

NINTH FIVE YEAR PLAN 1997-2002

VOLUME II

Thematic Issues and Sectoral Programmes



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CHAPTER 1

OVERVIEW

1.1 The objectives of the Ninth Plan have been spelt out in the Approach to the Ninth Five Year Plan document adopted by the National Development Council. "Growth with Social Justice and Equity" is proposed to be achieved with the objectives outlined in the Approach Paper. Some specific areas from within the broad objectives of the Plan as laid down by the NDC have been selected for special focus. For these areas, Special Action Plans (SAPs) have been evolved in order to provide actionable, time-bound targets with adequate resources. Broadly, the SAPs cover specific aspects of social and physical infrastructure, agriculture, information technology and water policy.

1.2 Volume-I of the Ninth Plan document covers not only the macro and economy-wide issues but also reflects on the important general aspects of the sector specific issues, particularly the approaches to policy formulation. The main thematic areas covered in Volume-I, inter alia, include Economic infrastructure, energy, agricultural development and food security, industry and commerce, and the financial sector.

1.3 Volume-II gives perspectives on how the sectoral programmes fit into realisation of planning themes enumerated in Volume-I. The sectoral chapters deal with the trade-off in objectives both for the perspective period and during the Ninth Plan, commonality in approach, policy framework, institutional structure, delivery mechanism, possibility of synergy and convergence and major requirements i.e. labour, input and technology.

1.4 In individual sectoral chapters, policies and programmes during the Eighth Plan period have been reviewed, shortcomings identified and new policy framework suggested to overcome the shortcomings and ensure sustainability of the development process not only in economic terms but also in terms of social and environmental factors. Sectorwise overview is discussed in the succeeding paragraphs:

Agriculture, Food Security and Irrigation

1.5 The Strategy of agricultural development would be centred around achieving the objectives of sustainability of employment generation, food and nutrition security, equity and poverty alleviation. Efforts will be made to achieve a growth rate of 4.5 per cent per annum in agricultural output in order to make a significant impact on overall growth and poverty. Regionally differentiated strategies will be followed to realise the full potential of growth in every region. The emphasis will be on raising the capabilities of small peasants and promoting sustainable agricultural systems, while at the same time conserving and maximising the value from scarce resources, water and land. Infrastructure development will be given the highest importance. Emphasis will be laid on minor irrigation by harnessing ground water resources. Timely and adequate availability of inputs will receive special attention. The regional programmes will be formulated in such a manner as to ensure provision of inputs to the farmer, particularly in the remote, hilly, backward and tribal areas. Agricultural credit is a crucial input and it will receive special attention. The programmes relating to land reforms would be strengthened to raise agricultural growth and help the poor. Efforts will be made to increase public investment during the Plan period. In every district, the Rural Infrastructure

Development Fund (RIDP) would be used to promote projects which encourage organisations of groups of small farmers, artisans and landless labourers for skill up-gradation, processing, transport infrastructure, quality improvement etc. Support to agricultural research will be enhanced and emphasis will be placed on bio-technology, microbiology, genetic improvement of crops including hybrid technology, genetic up-gradation of animal resources, improvement of fish genetic stock and post-harvest technology, etc. Efforts will be made to accelerate the growth rates of allied sectors such as horticulture, including fruits and vegetables, fisheries, livestock and dairy. Agricultural exports will receive special attention as these have a lot of potential for increasing farm incomes and employment, besides earning foreign exchange. Co-operatives will be strengthened. Greater participation of women in agriculture than at present will be encouraged. Linkages with markets will be strengthened and agro-processing and agro-industries will be encouraged.

1.6 Self-sufficiency in food-grains for the country as a whole does not necessarily imply food and nutrition security for all. Making food available through the PDS at affordable prices has been a key element of our food security system. However, untargeted PDS has resulted in a steady rise of budgetary food subsidy. During the Ninth Plan subsidised food grains is proposed to be targeted only to people below the poverty line so as to ensure that budgetary subsidies reach the needy and become sustainable. In addition to reorienting PDS, food supplementation programmes for the identified vulnerable groups such as women and children (such as ICDS, Mid-day Meal, Vitamins and Iodine deficiency programmes) are proposed to be extended and strengthened.

Industry & Minerals

1.7 The thrust of the new industrial policy announced in July 1991 has been on substantial reduction in the scope of industrial licensing, simplification of procedures, rules and regulations, reforms in the Monopolies and Restrictive Trade Practices(MRTP) Act, reduction of areas reserved exclusively for the public sector, disinvestment of equity of selected public sector enterprises (PSEs), raising the limit of foreign equity participation in the domestic industrial undertakings, liberalisation of trade and exchange rate policies, rationalisation of duties, etc. with a view to promoting growth and increasing efficiency and international competitiveness. Steps were also taken to bring public sector enterprises within the ambit of Board of Industrial and Financial Reconstruction (BIFR), providing a social security net through National Renewal Fund (NRF), industrialisation of backward areas through growth centres scheme, opening up of mining sector to private sector, strengthening of technological capacity etc. Industrial growth rate during the Eighth Plan was, however, lower than that achieved in the Seventh Plan. One of the major constraints faced by the industrial sector is inadequate availability of infrastructural support, which not only affected domestic production but exports as well. However, the industry has responded well to the opening up of the economy and has realised the importance of competitiveness with the result that due emphasis is being given to modernisation, up-gradation, economies of scale, quality research and development, etc. The rate of foreign direct investment has also started picking up in response to the improved policy environment.

1.8 The Ninth Plan envisages an industrial growth rate of 8.2% per annum and export growth of 11.8% per annum. For achieving this growth, special measures have been suggested to ensure adequate availability and requisite quality of infrastructure and creating conditions conducive for unhindered growth of such industries which can produce products at internationally competitive prices. Internal aberrations in policies are proposed to be removed and special measures envisaged to promote development of industries in backward areas. Special emphasis has been given to the industrial and economic development of the North Eastern Region by evolving a special package which, inter alia, includes changes in the funding pattern of growth centres and integrated infrastructure development centres, extension of transport subsidy scheme, strengthening of institutions concerned with entrepreneurship and human resources development etc., various physical concessions and incentives and specific measures for development of industrial sub-sectors like agriculture, handicrafts, handloom etc. It is also proposed to review the working of BIFR and bring about necessary changes to make it an effective instrument of reviving sick industrial units. The scheme of National Renewal Fund is also proposed to be recast through appropriate modifications to make it more effective and achieve the objectives of providing a social safety net as originally envisaged. The retention price-cum-subsidy scheme for fertilisers and dual pricing scheme for sugar is also proposed to be reviewed and necessary changes will be made with a view to ensuring healthy development of these industries.

1.9 The small scale sector has shown considerable resilience and in-built strength and growth rate of this sector has been about two to three percentage points higher than that of large and medium industries. Due emphasis would be given for making available adequate credit to the sector, and promote production and productivity through technological up-gradation.

1.10 In the unorganised sector, a cluster approach will be adopted for provision of training, up-gradation of skills and improvement in tool kits, equipment and production techniques to increase production, productivity and income levels of artisans, craft-persons, weavers, spinners and workers etc.

Energy

1.11 The major thrust of the on-going reform process in the Energy Sector has been to make it commercially viable and also to attract private sector participation. The Ninth Plan lays emphasis on bringing about a commercial outlook among the PSUs, attracting private sector participation in the development of energy sector, encouraging a competitive environment not only between public and private sectors, but between public sector units, need for regulatory agencies for fixation of tariff, conservation of resources, safeguarding the interest of consumers and protecting the environment. Energy-economy interaction, viz. the demand for energy in the economy, the sources from which this demand is met, the changes in the pattern of energy consumption from non-commercial to commercial, changes in the composition of commercial energy use, energy-GDP elasticity along with some policy measures have been discussed. New policies in the Ninth Plan on getting the private sector to invest in the electric power generation, transmission and distribution, in coal mining, in petroleum exploration, production and arranging of supply of liquefied natural gas have been considered. Restructuring of the electricity supply system to make it commercially viable, bankable and professional, rapid increase in oil and coal production by deregulating the industry in a short period of time are some of the aspects which will receive due consideration.

Transport

1.12 The country's transport system which comprises of rail, roads, sea port and airports is facing capacity saturation. Inadequacies and imbalances in transport threaten to constrain economic growth and the quality of life in both urban and rural areas. A large number of villages lack reliable all-weather connection with nearby markets and towns. Areas like North East and Jammu & Kashmir have remained physically and emotionally isolated because the transport system has not linked them adequately with the rest of the country. Environment friendly and socially cost-effective means of transport like coastal shipping, inland water transport and non-mechanised transport, etc. also have remained undeveloped. Distortions in the inter modal mix of transport, environment and energy linkages, safety and technology up-gradation have been examined. The diverse issues facing the transport sector require a comprehensive policy package. Strengthening of the Indian railways in its reach and capacity so that it effectively links the distant parts of the country, helps to develop economic potential of the backward areas and carries the bulk of the nation's long or medium haul traffic, is necessary. Similarly road networks need to be expanded and strengthened. There is also a need to modernise our seaports and airports with a view to augmenting their capacity and making them of international standard.

1.13 Policy options, each backed by adequate investment and complemented by suitable policy changes in other sectors, have been discussed and emerging issues and strategies visualised for development have been elaborated. The pricing policy in future would have to be based on full recovery of cost. Subsidies/concessions will be direct through General Budget or sectoral budget so that the health of the transport enterprises is not impaired. Attempts will be made to mobilise resource from user charges in various ways. Non-tariff measures will also be taken for resource generation. Revenue mobilisation through tariff and non-tariff measures, stress on productivity of human and material assets and cost cutting will be pursued vigorously in the public sector transport enterprises. Measures will be taken for increasing the involvement of private capital in the expansion and strengthening of infrastructure in railways, road, shipping and airports. The private participation can take many forms like full or joint ownership management contract, leasing, concessions like BOT etc.

Communications, Broadcasting and Information Technology

1.14 Information Technology (IT) is fast emerging as the technological infrastructure for global integration and rapid development of all sectors of economy. IT broadly includes all sub-sectors dealing with the generation, transmission and utilisation of information like telecommunications, computers, consumer electronics, media infrastructure etc. Recognising the impressive growth the country has achieved in IT since mid-eighties, its immense potential for future growth and its importance as an agent of transformation of every facet of human life, a high priority has been accorded to the development of this sector. The Ninth Plan would aim to make India a global IT super power and a front runner in the information revolution. To help devise an appropriate policy framework towards achieving this objective, a National Task Force on Information Technology and Software Development has been set up with Deputy Chairman, Planning Commission as its Chairperson. Expansion of the telecom network and its transformation into a modern and efficient system would be the two thrust areas during the Ninth Plan. Universal coverage of telephones on demand, universal and easy accessibility, world standard services to consumers at affordable prices, demand

based provision of existing value added services and introduction of new services would be the major objectives for the Ninth Plan. To achieve the objective of providing telephones on demand, 237 lakh new telephone connections are envisaged to be provided.

Environment & Forest

1.15 The Agenda 21 of the Rio Summit calls for integration of environmental aspects with development aspirations. One of the objectives of the Ninth Five Year Plan is to ensure environmental sustainability through social mobilisation and participation of people at all levels. It is also based on the belief that the principal task of planning in a federal structure is to evolve a clear vision and commitment to the national objectives and development strategy by both central, State and local governments. Therefore, emphasis is being placed on reorienting the policies rather than on direct intervention so as to send proper signals and induce economic development. The strategy in the Ninth Plan for the environment sector has been drawn up in accordance with the development needs of the nation. The measures required to protect the environment will be taken in such a way as to achieve sustainable development. The strategy recognises the symbiotic relationship between tribals and the forests, and gives a special focus to the scheduled castes, the tribals and the weaker sections living in and around the forests. A number of enabling conditions have already been created for harmonising economic growth and environmental conservation. These include the macroeconomic compatibility, the implementation of the 73rd and 74th Constitutional amendments and the measures being undertaken in the implementing ministries.

Human and Social Development

1.16 Human Development and improvement in the quality of life are the ultimate objectives of planning. This is to be achieved through policies and programmes aimed at promotion of both equity and excellence. Benefits of national economic programmes reach the different segments of the population through different channels and at different rates. Economic growth improves employment opportunities and employment improves income and purchasing power. But the market mechanism may not improve access to available facilities or fully meet the essential needs of the population with inadequate purchasing power. Social sector planning therefore ensures that appropriate policies and programmes are formulated and adequate investment provided by the State so that poor and vulnerable segments of the population can access essential commodities and facilities based on their needs and not on the ability to pay.

1.17 Despite the fact that there has been a decline in the incidence of poverty over the past two decades, millions continue to live below the poverty line, a large proportion of whom reside in rural areas. Therefore, specifically designed anti-poverty programmes for generation of both self-employment and wage-employment will continue in the Ninth Plan. These would, however, be rationalised and re-designed in order to make them more effective as instruments of poverty alleviation. Under the self-employment programme of Integrated Rural Development Programme (IRDP) there would be a progressive shift from the individual beneficiary approach to the group and/or cluster approach. A holistic approach would be adopted with an integration of the existing sub-schemes of Training of Rural Youth for Self Employment (TRYSEM), Development of Women and Children in Rural Areas (DWCRA), Supply of Improved Toolkits to Rural Artisans (SITRA), and Ganga Kalyan Yojana (GKY) in the IRDP. Jawahar Rozgar Yojana (JRY) will be confined to the creation

of rural infrastructure according to the felt needs of the people at the village level through panchayats. However, at the block and district level, the Employment Assurance Scheme (EAS) would be the single wage-employment programme. Efforts would be made to bring about a greater integration between the poverty alleviation programmes and the various sectoral programmes as well as the area development programmes within the umbrella of the Panchayati Raj Institutions (PRIs).

1.18 In the area of basic minimum services, the Ninth Plan has placed greater emphasis on primary health care, primary education and provision of safe drinking water and shelter.

1.19 Over the last five decades a massive health care infrastructure has been built up in urban and rural areas. National programmes to combat major health problems have been evolved and implemented through this infrastructure. These have resulted in a steep fall in mortality. However there has not been any reduction in the communicable diseases and nutrition related morbidity. There has been a progressive increase in the non-communicable disease burden, occupational and environmental health related problems. Focus during the Ninth Plan will be to provide integrated preventive, promotive, curative and rehabilitative services for communicable, non-communicable and nutrition related health problems, through appropriate strengthening of the existing health care institutions and ensuring that they are optimally utilised. Efforts will be made to achieve substantial reduction in morbidity and mortality rates by taking advantage of the ongoing demographic transition and progressive increase in the population in the 15-59 age group.

1.20 Over the last five decades there has been a steep decline in severe grades of under-nutrition and related health problem. Currently major nutritional problems of public health importance are (a) chronic energy deficiency (CED) especially in pregnant women and pre-school children; (b) obesity and consequent increase in non-communicable diseases especially among urban affluent segments of population; (c) micro-nutrient deficiencies of iron, iodine and vitamin A and associated health hazards. During the Ninth Plan, efforts will be made to achieve substantial reduction in CED and its health consequences through universalisation of ICDS, screening of pregnant and lactating women, growth monitoring and better targeting of food supplements to those with CED, close monitoring of persons receiving food supplements; close inter-sectoral co-ordination to ensure early detection and management of health problem leading to or associated with under-nutrition. Prevention, early detection and effective management of micro-nutrient deficiencies and associated health hazards will receive due attention.

1.21 The technological advances and improved quality and coverage of health care resulted in a rapid fall in Crude Death Rate (CDR) from 25.1 in 1951 to 9.8 in 1991. In contrast, the reduction in Crude Birth Rate (CBR) has been less steep, declining from 40.8 in 1951 to 29.5 in 1991. As a result, the annual exponential population growth rate has been over 2% in the last three decades. During the Eighth Plan period the decline in CBR has been steeper than that in the (CDR) and consequently, the annual population growth rate has been around 1.9% during 1991-95. Reduction in the population growth rate has been recognised as one of the priority objectives during the Ninth Plan period. This will be achieved by meeting all the felt-needs for contraception; and reducing the infant and maternal morbidity and mortality so that there is a reduction in the desired level of fertility. The efforts will be made to minimise the existing disparities between states by providing resources to fill the crucial gaps in infrastructure and manpower and improving the operational efficiency of health system, improving the access and quality of reproductive

and child health services to enable the increasingly aware and literate families to attain their reproductive goals in harmony with the national goals and accelerating the rate of reduction in population growth rate to achieve rapid population stabilisation.

1.22 Manpower development to provide adequate labour force of appropriate skills and quality to different sectors essential for rapid socio-economic development and elimination of the mismatch between skills required and skills available has been a major focus of human resource development activities during the last fifty years. Employment generation in all the productive sectors is one of the basic objectives. In this context, providing enabling environment for self employment has received special attention both in urban and rural areas. Objective is also to eliminate bonded labour, employment of children and women in hazardous industries, and minimise occupational health hazards. During the Ninth Plan period, elimination of such undesirable practices as child labour, bonded labour, ensuring workers' safety and social security, looking after labour welfare and providing of the necessary support measures for sorting out problem relating to employment of both men and women workers in different sectors will receive priority attention. It is also envisaged that the employment exchanges will be reoriented so that they become the source of labour related information, employment opportunities and provide counselling and guidance to employment seekers.

1.23 The Ninth Plan treats Education as the most crucial investment in human development with objective of eradicating illiteracy by 2005. Special Action Plan has identified the expansion and improvement of social infrastructure in education as a critical area. An overriding priority will be given for providing access to schooling to children in the age group 6-11 years. A special thrust will be on girls' education by providing free education up to college level including professional courses. Vocational education at the secondary and under-graduate levels will be expanded and restructured so as to have strong linkages with industry and improve employability. The intake capacity of the IITs, other reputed engineering institutions and IIMs will be doubled, particularly in high demand areas like software engineering and information technology. PRIs will be empowered to serve as the nucleus in programme implementation. Non-governmental organisations will be encouraged to supplement the governmental efforts, private sector will also be facilitated to grow particularly in higher and technical education. Care will, however, be taken to ensure that the country does not lag behind in terms of creative artists and scientists. Accordingly, education in basic sciences and areas of fundamental research will be promoted and strengthened.

1.24 To ensure the well-being of the disadvantaged sections of the society, there has been a definite shift in the approach from 'welfare' to 'development' and to 'empowerment' over the last four and a half developmental decades. In line with this new approach, all the welfare and developmental measures have been directed towards empowering the Socially Disadvantaged Groups, such as women, Scheduled Castes, Scheduled Tribes, Other Backward Classes and Minorities, as the agents of social and economic change and development. While in the case of women, efforts are now being made to make them economically independent and self-reliant through various employment and income-generating activities, the main thrust in respect of children is to ensure their survival, protection and development with a special focus on the girl child and the adolescent girl. In the field of social welfare, the special focus will be now on empowering the persons with disabilities; reforming the deviants like juvenile delinquents/vagrants, alcoholics and drug addicts; and caring for other disadvantaged, viz. street children, older persons and destitutes. The main strength of these efforts is derived from various legislations enacted for protecting

the interests of these groups. Towards empowering the Socially Disadvantaged Groups, a three-pronged strategy of Social Empowerment, Economic Empowerment and Social Justice, will be adopted in the Ninth Plan.

Housing, Urban Development and Water Supply

1.25 The key urban concern is the growing gap between demand and supply of basic services. While there has been a steady growth in the housing stock, infrastructure and basic services, the gaps between demand and supply have been growing even in terms of conservative norms. This gap has a deteriorating impact on the urban environment, inadequacy of urban planning, urban poverty and degradation. With a view to achieving the goal of 'Health for all', the Government is committed to provide drinking water to every settlement in the rural and urban areas within next five years. It has also been decided to ensure that sanitation facilities are improved and expanded rapidly. A new National Housing and Habitat Policy has been evolved which aims at providing 'Housing for All'. Towards this end the Government will facilitate construction of 20 lakh additional housing units annually in urban and rural areas. To achieve these objectives Special Action Plans have been prepared.

1.26 The rural hinterland has played a critical role in sustaining urbanisation. This is reflected in the indicators of sources of primary inputs, competitively priced labour for urban economic activities, primary funds as reflected in comparative urban and rural credit-deposit ratios and market for urban pockets. But the unending migration of the rural poor to the urban areas may have a destabilising effect of urbanisation and its sustainability. Income and employment opportunities will have to rise in rural areas through both the farm and non-farm sectors. The rural - urban continuum would be strengthened so that the gaps between rural and urban life styles are reduced. Effective urban strategies and programmes cannot be developed in isolation of those living in rural areas. The Ninth Plan will take cognisance of this ground realities, particularly in respect of the three critical components viz. drinking water, sanitation and housing.

Science and Technology

1.27 The Science and Technology policy and approach for the Ninth Plan reflects the reality of the present day world in which nations progress along their own chosen path but in a much more closely inter-connected and inter-dependent manner. Science and Technology continues to remain the main focal point for exploring new horizons and new vistas, economic prosperity and meeting the economic, industrial, trade and societal challenges. Policy initiatives have been suggested to ensure the benefits emerging from the S&T reach all sections of the community including the weaker sections of the society. Since a strong science base is a pre-requisite for achieving technological competitiveness, efforts will be continued to build and maintain the same. Scientists with exceptional capabilities would be nurtured and supported fully by offering them within the country facilities comparable with international standards, by creating more centres of excellence in institutions of higher learning for supply of future S&T manpower and by utilising the existing infrastructure in terms of facilities and manpower more efficiently. Research programmes, particularly in some of the chosen fields of agriculture, export and industry would be taken up on in a mission mode through appropriate restructuring and reorientation of many of the scientific institutions and laboratories. The emphasis will be on clean and eco-friendly technologies. The major focus of the S&T programmes will be to

encourage and strengthen interaction among R&D institutions and the users. Development of core strength and concentration on areas where competitive strength can be built so that the technological competitiveness can be converted into commercial strength are envisaged. In the light of the international control regime, greater awareness would be created among the scientists and technologists regarding the patents and IPR related issues for protecting the interest of the country. Science and technology activities in the States and UTs would be geared up to take up location specific R&D programmes for S&T inputs in the key sectors of the socio-economic development through promotion of joint innovative programmes with industry and NGOs.

1.28 The importance of developing S&T in a major way has been recognised since independence. The whole hearted support provided to science and technology since then has resulted in many accomplishments in a wide variety of disciplines. Support to basic research has been receiving a rather high priority during the earlier plans. Though this may continue to a considerable extent, a proper balance would be maintained between fundamental research and applied research in scientific fields. Recent developments have brought home the need to accord high priority to technology related areas, particularly the process technologies, which may be characterised as core technologies, which need to be strengthened with particular emphasis on ensuring partnership with the concerned socio-economic activities and industry wherever possible. In this process the Indian industry and the users of technology have a crucial role to play in generation of technology in order to sustain a competitive technological edge.

CHAPTER 2

POVERTY ALLEVIATION PROGRAMMES

2.1 Poverty Alleviation in Rural India : Programmes and Strategy

2.1.1 Poverty eradication is one of the major objectives of planned development. The magnitude of the problem is still quite staggering. Thirty six per cent of the Indian population was below poverty line (BPL) in 1993-94, the latest year for which the data are available and the absolute number of poor was 320 million, out of which 244 million (37 per cent of the rural population) lived in rural areas. The incidence of poverty declined from 54.9 per cent in 1973-74 to 36 per cent in 1993-94. But the absolute number of poor did not decline much over this period of 20 years. There were 321 million poor in 1973-74 and 320 million in 1993-94; in the rural areas the corresponding numbers were 261 million and 244 million.

2.1.2 The main determinants of poverty are (i) lack of income and purchasing power attributable to lack of productive employment and considerable underemployment and not to lack of employment per se; (ii) a continuous increase in the price of food, especially foodgrains which account for 70-80 per cent of the consumption basket; and (iii) inadequacy of social infrastructure, affecting the quality of life of the people and their employability.

2.1.3 Economic growth is important. Economic growth creates more resources and has the potential of creating more space for the involvement of the poor. But the involvement of the poor depends on the sources of growth and the nature of growth. If the growth is sourced upon those sectors of the economy or those activities which have a natural tendency to involve the poor in their expansion, such growth helps poverty eradication. Therefore, it is important to source a large part of economic growth in agriculture, in rural non-agricultural activities and in productive expansion of the informal sector which all have high employment elasticities, as well as in an export strategy based on labour intensive exports.

2.1.4 The Government recognises that high growth of incomes is by itself not enough to improve the quality of life of the poor. Unless all the citizens of the country, and most particularly the poor, have certain basic minimum services, their living conditions cannot improve. These minimum services include among other things literacy education, primary health care, safe drinking water and nutritional security. The Government had convened a meeting of Chief Ministers to identify such basic minimum services and a list of seven services had unanimously been agreed upon. These seven services are safe drinking water, primary health facilities, universal primary education, nutrition to school and pre-school children, shelter for the poor, road connectivity for all villages and habitations, and the Public Distribution System (PDS) with a focus on the poor. The Ninth Plan lays special emphasis on these seven basic minimum services and will make all efforts to achieve a minimum level of satisfaction in providing these in partnership with the State Governments and the Panchayati Raj Institutions (PRIs).

2.1.5 Direct poverty alleviation programmes are important and will continue on an expanded scale in the Ninth Plan. But these programmes would be oriented towards strengthening the

productive potential of the economy and providing more opportunities for involving the poor in the economic process. Broadly, there would be schemes for income generation through supplementary employment, for the welfare of the poor in rural/urban areas and for a targeted PDS system to ensure that the poor have access to foodgrains at prices they can afford. In this chapter, both rural and urban poverty alleviation programmes besides the Targeted Public Distribution System (TPDS) will be discussed in some detail.

2.1.6 Poverty can effectively be eradicated only when the poor start contributing to the growth by their active involvement in the growth process. Implementation of the programmes should be increasingly based on approaches and methods which involve the poor themselves in the process of poverty eradication and economic growth. This is possible through a process of social mobilisation, encouraging participatory approaches and institutions and empowerment of the poor. In this the PRIs, the voluntary organisations and community based Self-Help Groups will be more closely involved.

Rural Poverty Alleviation

Self-Employment Programmes

Integrated Rural Development Programme (IRDP) & Allied Programmes

2.1.7 The Integrated Rural Development Programme (IRDP) aims at providing self-employment to the rural poor through acquisition of productive assets or appropriate skills which would generate additional income on a sustained basis to enable them to cross the poverty line. Assistance is provided in the form of subsidy and bank credit. The target group consists largely of small and marginal farmers, agricultural labourers and rural artisans living below the poverty line. The pattern of subsidy is 25 per cent for small farmers, 33-1/3 per cent for marginal farmers, agricultural labourers and rural artisans and 50 per cent for Scheduled Castes/Scheduled Tribes families and physically handicapped persons. The ceiling for subsidy is Rs.6000/- for Scheduled Castes/Scheduled Tribes families and the physically handicapped; for others, it is Rs.4000/- in non-DPAP/non-DDP areas and Rs.5000/- in DPAP and DDP areas. Within the target group, there is an assured coverage of 50 per cent for Scheduled Castes/Scheduled Tribes, 40 per cent for women and 3 per cent for the physically handicapped. Priority in assistance is also given to the families belonging to the assignees of ceiling surplus land. Green Card Holders covered under the Family Welfare Programme and freed bonded labourers.

2.1.8 IRDP is a Centrally Sponsored Scheme which is in operation in all the blocks of the country since 1980. Under this scheme Central funds are allocated to States on the basis of proportion of rural poor in a State to the total rural poor in the country.

2.1.9 Since the inception of the programme till 1996-97, 50.99 million families have been covered under IRDP at an expenditure of Rs.11434.27 crore. The total investment during this period has been Rs.28047.65 crore which includes a subsidy component of Rs.9669.97 crore and a credit disbursement of Rs.18377.68 crore. Of the total families assisted under this programme 44.75 per cent were Scheduled Castes/Scheduled Tribes and 27.07 per cent women.

2.1.10 During the Eighth Five Year Plan the total allocation (Centre and State) under IRDP was Rs 5048.29 crore and the total investment amounted to Rs.11541.06 crore. In quantitative

numbers, 10.82 million families were covered under IRDP against the initial target of 12.6 million families fixed for the entire Eighth Plan period. However, from 1995-96 physical targeting under the programme was abolished with the focus shifting to financial targets and qualitative parameters. Of the families covered 50.06 per cent were Scheduled Castes/Scheduled Tribes and 33.59 per cent women. The coverage of women was still lower than the target of 40 per cent.

2.1.11 The IRDP has been successful in providing incremental income to the poor families, but in most cases the incremental income has not been adequate to enable the beneficiaries to cross the poverty line on a sustained basis mainly because of a low per family investment. The results of the last Concurrent Evaluation (September 1992 - August 1993) revealed that of the total beneficiaries assisted under the programme, 15.96 per cent of the old beneficiary families could cross the revised poverty line of Rs.11,000 (at 1991-92 prices), while 54.4 per cent of the families were able to cross the old poverty line of Rs.6,400 per annum. But, the analysis by income group of families revealed that in case of those within initial income of Rs.8501 – 11,000, 48.22% of beneficiary families could cross the poverty line of Rs.11,000 which is quite encouraging. The analysis of the family income of the beneficiaries reveal that a large percentage (57.34%) of the families had annual family income from assets of more than Rs.2000. The annual income from the asset was more than Rs.6000 in 29% cases.

2.1.12 The major constraint in the implementation of IRDP has been sub-critical investments which have adversely affected the Incremental Capital Output Ratio (ICOR) levels and thereby undermined the viability of the projects. Though the average per family investment has been rising steadily in monetary terms, in real terms the increase has been inadequate and in some cases sub-critical due to the inflationary trends and the increase in the cost of assets.

2.1.13 At the instance of the Ministry of Rural Development (now renamed as Ministry of Rural Areas & Employment), the Reserve Bank of India appointed in 1993, a High Powered Committee under the Chairmanship of Dr. D.R. Mehta, Deputy Governor of Reserve Bank of India to make an indepth study of IRDP and recommend suitable measures for its improvement. The Committee was asked to review among other factors, the process of selection of appropriate income generating assets, credit structure, recovery of loans, and procedural matters in respect of obtaining loans, and efficacy of existing administrative structures of the District Rural Development Agencies (DRDAs). In consonance with the recommendations of the High Powered Committee, the new initiatives taken by Government under IRDP in the Eighth Plan included (a) targeting the segment of literate unemployed youth below the poverty line for IRDP activities by giving them subsidy upto Rs.7500 or 50 per cent of the project cost (whichever is lower) (b) promotion of group activities through enhancement of ceiling on subsidy to Rs.1.25 lakh or 50 per cent of the project cost (whichever is lower) for all group ventures involving at least 5 members (c) back-ending of subsidy to prevent leakages in subsidy administration (d) shifting the emphasis to financial targets and qualitative parameters from a perfunctory physical coverage of families and (e) enhancing the limit of allocation to programme infrastructure from 10 per cent to 20 per cent in all the States and 25 per cent in the North Eastern States.

2.1.14 Among the other steps taken to enhance the efficacy of the programme are abolition of the cut of line to enable all families below the poverty line to be assisted under the programme, targeting the investment per family at progressively higher levels each year, extension of the family credit plan to 213 districts of the country, enhancing the ceiling limit of collateral free loans to a uniform limit of Rs.50,000 with a view to easing the constraints faced by poor beneficiaries while taking loans from the banks, extension of the cash disbursement scheme to 50 per cent blocks in the country, decentralisation of the sanctioning powers for infrastructural projects below Rs.25 lakh and entrusting the banks with the task of identification of beneficiaries in about 50 districts on a pilot basis. These interventions have had an impact on the average per family investment which rose from Rs.7889 in 1992-93 to Rs.15036 in 1996-97.

2.1.15 In pursuance of the High Powered Committee's recommendation, for the first time in 1995-96 credit targets were fixed. There has been a continuous increase in the volume of credit mobilised by the banks during the successive years of the Eighth Plan period. Correspondingly, the subsidy credit ratio, which averaged 1:1.77 in the first three years of the Eighth Plan, rose to 1:1.96 in the fourth year and further to 1:2.17 in 1996-97. However, there are genuine reasons for the inability of the banks to meet the full credit requirements of IRDP beneficiaries. These include poor recovery of IRDP loans, lack of adequate rural banking infrastructure in certain areas and the weak financial performance of Regional Rural Banks and Cooperative banks.

2.1.16 There has been considerable diversification of IRDP activities since the inception of the programme. Initially, a majority of the beneficiaries under the programme subscribed to primary sector activities. In 1980-81 the sectoral composition of IRDP activities was heavily skewed towards the primary sector which had a sponsorship of 93.56 per cent, while the share of the secondary and tertiary sectors were 2.32 per cent and 4.12 per cent respectively. Over the years, the share of the primary sector has come down considerably and is currently around 55 per cent, while the shares of the secondary and tertiary sectors have increased proportionately to 15 per cent and 30 per cent respectively.

2.1.17 Inadequate development of infrastructure and insufficient forward and backward linkages and market facilities have been an area of concern under IRDP. In an attempt at filling up the critical infrastructural gaps and strengthening the linkages and marketing facilities, the allocation under IRDP towards the development of programme infrastructure was increased from 10 per cent to 20 per cent in all the States and to 25 per cent in the North Eastern States. Decentralisation in the sanctioning powers for infrastructural projects had already been given effect to in 1994-95. However, despite this enhanced provision for programme infrastructure under IRDP and the relaxation in sanctioning norms, the actual expenditure on infrastructural development was a mere 5 per cent to 7 per cent of the total allocation under the programme at the all-India level. There is, therefore, a critical need to prepare a perspective infrastructural plan at the district and block level and to ensure that the funds earmarked for infrastructural development under IRDP are closely monitored and not diverted elsewhere.

2.1.18 The salient features of IRDP performance during the Eighth Plan are given in Annexure-I.

Training of Rural Youth for Self-Employment (TRYSEM)

2.1.19 The Scheme of TRYSEM, a facilitating component of IRDP, aims at providing basic technical and entrepreneurial skills to the rural poor in the age group of 18 to 35 years to enable them to take up income generating activities. The Eighth Plan had emphasised the importance of a proper assessment of the training needs of the rural youth in relation to self and wage-employment opportunities, quality of training and group training. During the Eighth Plan, 15.28 lakh youth were trained under TRYSEM, of whom 34.16 per cent took up self-employment and 15.05 per cent wage-employment; while the remaining 50.79 per cent remained unemployed. (Performance details are given at Annexure-II.)

2.1.20 With a view to strengthening this programme, several initiatives were taken in the Eighth Plan which include, among others, an increase in the stipend and honorarium rates; emphasis on professionalised training through the established and recognised institutes like ITIs, Community Polytechnics, Krishi Vigyan Kendras etc., exploring the possibilities of setting up production groups from amongst TRYSEM trainees for undertaking ancillary activities like manufacture and assembly of modern items of production; utilisation of TRYSEM infrastructure funds for the strengthening of Nirmithi Kendras (Rural Building Centres) sponsored by HUDCO for training of youth under TRYSEM in the trades of low cost housing and the setting up of mini-ITIs at the block level to strengthen the training infrastructure for the rural youth.

2.1.21 The TRYSEM programme was evaluated for the first time in a Quick Study (June to August 1993) conducted through independent research institutes/organisations. The main findings of the evaluation study are as under :

- i) Of the total sample districts, area skill surveys were not carried out in 92 per cent of the districts to assess the potential skill requirements. This resulted in a mismatch of job skills in 53.3 per cent of the sample districts.
- ii) Of the total number of beneficiaries, who got training under TRYSEM, roughly 47.19 per cent were unemployed after the training and 32.54 per cent took up self-employment after training of whom 12.41 per cent took up employment in trades other than those in which they were trained.
- iii) A majority of the beneficiaries i.e. 66.52 per cent cited lack of funds as a major reason for not taking up self-employment independently after the training.
- iv) A major proportion of TRYSEM trainees i.e. 53.57 per cent did not apply for loan under IRDP. Of the total beneficiaries, who applied for loan, only about 50 per cent were given assistance under IRDP upon completion of training.
- v) Roughly, 73.38 per cent of the beneficiaries could derive an average monthly turnover upto Rs.1000 as a result of self-employment taken up by them after the training.
- vi) 63 per cent beneficiaries felt no improvement in their socio-economic conditions as a result of TRYSEM training.

2.1.22 There has been a poor convergence of TRYSEM with IRDP which has also been reflected in the Fourth Round of the Concurrent Evaluation of IRDP (1992-93). Only 3.88 per

cent of the IRDP beneficiaries had received training under TRYSEM. It was also observed that the rural youth trained under TRYSEM were only interested in the stipendiary benefits they received during the course of training and therefore, had not utilised the knowledge gained under the programme for furthering their self-employment prospects. In practice, therefore, such expenditure on training had become infructuous because of an absence of linkages between the employment opportunities available and training provided. Clearly, TRYSEM has been a weak link in the overall strategy for self-employment in rural areas.

Supply of Improved Toolkits to Rural Artisans (SITRA)

2.1.23 Launched in July 1992, as a sub-scheme of IRDP in selected districts, this scheme has since been extended to all the districts of the country. Under the scheme, a variety of crafts persons, except weavers, tailors, needle workers and beedi workers, are supplied with a kit of improved hand tools within a financial ceiling of Rs.2000, of which the artisans have to pay 10 per cent and the remaining 90 per cent is a subsidy from the Government of India. The supply of power driven tools, subject to a ceiling of Rs.4500, is also permitted under this scheme. Beyond this, any additional finance required by the artisans can be provided through loans under IRDP. The rural artisans are trained under TRYSEM for which an age relaxation has been provided to them.

2.1.24 Since the inception of this scheme in 1992-93 upto 1996-97, 6.10 lakh toolkits have been distributed to rural artisans at an expenditure of Rs.116.19 crore. (Performance details are given at Annexure-III.) Reports from the State Governments indicate that the scheme has been well received by rural artisans. The more popular crafts under this scheme are blacksmithy, carpentry, stone craft, leather work, pottery and cane & bamboo work. Prototypes of improved tools in these crafts have been developed by the National Small Industries Corporation (NSIC), Regional Design and Technical Development Centres under the Development Commissioner, Handicrafts and other organisations. The SITRA was evaluated by an independent research organisation, i.e. Development Alternatives, New Delhi, in two Districts of Uttar Pradesh, namely Agra and Aligarh. The findings of this study reaffirms the positive impact of SITRA. It also indicates that the income level of rural artisans have increased substantially with the use of improved tools.

DEVELOPMENT OF WOMEN AND CHILDREN IN RURAL AREAS (DWCRA)

2.1.25 The special scheme for Development of Women and Children in Rural Areas (DWCRA) aims at strengthening the gender component of IRDP. It was started in the year 1982-83, on a pilot basis, in 50 districts and has now been extended to all the districts of the country. The details of the performance under DWCRA during the Eighth Plan are given at Annexure-IV.

2.1.26 DWCRA is directed at improving the living conditions of women and, thereby, of children through the provision of opportunities for self-employment and access to basic social services. The main strategy adopted under this programme is to facilitate access for poor women to employment, skill upgradation, training, credit and other support services so that the DWCRA women as a group can take up income generating activities for supplementing their incomes. It seeks to encourage collective action in the form of group activities which are known to work better and are more sustainable than the individual effort. It encourages the habit of thrift and

credit among poor rural women to make them self-reliant. The programme also envisages that this target group would be the focus for convergence of other services like family welfare, health care, nutrition, education, child care, safe drinking water, sanitation and shelter to improve the welfare and quality of life of the family and the community.

2.1.27 Since the inception of the scheme till 1996-97, 1,87,918 DWCRA groups were formed at an expenditure of Rs.248.95 crore, covering 30,39,383 rural women. It was in the Eighth Plan that DWCRA received a fillip with the Government taking several initiatives to strengthen the programme. These include, among others, extending its coverage to all the districts of the country, increasing the revolving fund from Rs.15,000 to Rs.25,000, permitting the formation of smaller DWCRA groups in difficult terrain and remote areas, and permitting operation of joint accounts by the group organiser and another member of the group elected as treasurer of the group rather than the Gram Sevikas and the group organiser, so as to facilitate the DWCRA groups in managing their own affairs. The Child Care Activities (CCA) component was introduced in the DWCRA programme in 1995-96 with the objective of providing child care services for the children of DWCRA women. Similarly the Information, Education and Communication (IEC) component was introduced to generate an awareness among rural women about the development programmes being implemented for their upliftment and welfare. The Eighth Plan also saw the extension of the Community Based Convergent Services (CBCS), a component of DWCRA, to 141 districts of the country.

DWCRA – The Case of Andhra Pradesh

- Strategy adopted for formation of sustainable DWCRA groups had the following salient features :
- ❖ Formation of Thrift and Credit groups to develop group dynamics, cohesion and homogeneity among the members.
- ❖ Savings provided the entry point for poor women to come together through a Self-Help mechanism.
- ❖ Democratically managed groups with collective decision making.
- ❖ Sustainable income generating activities with access to credit under the Integrated Rural Development Programme (IRDP) and to training facilities.
- ❖ Total Literacy Campaign (TLC), Kalajatha, multimedia publicity campaign through All India Radio (AIR). Doordarshan and print media, involvement of youth leaders, mahila mandals, voluntary organisations and Government functionaries created awareness and contributed to the process of social mobilisation

2.1.28 In the implementation of DWCRA, some States like Andhra Pradesh, Kerala, Tripura and Gujarat have performed very well while in other States, the performance and impact of DWCRA has been relatively poor. In Andhra Pradesh, in particular, several successful DWCRA groups have been formed and this has led to the empowerment of women in decision making on various social aspects that impinge on their daily life. The range of activities pursued by these groups are also fairly diverse. Some have started mini banks and have, thereby, reduced

their dependence on the money lenders. Other groups are managing lands taken on lease. Quite a few have formed mini transport companies, having acquired autos, LCVs etc. on bank loans. The success of this programme has been attributed to two major catalysts namely, adult literacy among women and its culmination into a women's movement and close involvement of the NGOs. There is a need to evolve an institutional mechanism for replicating the successful DWCRA groups throughout the country.

2.1.29 Yet, in the implementation of DWCRA several shortcomings have also surfaced which has stymied its successful and effective execution in some States. Several groups have become defunct over time. The reasons for these include, among others, (a) improper selection of groups; (b) lack of homogeneity among the group members; (c) selection of non-viable economic activities which are mostly traditional and yield low income; (d) the linkages for supply of raw material and marketing of production are either deficient or not properly planned as a result of which DWCRA groups have become vulnerable to competition. The District Supply and Marketing Societies have been weak outlets for the sale of DWCRA products; (e) lack of institutional financial support, inadequate training, a non-professional approach and poor access

PODUPULAKSHMI – Pride of Nellore Women’ - a success story.

- As a sequel to the Total Literacy Campaign & anti-arack agitation, 'PODUPULAKSHMI' (Podupu means saving, Lakshmi – Goddess of Wealth) was started by two lakh women organised into 7000 small thrift groups of 20-30 members. They saved Rs.8.00 crore in four years.
- The district administration provided the 'PODUPULAKSHMI' movement with the initial support and acted as a facilitator. Volunteers, animators, trainers and instructors in the Total Literacy Campaign acted as PODUPULAKSHMI organisers.
- Once PODUPULAKSHMI groups reached a level of maturity, they converted themselves into DWCRA groups. This enabled them to access the revolving fund under DWCRA which was used by the groups to provide working capital to set up micro enterprises. The savings fund was used to meet emergency consumption needs.
- Today a wide variety of women centred activities are carried out by these groups. The ANM, the School Teacher, the Fair Price Shop Dealer, the Anganwadi Worker are all associated with PODUPULAKSHMI – bringing about a convergence of basic services.

to upgraded technological inputs have deprived DWCRA groups from diversifying into high value addition activities; and (f) inadequacy of staff and their insufficient training and motivation has also affected the overall implementation of the programme. These shortcomings would have to be suitably addressed for the successful implementation of the programme in the Ninth Plan.

**Wage Employment Programmes
Jawahar Rozgar Yojana (JRY)**

2.1.30 Rural poverty is inextricably linked with low productivity and unemployment. Hence, it is imperative to improve productivity and increase employment in rural areas. An employment-oriented growth strategy would achieve this goal only in the medium and long run. In the short run supplementary employment will have to be provided to the unemployed and underemployed, during the lean agricultural season. There are two major wage employment programmes namely the Jawahar Rozgar Yojana (JRY) and the Employment Assurance Scheme (EAS) presently in operation.

2.1.31 The JRY was launched as a Centrally Sponsored Schemes (CSS) on 1st April, 1989 by merging the National Rural Employment Programme (NREP) and the Rural Landless Employment Guarantee Programme (RLEGP). The main objective of the programme is the generation of additional gainful employment for unemployed and underemployed persons, both men and women, in the rural areas through the creation of rural economic infrastructure, community and social assets with the aim of improving the quality of life of the rural poor.

2.1.32 The resources under this scheme are allocated to the States/UTs on the basis of proportion of rural poor in the States/UTs to the total rural poor in the country. From the States

to the districts, the allocation is made on an index of backwardness which is based on the proportion of rural Scheduled Castes/Scheduled Tribes population in the district to total Scheduled Castes/Scheduled Tribes population in the State and an inverse of agricultural production per agricultural worker in that district, in equal weights. The funds are devolved to the village panchayats by giving due weightage to the Scheduled Castes/Scheduled Tribes population and the total population of the village panchayat. Until recently, these funds were distributed between the village panchayats and the district level in the ratio of 80:20. However, subsequent to the revitalisation of PRIs at three levels, the JRY funds are now distributed among the village panchayats, intermediate panchayats and the district panchayats in the ratio of 70:15:15.

2.1.33 This programme is targeted at people living below the poverty line. However, preference is given to Scheduled Castes/Scheduled Tribes and freed bonded labourers. At least 30 per cent of the employment is to be provided to women under the Yojana. In practice, however, this programme is self targeting. Given that employment is offered at statutory minimum wages for unskilled labour and that these wage rates are generally lower than the prevailing market wage rates, only those willing to do manual work for the prescribed wage rates would seek employment on these public works. While works under the scheme can be taken up during any part of the year whenever the need for generating employment is felt, these should preferably be started during the lean agricultural season but may continue thereafter, if necessary.

2.1.34 After three years of its implementation, i.e. in 1992-93, a review of the programme revealed that the per person employment generated was inadequate in terms of the requirement and did not provide enough income to the poor. It was also perceived that the resources under JRY were too thinly spread and adequate attention was not being given to the backward areas of the country. Accordingly, the strategy for implementation of JRY was modified from 1993-94 with the introduction of the **Second Stream** of JRY, specifically targeted at 120 identified backward districts in 12 States of the country, characterised by a concentration of the poor and the underemployed, with additional resources flowing to these districts. This modification in programme strategy was made to achieve the target of providing 90-100 days of employment per person in backward districts where there was a concentration of unemployed and underemployed persons. In addition, a **Third Stream** of JRY was introduced for taking up special and innovative projects aimed at preventing migration of labour, enhancing women's employment and undertaking special programmes through voluntary organisations for drought proofing etc.

2.1.35 A Concurrent Evaluation of the JRY was conducted from June 1993 to May 1994. The study revealed that nearly 82.16 per cent of the available funds were spent on community development projects. Construction of rural link roads received the highest priority. The wage and non-wage component of the expenditure of JRY works undertaken by the village panchayats was of the order of 53:47 at the all-India level against the stipulated norm of 60:40. Muster rolls were maintained with 86.87 per cent of the village panchayats. The average wages paid per manday of the unskilled workers were more or less on the lines of the minimum wages stipulated under the Act. Of the assets created, 76.96 per cent were created by the village panchayats and 76.11 per cent of these assets were found to be in a good condition. As many as 69.35 per cent of the workers were satisfied with the benefits they received under the JRY.

2.1.36 The Evaluation Report also brought into focus certain inadequacies in the programme. It was reported that 57.44 per cent of the elected panchayat heads had not been imparted any training for the implementation of JRY works. The share of women in employment generated under the programme was only 16.59 per cent and 49.47 per cent of the works could not be completed on time on account of shortage of funds. Other shortcomings observed were differentials in the wages paid to male and female workers, non-utilisation of locally available material in a large number of JRY works undertaken by panchayats and lack of discussion of the annual action plans in the Gram Sabha meetings etc.

2.1.37 In a comprehensive restructuring of the wage employment programmes on 1.1.1996, JRY was further streamlined. In the revised strategy, the First Stream of JRY was continued in its existing form but Indira Awaas Yojana (IAY) and Million Wells Scheme (MWS) which were till then sub-schemes of JRY were made independent schemes. The Second Stream of JRY, which was being implemented in 120 backward districts in the country, was merged with the Employment Assurance Scheme (EAS) introduced in 1775 selected backward blocks of the country in 1993-94 in view of the similarity in these programmes. The Third Stream of JRY with its thrust on innovative projects was continued. Accordingly, the JRY is now being implemented in two parts i.e. (i) the **Jawahar Rozgar Yojana (Main Scheme)**; and (ii) **Special and Innovative Project**.

2.1.38 Since the inception of JRY in 1989-90 till 1996-97 a total amount of Rs.26570.25 crore (Centre and State) was allocated to the programme. As against this total allocation, an amount of Rs.25661.70 crore was released of which Rs.25190.30 crore was utilised by the States. This utilisation is approximately 98.16 per cent of the total funds released. In terms of physical performance, as against a target of 6581 million mandays fixed under JRY, the actual employment generated was 6585 million mandays which is an achievement of 100.07 per cent. Of the total employment generated under the programme, the share of Scheduled Castes/Scheduled Tribes was 3659.53 million mandays (55.57 per cent) and that of women 1681.40 million mandays, which is 25.53 per cent.

2.1.39 The financial and physical performance under the JRY during the Eighth Plan period is given at Annexure-V.

2.1.40 From the data on mandays of employment generated under JRY it is difficult to assess the number of workers who have actually received employment in the rural areas and on an average for how many days. To surmount this shortcoming, registration of workers who take up employment under this programme, should be made compulsory as under the EAS.

2.1.41 Besides generating supplementary employment of a casual manual nature, the programme has contributed to the development of rural infrastructure through the creation of a wide range of community and social assets in a number of sectors. These included major irrigation works, soil conservation works, land development, drinking water wells, rural roads, construction of school buildings, panchayat ghars, mahila mandals, houses and sanitary latrines and social forestry. In fact, assistance for construction of class rooms under the Operation Black Board (OBB) programme was specially provided under JRY. Of the total cost, 60 per cent was funded from JRY and 40 per cent from the education department of the State Governments to meet the additional non-wage cost. Under Operation Black Board, 25576 classrooms and 21541

school buildings were constructed at an expenditure of Rs.176.11 crore from JRY funds between 1991-92 to 1994-95. Such an integration between sectoral programmes and JRY, with dovetailing of funds, would help in the creation of better quality durable assets.

Employment Assurance Scheme (EAS)

2.1.42 The Employment Assurance Scheme was launched on 2nd October, 1993 in 1775 identified backward blocks situated in drought prone, desert, tribal and hill areas, in which the revamped public distribution system was in operation. Subsequently, the scheme was extended to additional blocks which included the newly identified Drought Prone Area Programme (DPAP)/Desert Development Programme (DDP) blocks, Modified Area Development Approach (MADA) blocks having a larger concentration of tribals, and blocks in flood prone areas of Uttar Pradesh, Bihar, Assam and Jammu & Kashmir. In addition, 722 non-EAS blocks previously covered under Second Stream of Jawahar Rozgar Yojana (JRY) were also brought under the EAS. The EAS has since been universalised to cover all the rural blocks in the country with effect from 1.4.1997.

2.1.43 The main objective of the EAS is to provide about 100 days of assured casual manual employment during the lean agricultural season, at statutory minimum wages, to all persons above the age of 18 years and below 60 years who need and seek employment on economically productive and labour intensive social and community works. The works are to be selected by the District Collector and implemented through the line departments in such a manner that the ratio of wage to the non-wage component would stand at 60:40. Sectoral norms for execution of various works are-watershed development (50 per cent) and agro-horticulture, minor irrigation works (10 per cent) in DPAP and DDP blocks or water & soil conservation including afforestation, agro-horticulture and silvipasture (40 per cent), and minor irrigation works (20 per cent) in non-DPAP/non-DDP blocks. In addition, funds are also earmarked for link roads featuring in the Master Plans developed in the respective districts for this purpose (20 per cent) and public community buildings in rural areas as per the felt needs of the districts (20 per cent). The village panchayats are involved in the registration of persons seeking employment and the panchayats maintain these registers. They also coordinate and monitor the works. A maximum of two adults per family are to be provided employment under the scheme. The applicants, who register themselves for employment under the EAS, are issued family cards in which the number of days of employment are entered as and when such employment is given to them.

2.1.44 The EAS is a Centrally Sponsored Scheme. The scheme is demand-driven and therefore no fixed allocations are made for the districts/blocks. Instead, initial notional allocations are made to districts at the commencement of each year and thereafter depending on the demand for supplementary employment and the actual utilisation of funds the districts can request for additional funds. For the purpose of initial release, the blocks have been classified into three categories i.e. category A, B & C and Central funds to the tune of Rs.40 lakh, Rs.30 lakh and Rs.20 lakh are released as the first of the two instalments to these blocks respectively. This corresponds to the notional minimum allocation of Rs.1 crore, Rs.75 lakh and Rs.50 lakh per block per annum including the State's matching share.

2.1.45 The financial and physical performance of EAS since its inception in 1993-94 (October 1993) to 1996-97 is given in the Annexure-VI.

2.1.46 Since the inception of EAS in 1993-94 (i.e. October 1993) upto 1996-97, a total amount (Centre and State) of Rs.6514.65 crore has been released under the programme, against which the total utilisation was Rs.5278.16 crore. This indicates a percentage utilisation of 81.02 per cent. As many as 25.90 million persons registered themselves for employment under the EAS. The programme generated 1068.60 million mandays of employment from 1993-94 (October 1993) to 1996-97.

2.1.47 The EAS has not been evaluated till date. Hence, it is difficult to assess the overall impact of the programme in terms of employment, enhancement in the purchasing power of the poor and creation of durable assets. However, the Programme Evaluation Organisation has recently undertaken a comprehensive evaluation study of this Scheme.

Million Wells Scheme (MWS)

2.1.48 In India, though the small and marginal farmers, with holdings of less than 2 hectares, account for about 78 per cent of the total operational holdings, they only cultivate about 32.2 per cent of the cropped area (Agricultural Census 1990-91). To increase the productivity of these holdings they must be ensured an assured source of water supply. Ground water made available through wells is an important source specially in the remote areas of the countryside, where canal or tank irrigation is not feasible. Though the fixed capital investment in well irrigation is fairly high, it has many advantages such as flexibility in operation, dependability of source, timing of water deliveries and low conveyance losses.

2.1.49 The Million Wells Scheme (MWS) was launched as a sub-scheme of the National Rural Employment Programme (NREP) and the Rural Landless Employment Guarantee Programme (RLEGP) during the year 1988-89. After the merger of the two programmes in April 1989 into the Jawahar Rozgar Yojana (JRY), the MWS continued as a sub-scheme of JRY till December 1995. The MWS was delinked from JRY and made into an independent scheme with effect from 1.1.1996.

2.1.50 The scheme was primarily intended to provide open irrigation wells, free of cost, to individual, poor, small and marginal farmers belonging to Scheduled Castes/Scheduled Tribes and freed bonded labourers with a 20 per cent earmarking of JRY funds. Tubewells and borewells are not permitted under the Scheme. Where wells are not feasible due to geological factors, other minor irrigation works can be undertaken such as irrigation tanks, water harvesting structures as also development of land belonging to small and marginal farmers. From the year 1993-94 the scope of the MWS has been enlarged to cover non-Scheduled Castes/non-Scheduled Tribes small and marginal farmers who are below the poverty line and are listed in the IRDP register of the village. The sectoral earmarking which was 20 per cent upto 1992-93 had also been raised to 30 per cent from 1993-94 with the stipulation that the benefits to non-Scheduled Castes/Scheduled Tribes would not exceed one third of the total funds utilised during the year.

2.1.51 The MWS is also a Centrally Sponsored Scheme. The cost/area norms in regard to works under MWS are decided upon by a Committee comprising of Chief Secretary, Secretary (RD), Secretary (Planning), Secretary (Irrigation) and Chief Engineer (Minor Irrigation) of the State. The beneficiarficiaries themselves are asked to undertake construction of their wells through their own labour and local labour for which they are paid. Contractors are banned under

this programme. The wage to material ratio is required to be maintained at 60:40. Supplementary material costs, if any, can be met from other private/public sources. Though lifting devices are not provided under the scheme, the beneficiaries who intend to install a lifting device, are given the preference under IRDP and other relevant programmes.

2.1.52 The MWS is being implemented throughout the country. Allocations are made to the States/UTs on the basis of the proportion of rural poor in the State/UTs to the total rural poor in the country. The District-wise allocations are made by the States from their allocation in relation to the unirrigated land held by the target group with a potential for well irrigation.

2.1.53 A total of 11.04 lakh wells have been constructed since the inception of the programme till 1996-97 at an expenditure of Rs.4003.11 crore. The financial and physical performance under MWS during the Eighth Plan is given at Annexure-VII.

2.1.54 There has been no evaluation or impact study conducted in the field for the MWS. Yet, on the basis of the feedback available from certain parts of the country, this programme achieved considerable success in the districts falling in the Chotanagpur region of South Bihar, large parts of Orissa, many districts of Gujarat, besides the Eastern and Southern region of Rajasthan. In these areas, the MWS has played a significant role in transforming single cropped dry land areas held by farmers of the target group into double cropped lands, leading to increase in agricultural output and incomes. Yet, such successes have not been uniformly reported across the country. Many States have expressed difficulty in the implementation of the programme. For instance, in Punjab and Haryana where the incidence of tubewell irrigation is widespread and there is a wide network of canal irrigation systems, the programme of open dug wells is a non-viable option. Similarly, in Kerala the small size of the land holdings of the small and marginal farmers gives the scheme a limited potential. Andhra Pradesh, Goa, Madhya Pradesh, Maharashtra, and West Bengal are some of the other States which have shown a poor performance in the construction of wells under the MWS. These States have been permitted to utilise the allocations made under MWS for other schemes of minor irrigation such as irrigation tanks, water harvesting structures and also for the development of land belonging to the small and marginal farmers. Some States have also been permitted to divert MWS resources for the construction of houses for the poor under the Indira Awaas Yojana.

2.1.55 Field studies in various parts of the country have identified several factors which have posed as impediments to the effective implementation of this scheme. These include, among others, (a) construction of wells without proper hydro-geological surveys; (b) a declining water table and its continuous depletion by overuse of pumping sets resulting in large tracts falling in the dark/grey zones which indicate already dangerous levels of depletion of ground water; (c) non-availability of eligible persons in the target group; (d) limited success in rocky and sandy strata; and (e) distance between wells affecting the rate of discharge.

2.1.56 The programme has also been hamstrung by inadequate linkages. There has been a failure on the part of the block officers and the banks in providing lifting devices under IRDP and other programmes, thus rendering the investment in open dug wells infructuous. In some cases, though the wells have been dug and are working, their full potential has not been realised because of a lack of extension support from the agricultural department.

National Social Assistance Programme (NSAP)

2.1.57 The National Social Assistance Programme (NSAP) came into effect from 15th August, 1995. The programme represents a significant step towards the fulfilment of the Directive Principles in Articles 41 and 42 of the Constitution through the enunciation of a National Policy for social assistance benefits to poor households in the case of old age, death of the primary breadwinner and maternity. It is a Centrally Sponsored Scheme with 100 per cent Central assistance provided to States/UTs.

2.1.58 This programme has three components : namely (i) National Old Age Pension Scheme (NOAPS); (ii) National Family Benefit Scheme (NFBS); and (iii) National Maternity Benefit Scheme (NMBS) which are targeted at people living below the poverty line. Under the National Old Age Pension Scheme (NOAPS), old age pension of Rs.75 per month is provided to persons of 65 years and above who are destitutes. The National Family Benefit Scheme (NFBS) provides a lump sum family benefit of Rs.10,000 to the bereaved household in case of the death of the primary bread winner irrespective of the cause of death. This scheme is applicable to all the eligible persons in the age group 18 to 64. Under the National Maternity Benefit Scheme (NMBS) there is a provision for payment of Rs.500 per pregnancy to women belonging to poor households for pre-natal and post-natal maternity care upto the first two live births. This benefit is provided to eligible women of 19 years and above.

2.1.59 In providing social assistance benefits to poor households in cases of old age, death of the primary bread winner and maternity, the NSAP supplements the efforts of the State Governments with the objective of ensuring minimum national levels of well-being.

2.1.60 The NSAP provides opportunities for linking social assistance package to schemes for poverty alleviation and provision of basic minimum services. In fact, that old age pension can be linked to medical care and other benefits aimed at the aged beneficiaries. The Integrated Rural Development Programme/Jawahar Rozgar Yojana assistance may be provided in addition to the family benefit for the families of poor households, who suffer the loss of the primary bread winner. Maternity assistance can be linked to other programmes of maternal and child care.

2.1.61 The NSAP is implemented in the States/UTs through Panchayats and Municipalities. The Panchayats and Municipalities are encouraged to involve Voluntary agencies to the extent possible for identifying beneficiaries and persuading them to avail of the benefits intended for them.

2.1.62 The NSAP programme has been operationalised since August 1995. No evaluation of the programme has been conducted either by the Central Government or by any other institution/organisation so far.

2.1.63 The details of financial and physical performance under NSAP during the years 1995-96 and 1996-97 are given at Annexure VIII.

2.1.64 In the first year of the programme in 1995-96, as against the total allocation of Rs.538.93 crore, the release was Rs.380.49 crore. Of the total release, only Rs.183.77 crore was actually utilised. Consequently, in 1996-97 there was a large opening balance of Rs.197.53 crore. Again, as against the total allocation of Rs.916.21 crore, the total release in 1996-97 was Rs.548.29 crore. Thus, the total available funds in 1996-97 was Rs.745.82 crore, of which only Rs.383.50 crore was utilised (i.e. 51.42 per cent utilisation).

2.1.65 Of these three programmes, the performance under the NOAPS has been relatively good as compared to that of NFBS and NMBS because the administrative machinery for the implementation of this programme was already in place in most of the States. If we analyse the State-wise physical performance for the year 1996-97, even under NOAPS, only 10 States had covered more than 90 per cent numerical ceilings of the target population. Of this, 5 States/UT namely Andhra Pradesh, Haryana, Karnataka, Madhya Pradesh and Pondicherry had more than 100 per cent achievement. The achievement in many States was less than 50 per cent. These States include Goa, Maharashtra, Rajasthan and North Eastern States excluding Assam.

2.1.66 The performance in the case of NFBS and NMBS was particularly poor. Under NFBS, achievement was only 28.85 per cent of the numerical ceiling. In only five States namely, Andhra Pradesh, Goa, Madhya Pradesh, Punjab and Tamil Nadu the coverage was above 50 per cent and in 7 States/UTs the coverage was between the national average of 28.85 per cent and 50 per cent, while in the remaining 20 States/UTs, the coverage was below the national average.

2.1.67 Under NMBS, achievement was only 27.57 per cent of the numerical ceiling. Except in Andhra Pradesh and Tamil Nadu where the coverage was 51.36 per cent and 60.94 per cent respectively, in all other States/UTs the coverage was below 50 per cent. In the case of 7 States/UTs the coverage was between the national average of 27.57 per cent and 50 per cent, while in the remaining 23 States/UTs, the coverage was below the national average.

2.1.68 Steps would be taken to simplify the procedures for the sanctioning and disbursement of benefits under these schemes with a closer involvement of the Gram Panchayats/Municipalities. The assistance may be sanctioned and disbursed in public meetings preferably of Gram Sabha by either Gram Panchayat functionaries or Block functionaries or appropriate level. In the case of urban beneficiaries, elected local self government officials wherever available should be involved in the process of sanctioning the assistance. The disbursement in such cases should also be preferably made in public meetings of neighbourhood/mohalla committees. These schemes would also be given increased publicity to ensure a larger coverage of beneficiaries.

Land Reforms

2.1.69 Despite attempts at land reforms over successive Plan periods, the basic character of the agrarian economy has not undergone any structural change. The pattern of land distribution is highly skewed, with a high concentration of land in the hands of a few land owners on the one hand and the growing number of marginal and sub-marginal farmers on the other. Fragmentation of land holdings continues on a large scale and only a few States like Punjab, Haryana, Uttar Pradesh and parts of Maharashtra have been able to successfully undertake a programme of consolidation of holdings. Agricultural tenancy, which was abolished in most of the States by various enactments in the post-Independence era, continues unabated though it is largely

concealed. In the wake of liberalisation, several State Governments have modified their land ceiling laws so as to exempt orchards, fish ponds etc., from the purview of land ceilings. There is also a move to make suitable changes in tenancy regulations to attract private corporate investment in agriculture. Hence, it is necessary to reconsider the issue of land reforms, particularly from the point of view of the poor, as access to land is still a major source of livelihood in rural India. In fact, it has been argued that the need for poverty alleviation programmes has arisen because the land reforms have not been implemented in a systematic way. The experience of several countries in East Asia shows that land reforms, leading to structural equity in the distribution of land, are an essential prerequisite for economic development through agricultural transformation. In addition, the efficiency of land use and land management, and protection of the land rights of the tribals and women have assumed great significance in the context of the changes that are taking place in rural India.

2.1.70 The continued importance of land reforms was recognised in the Eighth Plan, with the abolition of intermediaries, redistribution of ceiling surplus land, tenancy reforms providing security of tenure to tenants and share croppers, consolidation of holdings and updating of land records as the main objectives of the land reform policy. However, only limited success was achieved with respect to these objectives in the Eighth Plan. Given that land reforms is a State subject, the Central Government can only draw the attention of the State Governments to the pressing needs for land reforms, which are central to any strategy of poverty alleviation.

2.1.71 At the end of the Seventh Plan, out of the 72.2 lakh acres of land declared surplus, only 46.5 lakh acres had been distributed. At the end of the Eighth Plan, out of the total 74.94 lakh acres declared surplus, 52.13 lakh acres had been distributed. In other words, during the Eighth Plan only 6-7 lakh acres were redistributed. Further, 12.4 lakh acres were under disputes pending in courts and 19.59 lakh acres were not available for distribution because they were unfit for cultivation or reserved for public purposes or for other miscellaneous reasons. In fact, only 59,000 acres were available for redistribution. Of the Bhoodan land donated, 53 per cent was distributed, accounting for 24.52 lakh acres. In addition, 142.87 lakh acres of wastelands were distributed among 88.5 lakh beneficiaries. But, there is still considerable scope for redistributing Government wastelands, common lands, ceiling surplus land and Bhoodan land.

2.1.72 Similarly, in the area of tenancy reforms very little progress has been made, after the initial abolition of 'zamindari' and the transfer of title to owner-cultivators in the immediate post-Independence period. The successful implementation of tenancy laws has been confined to West Bengal, Karnataka and Kerala. In fact, in the Eighth Plan there was no progress in respect of conferment of rights on tenants and therefore the issue of tenancy reforms is still illusory, but requires tackling.

2.1.73 Consolidation of holdings has taken place in very few States. While 15 States had enacted appropriate legislation, Andhra Pradesh, Tamil Nadu, Kerala, Pondicherry and the North-Eastern States do not have any laws for consolidations of holdings. Several States like Bihar, Maharashtra and Rajasthan have suspended the programme. In fact, only in Uttar Pradesh, 900-1000 villages are being covered annually.

2.1.74 There is evidence of considerable alienation of tribals from their land. As per the latest available estimates, 4.6 lakh cases of tribal land alienation covering 9.2 lakh acres have been

registered. Of these 2.7 lakh cases covering 6.3 lakh acres have been disposed of in favour of tribals but physically an estimated 4.7 lakh acres had been restored to them. In other cases, reconciliations are being effected.

2.1.75 It cannot be gainsaid that the essential prerequisite of any land reform measure is the recording of land rights and their updating. In recognition of this, a Centrally Sponsored Scheme for Strengthening of Revenue Administration and Updating of Land Records was introduced during the later half of the Seventh Plan and against an outlay of Rs.20.8 crore, Rs.14 crore were spent. In the Eighth Plan a provision of Rs.175 crore was made against which Rs.98 crore were released and Rs.66.7 crore utilised. But, given that the funds are shared in the ratio of 50:50 between Centre and States, several States have not been able to provide their share and hence, the utilisation has been low. Several other States have not availed of this scheme at all. In 1995-96, funds were released only to Bihar, Kerala, Maharashtra, Madhya Pradesh, Rajasthan, Tamil Nadu and West Bengal aggregating to only Rs.18.8 crore. The States have been requested repeatedly to expedite expenditure and to adopt new technologies for survey and settlement operations, preparation of maps etc. Funds for infrastructure development were also sanctioned to meet the training needs of the revenue functionaries. Some States have developed new training institutions, while a few have upgraded the existing ones.

2.1.76 In 1988-89, 8 pilot projects were taken up for computerisation of land records with 100 per cent Central assistance. Since inception, 323 projects have been sanctioned and funds to the tune of Rs.64.43 crore have been released. However, the utilisation was only to the extent of 20 per cent. This shows the tardy progress made in the implementation of this scheme on the ground.

Ninth Plan Strategy

2.1.77 Direct poverty alleviation programmes will continue on an expanded scale in the Ninth Plan. But these programmes would be oriented towards strengthening the productive potential of the economy and providing more opportunities for involving the poor in the economic process.

2.1.78 The Integrated Rural Development Programme (IRDP) would continue to be the major self-employment programme targeted to families living below the poverty line in the rural areas of the country. In the Ninth Plan it would be implemented through an integrated approach under which the existing schemes of Training of Rural Youth for Self-Employment (TRYSEM) and Supply of Improved Toolkits to Rural Artisans (SITRA), Development of Women and Children in Rural Areas (DWCRA) and Ganga Kalyan Yojana (GKY) would be subsumed into the main programme.

2.1.79 To facilitate higher levels of investment under the programme, there would be a strategic shift under IRDP from an individual beneficiary approach to a group and/or cluster approach. As part of the group approach, the focus of IRDP would be on the formation of Self-Help Groups (SHGs) which would be the catalyst for organising the poor. The cluster approach would focus on the identification of a few specified viable activities based on the local resource endowment and occupational skills of the people of that area. The IRDP will also aim at diversifying the investments into high-value-addition sectors and non-traditional activities which have a market potential. The financial institutions would play a more significant and dynamic role by

enhancing the credit flows through a continuous line of credit, instead of a one-time loan and would render constructive assistance to the beneficiaries. This would help them to increase returns on their investments. The IRDP would service the beneficiaries through a package approach, wherein the beneficiary would have access to credit, training as per requirements, upgradation of technology, delivery of essential inputs and marketing tie-ups in an integrated manner. Presently, under the IRDP, training under TRYSEM is provided as an isolated input and there has been little attempt to make a proper assessment of opportunities where skills could be more gainfully utilised. Hence, the new holistic approach would overcome some of the inherent shortcomings which have undermined the success of the programme.

2.1.80 In view of the near complementarity in the ongoing wage employment schemes, Jawahar Rozgar Yojana (JRY) and Employment Assurance Scheme (EAS) will be rationalised. In the revised format JRY will be confined to the creation of rural infrastructure at the village panchayat level in consonance with the felt needs of the community. To the extent that the works undertaken under JRY would be largely labour intensive, supplementary wage employment would be generated in the process of infrastructure creation. The EAS would be the major wage employment programme which would contribute significantly to the provision of the mandated 100 days of casual manual work to those who register for employment under it. As the EAS has been universalised, specific measures would be taken to ensure that the benefits reach the poor and more backward districts of the country.

2.1.81 Land reforms will continue to be an important policy instrument for alleviating rural poverty. Access to land is still a major source of livelihood and its possession enhances the status of people in rural society. A proper implementation of land laws and policies would lead to a restructuring of the agrarian economy in a way conducive to higher rates of agricultural growth but with greater equity in the distribution of gains from it. While the ingredients of the land reform policy would continue to be the same as before, the focus would shift to a few critical areas. All efforts would be made to detect and redistribute the ceiling surplus land and to enforce the ceiling laws stringently. Given that small and marginal farms are viable, both from the efficiency and equity points of view, it is desirable that the existing ceiling limits are strictly enforced. More importantly, tenancy reforms would have to be taken up especially in States characterised by semi-feudal modes of production. The rights of tenants and sharecroppers need to be recorded and security of tenure provided to them. Leasing in of land should be made permissible within the ceiling limits. The poor should be given access to wastelands and common property resources. The land rights of women must be ensured. This would require amendment of the existing legislations in some States to ensure women's rights with regard to inheritance of both land owned as also under tenancy. Updating of land records would have to be expedited as this is a necessary prerequisite of any effective land reform policy. Since land reforms is a State subject the States would have to be persuaded to take up these measures.

2.1.82 While the implementation of poverty alleviation programmes would be made more effective in the Ninth Plan, the extant non-monetary policies and institutional arrangements which adversely affect the interests of the poor would also be suitably addressed. In this context, the Ninth Plan will identify those laws, policies and procedures which are anti-poor and take the initiative in exploring whether some of these could be suitably modified in favour of the poor.

2.1.83 In the Ninth Plan, the poverty alleviation programmes would be more effectively integrated with area development programmes and the various sectoral programmes within the umbrella of Panchayati Raj Institutions (PRIs). The PRIs will function as effective institutions of local self-government. These would prepare the plans for economic development and social justice through the District Planning Committees and implement them. The State Government would have to devolve administrative and financial power to the PRIs which fall within their purview as per the Eleventh Schedule of the 73rd Constitutional Amendment Act, 1992. In addition, the voluntary organisations (VO) will have to play a more dynamic role in empowering the poor through advocacy, awareness generation and formation of SHGs.

Integrated Rural Development Programme (IRDP)

New Initiatives under IRDP

- IRDP will be a holistic programme covering all aspects of self-employment, namely, organisation of beneficiaries and their capacity building, planning of activity clusters, infrastructure, technology, credit and marketing.
- The existing sub-schemes of TRYSEM, DWCRA, SITRA and GKY to be merged into IRDP.
- Progressive shift from the individual beneficiary approach to the group and/or cluster approach.
- To facilitate group approach SHGs will be formed and steps will be taken to nurture them.
- For cluster approach each district will identify 4 to 5 activity clusters in each block based on local resources and occupational skills of the people. The infrastructure needs for the identified activities will be met in full.
- The Banks will be closely involved in the planning and preparation of projects, identification of activity clusters, infrastructure planning as well as capacity building and choice of activity of the SHGs.
- Promotion of multiple credit rather than one time credit injection.

2.1.84 The IRDP would continue to be the major self-employment programme, targeted towards families living below the poverty line in the rural areas. However, in the Ninth Plan, the focus would be on pursuing an integrated approach under IRDP by subsuming the existing sub-schemes of Training of Rural Youth for Self-Employment (TRYSEM) and Supply of Improved Toolkits to Rural Artisans(SITRA), Development of Women and Children in Rural Areas (DWCRA) and Ganga Kalyan Yojana (GKY) into the main programme. This integration of schemes is necessary to develop the appropriate forward and backward linkages to achieve a synergistic complementarity in the

overall implementation of the programme.

Project for Linking Banks with Self-Help Groups

- NABARD initiated a Pilot project to link Banks with Self-Help Groups (SHGs), with the objective of meeting the credit needs of the poor through formal financial institutions.
- Evaluation studies show success with increase in loan volume of SHGs, shift to income generating activities, nearly 100 per cent recovery and reduction in transaction costs.
- 85% of the groups linked with banks were exclusively of women.
- Scheme is being expanded, and will be replicated all over the country.

2.1.85 Furthermore there would be a strategic shift from an individual beneficiary approach to a group and /or cluster approach.

a) To facilitate this process Self Help Groups (SHGs) will be formed under IRDP and steps will be taken to nurture these groups to enable them to function effectively as well as to choose

their economic activity. Efforts would be made to involve women members in each SHG. Besides, formation of exclusive women groups will also continue as at present under DWCRA. It is proposed that group ventures which involve at least five beneficiaries would be assisted by making available 50 per cent of the project cost subject to a ceiling of Rs.1.25 lakh. This enhanced level of investment would facilitate economies of scale and improve recovery.

b) Alternatively, a cluster approach would be preferred wherein a few specified activities are identified for assistance in an area. This would necessitate the formulation of a menu of "activity-based" project profiles in different sectors to suit the local resource endowment and the occupational skills of the local people. Accordingly, each DRDA would set up four to five activity clusters. Appropriate infrastructure and technology inputs would be built into the project.

c) The Family Credit Plan would be extended to all the districts of the country in a phased manner. The feedback from the States suggests that this strategy has met with reasonable success and has raised investment levels.

2.1.86 One of the major constraints in the implementation of IRDP has been sub-critical investments, which have adversely affected Incremental Capital Output Ratios (ICOR) and, thereby, undermined the viability of the projects. Recognising that the level of investment is the most crucial variable in determining the incremental income generated under IRDP, the credit flows and the average level of investment per family for the Ninth Plan would aim at achieving enhanced levels of investment in the range of Rs.25,000-Rs.50,000 depending on the estimate of the poverty line and the poverty gap. These higher levels of investment will give the beneficiary the necessary financial support for diversifying into high-value-addition sectors and non-traditional activities which have a market potential.

2.1.87 In this effort at achieving higher investment levels, the financial institutions would have to play a more significant and dynamic role by enhancing credit flows and rendering constructive assistance to the beneficiary making their investments viable under this programme. Adoption of simplified procedures by financial institutions would facilitate the BPL families in accessing groups loans under IRDP.

2.1.88 To simplify procedures the regimen of subsidy administration would be suitably streamlined in the Ninth Plan. At present, there is a complex gamut of ceiling limits on subsidy. The ceiling limit on subsidy would be fixed at 30% of the project cost subject to a maximum of Rs.7,500. However, in the case of SC/ST it would be fixed at 50% of the project cost subject to a ceiling of Rs.10,000. Therefore, for purposes of administrative expediency the area specific differential in subsidy administration would no longer exist. For group activities, however, the subsidy would continue to be Rs.1.25 lakh or 50 per cent of the project cost, whichever is lower.

2.1.89 The IRDP will seek to develop close linkages with the credit mechanism in such a manner as would promote repeated/multiple doses of credit rather than a one-time loan for the beneficiary. The emphasis, therefore, would be on establishing a continuous line of credit for the beneficiary, wherein it would be possible for the borrower to obtain need-based additional

credit for working capital purposes, meeting unforeseen expenditure related to proper maintenance of assets etc. which would have a bearing on the viability of the project so as to sustain credible levels of income generation.

2.1.90 Experience has shown that the IRDP has been relatively more successful in land-based activities. In recognition of this fact, purchase of land was made a permissible activity under the programme. For land-based activities, besides providing assistance for purchase of inputs to enhance the productivity of land, there exists a potential for diversifying into other allied activities, which have a high value-addition, such as sericulture, aqua-culture, horticulture and floriculture, on the existing lands of the small and marginal farmers as well as on land leased by the landless. In addition to these activities, SHGs would be given 'pattas' for development of wastelands, social forestry, soil conservation and watershed projects. Common property resources would also be allocated to SHGs in the villages on a long-term basis for eco-sensitive resource management. There is also a potential for allotting nurseries of the forest department to these groups for management. In all these, interest of women's groups would have to be protected. Usufruct rights of women on minor forest produce would have to be ensured legally and administratively and assistance provided to them for purchase or leasing in of land for joint management.

2.1.91 Yet, it must be recognised that land is a limited resource and that the distribution of land holdings remains highly skewed. Hence, the need for exploring the potential of the non-farm sector is crucial. It cannot be gainsaid that the non-farm sector in the rural areas has witnessed both growth and diversification in the past few years. Around 50 per cent of the IRDP investments are now made in the secondary and tertiary sectors, based on local resources and local requirements. These include processing industries, handlooms and handicrafts. Again, in most villages there is scope for tailoring and ready-made garments, chemist shops, woodcraft, country tiles, general store etc. In addition, in villages of a reasonable size, other business/service ventures like flour milling, motor rewinding, cycle repair etc. could also be promoted under IRDP. Greater emphasis should be placed on developing rural industries which would catalyse the overall development of that area. In a situation of an ever changing pattern of demand, emergence of new products and technologies in a dynamic and growing economy, an attempt would be made to integrate the IRDP activities, particularly those in the Industry Services and Business (ISB) sector with the market. This task would be entrusted to a team of experts/professionals, who would prepare sectoral and micro plans for identifying the thrust areas and activities for working out necessary linkages with other departments/agencies.

2.1.92 The artisans in the rural areas, despite their rich heritage and skills, largely belong to the poverty group. The scheme for Supply of Improved Toolkits to Rural Artisans is directed to this particular target group. In the Ninth Plan, to enable the rural artisans to take advantage of the new opportunities thrown up by the market, there has to be a quantum jump in their skills and productivity to make their activities viable and profitable. It is also necessary to support them with appropriate product designs and training, improved technology on the one hand and professional management and marketing support on the other. In other words, the rural artisans should be serviced through a package approach wherein the distribution of improved toolkits is supplemented with the supply of credit and raw material, marketing support and upgradation of existing technology.

2.1.93 The timely and adequate supply of trade specific toolkits would be given added attention. While deciding the source for supply of toolkits, quality and cost considerations, alongwith the post-delivery services offered by the manufacturer would be of considerable significance. It is important to constantly upgrade the design of the toolkits. For this, research and development would be given due emphasis. States would be advised to take the initiative in developing toolkits in at least two or three artisanal trades. The Department of Science and Technology, the National Small Industries Corporation, the Small Industries Services Institutes and the IITs would interact with the State Governments for development of appropriate technology and designs for improved toolkits for various artisan groups. In the process of designing and manufacturing these trade-specific toolkits, there would be constant consultations and dialogue with groups of artisans and reputed craftsmen in that particular trade. To broadbase the source for supply of toolkits some master craftsmen would also be trained in the manufacture of improved tools/toolkits. An effort would also be made to develop capabilities for design and upgradation of improved toolkits by artisans themselves. There are pockets of rural technology which have survived the onslaught of modern technological innovations by virtue of their sturdiness and locale-specific utility. These would be identified and replicated elsewhere. For the dissemination of technology the State Governments, in collaboration with the manufacturing agencies, would undertake promotional activities by organising exhibitions at several locations and on important occasions.

2.1.94 Since the 1991 Census data on rural artisans are still not available, the States would be required to conduct a district-wise survey of the total number of rural poor artisans, the number of such artisans provided with improved toolkits and the balance number to be covered. This exercise would facilitate a planned and phased coverage of this target group under IRDP. While individual artisans would continue to be covered with the supply of toolkits in traditional crafts, it is also proposed to cover the rural artisans through a cluster approach and to provide/saturate each cluster with trade-specific toolkits and related inputs in a package. In the implementation of this group cluster approach, due emphasis would be given to the formation of women artisan groups.

2.1.95 Availability of infrastructure facilities is an essential prerequisite for the success of IRDP activities. Substantial investments in programme infrastructure would be ensured, through a larger apportionment of funds, in consonance with the enhanced provisions of 20 per cent for IRDP infrastructure (and 25 per cent in the North Eastern States). There would be a special emphasis on infrastructure created under ISB sector with the setting up of service-cum-facility workshops at convenient places in the rural areas. These could provide common facilities in the use of machines and equipments to the rural artisans as also for repairing electrical gadgets of various types, agricultural implements, automobile parts and articles of common use. These workshops would also be set up in the tribal areas so that the process of initial value-addition to minor forest produce could be undertaken by the tribals themselves. Funding for infrastructure would also include the setting up or upgradation of technology resource centres.

2.1.96 Provision of marketing facilities is an important aspect of infrastructural development. In the Eighth Plan detailed guidelines were issued for setting up District Supply and Marketing Societies (DSMS) with the objective of providing integrated services to IRDP beneficiaries in the cottage and rural industries sector for the supply of raw materials, marketing of surplus products, information on technological upgradation and extension of credit support. Whereas

some State Governments have taken the initiative in this regard, by and large the DSMS or similar bodies do not have much of a presence in most areas. In the Ninth Plan alternative strategies would be formulated for developing a suitable marketing infrastructure under IRDP. These would include (i) provision of transport arrangements for carrying IRDP products to rural/urban markets; (ii) introduction of insurance cover to mobile sellers; (iii) provision of better storage facilities; (iv) setting up and revamping of District Supply and Marketing Societies; (v) sale of IRDP products through Khadi & Village Industries Commission (KVIC) outlets, State Emporia etc., besides networking with DRDA showrooms/markets; (vi) setting up of quality control centres and consultancy centres which the beneficiaries could approach for advice for improving the quality and standard of their products; (vii) involvement of private sector in marketing by adoption of better packaging techniques, design, input, quality control, brand name etc.; and (viii) launching of a suitable advertisement campaign for IRDP products including organisation of exhibitions, melas. Furthermore, the potential of rural haats as a rural marketing outlet for IRDP products would be fully exploited.

2.1.97 There are certain areas in the country which have a very poor banking infrastructure. The areas of North-East and parts of Jammu & Kashmir fall under this category. Attention would be given to evolving innovative strategies and programmes to take care of the unbanked areas.

2.1.98 However, while diversifying the rural economies in high-productivity sectors, provision of adequate training facilities and upgradation of skills would be given primacy. As we have seen, the TRYSEM programme has been the weak link in the overall strategy for self-employment in rural areas. In the Ninth Plan, therefore, training would be made an integral component of IRDP. This integration would reduce to a great extent, the area-skill mismatch as the training would only be imparted in those trades/occupations which have a market potential. Yet, training would not be made compulsory as there are certain trades/activities under IRDP which do not require this input.

2.1.99 To strengthen the content and design of the training curriculum, the training institutes would have to constantly upgrade their syllabi in tune with the rapid changes in the job market. A basic foundation course would be a critical ingredient of the training curriculum which would make the trainees aware of simple accounting procedures, book keeping techniques and procedures in financial management, information on how to approach the banks and other financial institutions for loans, where to access the latest technology etc. Training would be given a sharper employment focus wherein the training content would be compatible with the area-specific ground realities and would be specifically imparted in those trades and activities which have a market orientation/potential and which would ensure the beneficiary sustained employment.

2.1.100 The quality of training would be improved. Inadequacy of proper infrastructural support has posed as a bottleneck in this effort. While the emphasis would continue to be on imparting training through the established and recognised training institutes like ITIs, Community Polytechnics, Krishi Vigyan Kendras, etc., the training infrastructure in these professionalised training institutes would be suitably strengthened. Special thrust will be given to the creation of training opportunities for women via strengthening of women ITIs, women wings in general ITIs and women polytechnic. It is also necessary to upgrade the training skills of the trainers in the various government institutions imparting training to IRDP beneficiaries.

The existing craft training centres and skill development institutes etc. would be revamped to cater to the needs of the changing situations. In those blocks where there is a concentration of unemployed youth and where there are no reputed training institutes in the vicinity, mini-ITIs should be set up, but only very selectively. Smaller private institutions and craftsmen will be engaged only where institutional support is not available.

2.1.101 In addition, a more effective liaison and interface between the State Governments, DRDAs and the formal/informal private sector/NGOs is required in order to identify the available employment opportunities in a region and develop training modules accordingly. Efforts would be made to establish a direct linkage between ITIs and industries in the areas where the youth could either be employed directly or could set up ancillaries to cater to the industrial demand. A similar linkage could be established between ITIs and exporters/export houses on the lines similar to gem cutting training in Gujarat. Such linkages are possible in rural hinterlands of towns/urban agglomerations. It is proposed to develop a Management Information System (MIS) through which important training institutes of relevance for IRDP throughout the country are identified and networked. This would give some idea of the areas deficient in the training infrastructure and would indicate where future investment should flow for meeting the training requirements.

2.1.102 With a view to ensuring that the benefits under the programme reach the more vulnerable sections of the society, the Ninth Plan would continue with the assured coverage of at least 50 per cent for Scheduled Caste and Scheduled Tribe families, 40 per cent for women and 3 per cent for the physically handicapped. Experience in the implementation of IRDP suggests that programmes focussed on women, or in which women have played a dominant role, have performed better. The DWCRA programme has been an excellent vehicle for extending IRDP credit support for women beneficiaries in some States. The group strategy would, thereby, become the main plank for achieving the stipulated reservation for women over the next few years.

2.1.103 In the Ninth Plan social mobilisation will receive a special thrust. Initiative will be taken to build and strengthen the organisations of the poor with the objective of enhancing their capabilities. In this process voluntary organisations would have to play an important role in empowering the poor through advocacy, awareness generation and social mobilisation. As social animators and rural organisers they would help the poor to form SHGs in order to take advantage of the policies and programmes being implemented by the Government for their economic betterment. A voluntary organisation or a technology group could lend support to group activities by ensuring training, technological upgradation and convergence of various schemes. In addition, the DRDAs and PRIs would provide support for capacity building and provide access to credit, technology and markets to SHGs. A cadre of para professionals from within the community would be created to enhance the capability of the SHGs and help the community to access the facilities and services meant for them.

2.1.104 The DRDAs would be restructured in the light of the 73rd Constitutional Amendment Act, which has enhanced their area of operation, commensurate with a larger inflow of funds. The scope of the activities implemented by the DRDAs has enlarged progressively over the years from the sole implementation of rural self-employment programmes to exercising effective coordination and supervision over other Centrally Sponsored Schemes. In the revised format,

the DRDAs would work under the supervision and overall control of the Zilla Parishads. The Chairman of the Zilla Parishad will be the Chairman of the DRDA Governing Body and will preside over their meetings. The organisational structure (staffing pattern) of the DRDAs would be suitably revamped and strengthened with the induction of professional cadres and technical experts. The expertise would have to be developed in the fields of credit, technology upgradation, activity-specific training and infrastructural development. To make this implementing agency effective, the staff would have to be given sufficient exposure to the complexities of poverty eradication, human resource development, gender and related issues. The DRDA's agenda for operation in the Ninth Plan, would not be limited only to the achievement of physical targets, but also to ensure the quality of the programme and realisation of intended benefits for the targeted poor beneficiaries.

Wage Employment Programmes

2.1.105 The thrust of the Government policy is on assuring at least 100 days of employment per person per year by coordinating all the wage-employment schemes including the State schemes like the Employment Guarantee Scheme in Maharashtra. Now, with the universalisation of the EAS, both JRY and EAS are operating in all the districts/blocks of the country. At present, the JRY is being implemented through the panchayats and the EAS through the administrative apparatus. However, in consonance with the Government policy, the EAS would also be implemented through the Panchayati Raj Institutions (PRIs) in future. There is, therefore, a near complementarity of objectives and there would be a common implementing agency namely the PRIs in the case of both JRY and EAS. The only major difference is that while, under JRY the allocations are made on the basis of a specified criteria, the EAS is a demand-driven scheme. In the latter case, only initial notional allocations are made and then depending on the demand for supplementary employment and actual utilisation, requests for additional allocations are made by States/Districts. Therefore, in theory there is a good case for merging these two schemes into a single wage-employment programme. Though this merger of the schemes may be operationally expedient, there would be practical constraints. Under the EAS works are taken up at the block level whenever workers register themselves for casual manual employment. Hence, it is possible that no works are taken up in many villages, particularly those which are economically better

Wage Employment Programmes

- JRY will be confined to the creation of rural infrastructure according to the felt needs of the people at the **village** level through **panchayat**.
- The EAS would be the major wage-employment programme.
- In order to make EAS effective in reaching the poor and more backward areas of the country, it is proposed that funds released to States should be made as per incidence of poverty.
- Works can be taken up in blocks where there is concentration of the poor and underemployed, and workers have registered themselves for manual work.

off or where the population is sparse. In this case, these villages would be denied funds presently flowing to them under JRY. This would lead to contradictions as JRY has made the villages more independent in so far as they can take up small works according to the felt needs of the community without having to look for funds from the district administration. The JRY has also been successful in taking development to the people with planning and implementation of works according to their felt needs.

2.1.106 Therefore, it is proposed that the JRY would be confined to the creation of rural infrastructure at the village panchayat level. To the extent that the works would be largely labour-intensive, supplementary wage-employment will be generated and this would be monitored without the existing stipulation of a wage-material ratio of 60:40.

2.1.107 The EAS would be the major wage-employment programme. The funds at present flowing to the block and district levels under JRY would also be rediverted to the EAS, augmenting the resources under this scheme. However, certain precautionary measures would have to be taken in order to make the scheme effective in reaching the poor and the more backward areas of the country, where there is a concentration of the poor and underemployed. Towards this end, it is proposed that funds released to States should be made on the basis of the incidence of poverty in order to prevent the better-off States from cornering a larger share of the funds. To elaborate, in progressive States characterised by higher levels of agricultural productivity, higher per capita income and/or high literacy rates there is little real demand for casual manual work on public works. Yet, in these States demand is artificially created as, in the lean agricultural season, labour is willing to work on public works at the prevailing minimum wage rates which are relatively high. In this way, the State's specific real demand is not being addressed and in fact, there is a diversion of resources from the relatively poorer States to the more progressive ones. In such a situation, EAS would cease to be a genuine demand-driven scheme and, therefore, suitable measures would have to be taken to ensure that scarce resources reach the targeted poor and the more backward areas of the country.

2.1.108 Hence, as a second step, the allocations from the States to the districts will also be made on the basis of a predetermined criterion which reflects the relative backwardness of the district. Below the district level, the works can be taken up in blocks where workers have registered themselves for casual manual work. Urbanised blocks would be excluded from the purview of this scheme. No contractors would be involved. This scheme would essentially be implemented by the PRIs at the block level, but with a specific apportionment of funds to the DRDA/ZPs, for taking up inter-block and district level works.

2.1.109 Presently, under EAS the funds are earmarked for specific activities in given proportions. Fifty per cent is earmarked for watershed-related activities. It is argued by many that it may not be fair to pre-empt the bulk of the resources for watershed-related activities being implemented in a few villages to the relative neglect of other villages in a block. In the spirit of democratic decentralised planning, the choice of activities must be left to the Panchayat Samities/Zilla Parishads which can select from the various activities/works envisaged in their block/district plans. However, at least 40 per cent of the expenditure would have to be on watershed-related activities in DPAP areas as water conservation through construction of water harvesting structures has become one of the priorities of planning, particularly in the plateau and rocky areas where water tables are falling rapidly and ground water aquifers need recharging. It may be worthwhile to spell out that the works should be labour-intensive with a 60:40 ratio of wages and materials and should lead to the creation of durable assets and rural infrastructure.

2.1.110 In short, EAS will be the single wage-employment programme operating throughout the country, while JRY will be confined to the creation of durable community assets at the village level. So far, under the JRY a certain quantum of funds was earmarked for Special and Innovative Projects. However, experience gained from the implementation of this component

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of JRY has indicated that most of the projects were not really innovative in nature but merely a replication of the existing programmes on traditional lines. Hence, there is no need to continue a separate scheme for Special and Innovative Projects.

2.1.111 Currently, the funds for IRDP and its allied programmes are shared between the Centre and the States in the ratio of 50:50, whereas the wage-employment programmes such as the JRY and the EAS are funded by the Centre and the States in the ratio of 80:20. It hardly needs to be emphasised that the wage-employment programmes are more popular with the State Governments on account of this cost sharing pattern. As against this, the equal cost sharing formula for self-employment schemes seems to have dampened the enthusiasm of the State Governments towards IRDP and allied programmes. States with difficult resource position find it hard to contribute their share of the outlay. In the Ninth Plan, it is proposed to alter the funding pattern under IRDP and bring it at par with the rural wage-employment programmes. In fact, the cost sharing formula for both IRDP and the wage employment programmes would be revised to a uniform ratio of 75:25 between the Centre and the States.

Million Wells Schemes (MWS)

2.1.112 In view of its importance in providing a source of irrigation to the target group, the MWS would continue in the Ninth Plan to provide for maximisation of agricultural output. Simultaneously, the level of ground water would have to be maintained by the adoption of suitable recharging practices so that the small and marginal farmers can derive maximum benefits from their small holdings.

2.1.113 Until recently, the focus under the MWS was on the creation of employment, with the secondary objective of providing a source of irrigation. This situation has now been modified by delinking the MWS from the JRY and repositioning it as a beneficiary-oriented scheme of irrigation for enhancing agricultural productivity levels of the small and marginal farmers.

2.1.114 The per capita assistance under the MWS for providing a well on the land of the small and marginal farmer ranges approximately from Rs.30,000 to Rs.35,000, though some States have reported a cost of upto Rs.1 lakh. Such a well can irrigate, on an average, one or two hectares. There have been suggestions from some States to permit the construction of field channels in conjunction with the digging of wells. This is particularly significant in view of the fact that water lifted from the wells is conveyed through open unlined earthen channels by most of the farmers, leading to conveyance losses of about 14 to 19 per cent. Necessary control and diversion structures for open line channels may be provided to avoid wastage of water. The channels could consist of structures of soil, cement or even prefabricated cement concrete.

National Social Assistance Programme (NSAP)

2.1.115 The NSAP was introduced as a social security programme for the welfare of the poor households. However, it must be recognised that it is not a poverty alleviation scheme but more in the nature of a welfare programme and hence, has a limited role in the overall strategy of poverty alleviation. Moreover, the financial assistance provided to poor households in the case of old age, death of primary bread winner and maternity is in the nature of transfer payments and therefore, it should really form a part of non plan expenditure. Furthermore, the performance

under this programme indicates that it has not been effective in reaching the intended beneficiaries. Moreover, several States have their own schemes of old age pension and maternity benefit for which provisions are made in the States Plans and this should continue to be within their purview, as it is a State subject. Yet, as this programme has now been introduced as a Centrally Sponsored Scheme it would continue in the Ninth Plan but would require a review thereafter.

Land Reforms

2.1.116 In the Ninth Plan the issue of agrarian restructuring will continue to receive the top most priority in the expectation that the States would be able to facilitate changes that would make for more efficient agriculture, leading to increases in both output and employment. This process will, in turn, contribute to the achievement of a higher rate of economic growth with social justice.

2.1.117 The main components of the land reform policy are the detection of ceiling surplus land and the distribution of the existing surplus land, besides tenancy reform, consolidation of holdings, providing access to the poor on common lands and wastelands, preventing the alienation of tribal lands and providing land rights to women. However, for the successful implementation of land reforms, updating of the land records, both by traditional methods and through computerisation, is an essential prerequisite. Let us elaborate.

2.1.118 ***Ceiling on Land Holdings:*** With the introduction of the Land Ceilings Act in 1972, the ceiling on land holdings was introduced in almost all the States with the exception of some North-Eastern States, though the ceiling limit varied depending on the quality of the land. The ceiling surplus land was to be distributed among the landless poor. In this way, land ceiling was considered an important instrument for reducing disparities in the ownership of land and as a way of increasing productivity through greater utilisation of labour. However, in practice, the extent of land declared surplus was very limited. The total area declared surplus is estimated at less than 2 per cent of the total cultivated area. Further, distribution of surplus land has been limited in several States because of institutional and legal rigidities. There are other reasons too which have led to the poor performance with regard to land ceiling. Most importantly, the ceiling surplus land continues to exist in a concealed way particularly in areas which have been covered by irrigation in the post-1972 era. Further evidence suggests that there are areas where land owners have land in excess of ceiling limits which can be mopped up if the programme for unearthing it is pursued vigorously. Also, in order to circumvent the ceiling laws, benami and furzi transfers are effected which need to be identified. There is clearly a need to detect the land falling within the ceiling limits and redistribute it. But detection and distribution of ceiling surplus land require tremendous political and administrative will.

2.1.119 In the wake of the economic liberalisation in certain States like Karnataka, the industry and the large farmers are being given exemption from ceiling laws without seeking the permission of the Government of India. This would certainly go against the interest of the poor as it would increase landlessness and depress agricultural wages. Hence, this issue requires close examination, before such exemptions are given.

2.1.120 Small farms are efficient in terms of yields and returns per unit of area. However, they are often not able to generate adequate income to sustain further investment. Therefore, there is a need for both horizontal and vertical diversification of small farms. An analysis of Indian Council of Agricultural Research (ICAR's) data of national demonstrations shows that there are large technological/yield gaps, particularly in the backward regions, which, if fully exploited, would enable the marginal and small farmers to generate incomes well above the sustenance level, subject to crop rotation, cropping pattern, yield responses of technological adoption, etc. In fact, in irrigated areas, the small and marginal farmers are viable because of their capacity to produce two or three crops a year. In the case of rainfed agriculture, a breakthrough in dryland farming is required with respect to the traditional cereal crop that can grow in these areas. Alternatively, there is a possibility of shifting to other high-value crops like fruits, vegetables, mulberry, etc. Other support systems would have to be appropriately developed to provide facilities for credit, marketing, storage and transportation of the perishable high-value crops. In fact, a change in the cropping pattern away from cereals to some high-value crops, would certainly make the small and marginal farmers viable. Also, given the increasing market demand for certain products, sericulture, horticulture and aquaculture have a great potential. In Maharashtra and West Bengal a small piece of land yields adequate returns from horticulture and aquaculture respectively. This provides further justification for ensuring that ceilings are strictly enforced as small farms can be perfectly viable in the given context.

2.1.121 As observed in the UNDP Human Development Report 1996, as land is redistributed from big to small farms, not only the family labour per hectare can increase sharply, so, can hired labour also. For both the reasons, the employment situation improves even for those, who remain landless after the land reform. The main conclusion from this is that an agricultural strategy centered on small farms, rather than large, simultaneously increases the social efficiency of resource use in agriculture and improves social equity through employment creation and more equal income distribution, that small farms generate.

2.1.122 While there appears to be a rationale for reducing the existing ceiling limits further with a view to alleviating poverty of the growing number of rural landless poor, this is unlikely to have the support of the State Governments. Therefore, a pragmatic approach would be to strictly enforce the existing ceiling limit without permitting any attempt to circumvent it. Given the employment elasticity of agriculture in areas, which are agriculturally backward, land reforms would ensure both agricultural growth and greater employment for the rural poor. It would also provide a social status to the large number of poor. A greater transparency in the method of distribution of surplus land is possible with a greater involvement of panchayats, local communities and NGOs.

2.1.123 **Tenancy Reforms:** The policy with regard to tenancy clearly provided for conferment of ownership rights on tenants or for acquisition of ownership rights by them on payment of a reasonable compensation to the landlords. The tenancy laws of most States abolished tenancies so as to vest ownership of land with the actual tiller. Despite the legal provisions to abolish tenancy, it has continued to flourish with the existence of a large number of tenants and sub-tenants without any protection against eviction leading to insecurity among them. The continued existence of oral and concealed tenancies has led to low investments and low productivity in agriculture in several States where the implementation of tenancy reforms has been tardy. In contrast, in West Bengal, Karnataka, and Kerala, much success has been achieved in this respect.

The success of 'Operation Barga' in West Bengal is well documented. This shows that conferring occupancy rights on the tenants has led to better investments in land and consequently, a higher rate of return. Hence, it is desirable that States which have a high incidence of concealed tenancy recognise this fact and record the rights of tenants. In addition, absentee landlordism has to be restrained. To the extent that large land owners leave their land fallow, either the State should take it over and lease it out on a long-term basis or the land owners should be required to lease it out on a long-term basis. Measures would have to be taken for the protection of tenants against displacement, eviction and other forms of exploitation.

2.1.124 A ban on tenancy was imposed in almost all the States to encourage owner cultivation and to give security of tenure to the sharecroppers and the tenants. In areas characterised by semi-feudal modes of production, where agricultural markets are not well developed, this ban is desirable with a view to protecting the tenants. It has been demonstrated that in 1972-73 in Purnea district of Bihar 40 per cent of the land was under sharecropping. This percentage has gone down and is probably around 25 per cent. The share of landholders is limited to 25 per cent of the gross produce but in practice this is perhaps illusory. Since the tenancies are oral and the sharecroppers are weak their hold on land is tenuous and they have to give to the landlord more than half of the produce. In this case, the tenants have no incentive to make long-term investments in land. The landlords also do not look upon it as a productive asset but a store of value and a reflection of their social status. Both the landlord and the sharecropper would gain if the sharecropper had the rights of cultivation in the land as he would make greater investments which would lead to higher returns. This shows that in areas where tenancy flourishes, reforms are required together with a proper implementation of laws.

2.1.125 On the other hand, in the "Green Revolution" areas where there is greater awareness and the markets work, freeing the lease market for land would contribute both to equity and efficiency. In these areas where the traditional arrangements exist, the tenants have been reduced to the status of an agricultural labourer with the landlord exercising considerable influence. In this case, the tenants as well as small and marginal farmers would be able to augment their operational holdings by leasing in land and, with a greater intensity of cultivation, it would lead to greater output. Clearly, agricultural tenancy should be opened up and leasing in of land permitted subject to the ceiling limits. This would activate the land market which would enhance the poor people's access to land.

2.1.126 **Protection of Tribal Land:** Despite the commitment that the tribal lands must remain with the tribals, alienation of the tribals from their land continues on a large scale due to various legal loopholes and administrative lapses. Hence, in the Ninth Plan legal provisions must be made for the prevention of alienation of tribal lands and for their restoration, not only in the notified scheduled tribe areas but also in the tribal lands in other areas. Also, the regulation of resale of the tribal lands should be made as stringent as possible. Given that alienation is basically a consequence of economic deprivation and social discrimination it is felt, that for the tribal communities, various development programmes must be dovetailed in order to improve the income level of these people and to provide them with a basis for sustained livelihood. Even in the case of acquisition of lands of the tribals by the Government for public purposes, it should be restricted to a minimum. Encroachment of land belonging to tribals should not be permitted. Even civil courts should have no jurisdiction in the proceedings involving transfer of land of persons belonging to scheduled tribes.

2.1.127 **Consolidation of Holdings:** As already stated, consolidation of holdings has been successful in a very few States though several States have enacted legislation in this regard. In some cases, there are genuine problems in the process of consolidation including proper valuation of land, fear of eviction of small and marginal farmers who are tenants, inadequate availability of staff and lack of updated land records. Despite these constraints, consolidation of holdings makes for efficient land use and water management, leading to higher productivity and, therefore, must be enforced wherever practicable. However, in so far as there is insecurity among the tenants and small and marginal farmers, the State must ensure that their interests are protected. Consolidation operations, whenever undertaken, should be integrated with survey and settlement operations in order to avoid duplication in work and harassment to the affected person. The involvement of the Panchayati Raj Institutions should facilitate this process through a greater participation of the village people.

2.1.128 **Government Land and Common Property Resources:** In rural areas every village has common lands as well as other common property resources. These are a source of sustenance to the landless. Evidence suggests that considerable area of the government land has been taken over both by the rural poor as well as by the rural elite for agricultural and housing purposes. Unluckily, due to negligence, unsustainable overuse and excessive pressure of population on land, the productive capacity of common lands has been diminishing. However, joint forest management and watershed development programmes are schemes which can be successful in the regeneration of these common lands. Clearly, 'pattas' should be given to the rural poor in order to provide them access to a means of livelihood. There are several success stories, both in the area of joint forest management as well as watershed development by groups of people, especially women on common land, which could be replicated. These lands can also be used for providing grazing land, fodder and fuel to the poor. If the common property resources vest in the Gram Panchayat, access to it should be limited to the rural poor and the rural elite should not be allowed to encroach upon it. Similarly, the wastelands which are lying unutilised should be reclaimed and distributed among the marginal farmers and landless labourers of the area. This would provide them a source of income as also generate greater output from a variety of activities in the area of agriculture, horticulture, fodder, fuelwood and other agro-forestry. Given the paucity of 'cultivable' land, it is necessary to redistribute the wastelands and fallow land in order to provide productive employment to the poor.

2.1.129 In the case of land vested and in possession of the Government and/ or where a final decision is pending in a judicial court, it is suggested that such land should not be kept vacant but allotted to eligible rural poor on a short-term basis with a clear understanding that they would have to handover the land to the original landlord if the court so directs. However, legal opinion is being sought on the possibility of taking up this measure. Again in the case of Government wasteland and degraded forests, there is a growing opinion that such land should be allotted/leased to the corporate sector and for industrial and commercial purposes. As argued above, this too would adversely affect the rural poor. Access to such land should be restricted to the rural poor in order to provide them with employment.

2.1.130 **Gender and Land Rights:** So far, the strategy of land reforms has not given any cognizance to the existing gender inequalities in land inheritance laws and ceiling laws. In most regions of the country, women constitute a disproportionate number of poor. They are also more

dependent on agriculture for a livelihood than men, as men shift to non-farm employment. Also, it is estimated that 20 per cent of the rural households are *de facto* female-headed. Yet, very few women have titles to land and even fewer control it. Hence, ensuring women's effective command over land will be one of the new priorities of the Ninth Plan.

2.1.131 Traditionally, it was accepted that agricultural land would be inherited by sons, even though in some States the inheritance law did not stipulate such a provision. Hence, it is necessary to implement the laws and also to record the rights of women, where it is legally claimed by them. Further, in so far as inheritance rights in tenancy laws are subject to specific land acts, the issues cannot be easily resolved. In some States the tenancy laws provide for devolution of tenancy to male descendants and only in their absence, women can inherit, but then also to a limited extent. Hence, it is recommended that States should amend their land and inheritance laws so as to bring agricultural land at par with other forms of property. There has been some progress in this direction in Southern and Central India.

2.1.132 Many of our States have improved women's access to land and landed property. States like Karnataka, Tamil Nadu and Andhra Pradesh have amended the Hindu Succession Act, 1956 to formalise issues related to women's right to property including land. Some, like Rajasthan and Madhya Pradesh have provided that issues related to property, including landed property, would be dealt with in accordance with the appropriate personal laws. However, serious anomalies continue to persist. A number of States like U.P. Haryana, J&K, Delhi and Punjab are apparently yet to take adequate steps to provide the Constitutional/legal safeguards to women with respect to their access to land.

2.1.133 Additionally, it is necessary that when ceilings are fixed in relation to a "family unit", the definition of a family should be uniform across States and sons and daughters should be given equal consideration, both while assessing ceiling surplus land and in land distribution under various resettlement programmes. The pattas should be in the name of women to a larger extent. While joint pattas are better than no pattas, which do not provide the women control over it. In fact, groups of poor rural women should be given group pattas with usufructuary rights, but no right to sell individually. This group approach would enable the women to retain control over land. They could invest in the land collectively and cooperate in sharing both labour time and the returns. There are several instances of such joint management by groups of women which need to be replicated. However, to enable women to reap the benefits of land acquisition, greater access to information, credit, inputs, marketing and technologies must be provided to them.

2.1.134 In order to have a better data base., both the Agricultural Census and the National Sample Surveys should provide information on land ownership, land operated and land under tenancy by gender. So far, land-based statistics are recorded on a household basis. A pilot survey should be undertaken preceding the next nationwide NSS data collection exercise.

2.1.135 **Updating of Access to Land Records:** Maintenance of up-to-date land records is crucial for effective implementation of land reforms. In recognition of this, during the Seventh Plan period, a Centrally Sponsored Scheme for Strengthening of Revenue Administration and Updating of Land Records was introduced with a view to strengthening survey and settlement organisations at the grassroots level through training, equipment, staff etc. Hence, it is imperative that States should give special emphasis to resurveys and adopt appropriate modern

technologies for this, including aerial survey, photogrammetric systems, global positioning system, use of scanners, digital computerised maps etc.

2.1.136 Further, a special drive for recording land rights of tenants and sharecroppers, as in West Bengal, must be undertaken by other States. As recommended by the Conference of Revenue Ministers held in 1997 all the existing tenancy reform legislations should be examined and a model legislation prepared.

2.1.137 Another Centrally Sponsored Scheme for Computerisation of Land Records was started during 1988-89 as a pilot project. But the scheme has made little progress. In fact, several factors including power shortage, lack of trained staff and bureaucratic procedures involved at various stages, have constrained the progress of computerisation of land records. Despite these problems, computerisation must be given a high priority and solutions found for the operational problems. The updating of land records can be expedited even without computerisation through the involvement of panchayat institutions and the local revenue functionaries. The village-level revenue functionaries should be placed under the control of the Gram Panchayats, though the appellate jurisdiction should continue with the tehsildar. At the district level, the land revenue system must work under the Zilla Parishad. The 30 per cent representation for women in PRIs should help the cause of women in so far as recording of rights of women in land is concerned.

2.1.138 Moreover, steps have to be taken to bring about greater transparency in the administration of land records, with access to information regarding land holdings on demand by any individual. Copies of land records, including record of rights, field books/field map, Land Pass Books as also mutation statements, status of land and jamabandi register should be accessible and copies provided on payment of a fee.

Anti-Poor Laws and Policies

2.1.139 Over time, the expenditure on the various poverty alleviation programmes has increased significantly. It is true that these programmes play a vital role in ensuring that the poor are able to sustain themselves, particularly during the lean seasons, through generation of additional employment and incomes. However, it is becoming increasingly clear that spending money is not the only way of ameliorating the conditions of the poor. Scant attention has been paid to the role of non-monetary policies and institutional arrangements which affect the lives of the common people, especially the poor. There are several laws and policies which are anti-poor. The knowledge about them is scattered and often anecdotal. However, some examples may illustrate the nature of the problem.

2.1.140 For tribals and forest dwellers minor forest produce obtained from forest and common property resources is a major source of livelihood. However, the poor tribals are facing problems in gathering this minor forest produce due to diversion of non-timber forest produce to the industry. Bamboo forests are being readily leased to the paper industries regardless of the provision in the Forest Policy 1988 which stipulates that the forest dwellers have the first charge on the forest produce. Rural artisans, who make products out of bamboo, face shortage of raw material as the forest departments allot them green bamboo in rationed quantities. This practice has been observed in Karnataka and Orissa. In some cases, forest land is leased out to private industry for long periods. This too adversely affects the poor.

2.1.141 The forest department also issues licences to women for gum collection from babool trees and compels them to sell their entire collection to the forest department at a prescribed price which is one third to one fourth of the market price. In some States, tribals can collect hill brooms but cannot process these into a broom nor can they sell the collected items in the open market. Thus, the poor are prevented from making value addition through processing and are denied the right to get the best price for their produce. Licensing activities for the poor in rural areas are cumbersome and time consuming. To set up a charcoal kiln one requires four to five types of permission.

2.1.142 The cattle flayers in UP have no legal control over their own produce i.e. the hides they flay from the naturally fallen animals. The Zilla Parishads award contracts either to individuals or to cooperatives for collection and storage of hides. Hence, the flayers are not able to sell in the open market but are forced to accept the terms made by the contractors. Again in Bihar, auction ferry right is made in favour of Zamindars and contractors who collect tolls and taxes from the poor who have to cross the river to sell their produce. In addition, those who are fishing or plying boats across the river have to pay taxes to the Zamindars. Normally, access to, and use of, the river should be free to farmers, labourers, petty traders etc. In Assam, the fishery laws are such that the fishermen do not benefit from them. A sector of the river is leased out to "Mohildhars" who auction the fish and only 1/3rd is given to fishermen who actually catch the fish. These are ways in which common property resources are being used in a way that are prejudicial to the poor.

2.1.143 The rural poor do not have a level playing field as the market for their finished products are dominated by a single trader or cartel of traders operating in the area. In the market, the terms of trade are against them. Neither the public nor the private sector has encouraged the growth of poor people's organisations but, instead, has either tried to suppress or control them. Cooperatives could have become the real supporters of the poor and needy but the process for their formation and registration is very cumbersome. Where cooperatives of poor people have been successful such as womens' beedi cooperatives, they have been taken over by private companies. Similarly, the Government has often interfered with the independence of the cooperatives by putting government operators in charge of them.

2.1.144 Such examples abound. An exercise has already been done to document some of these laws and policies. In the Ninth Plan, an attempt will be made to initiate the process of identifying anti-poor laws/policies, Statewise. These would be brought to the notice of the policy makers, local governments and NGOs so that these may be suitably modified and/or repealed in the interest of the poor.

Integration of Poverty Alleviation Programmes with Sectoral Programmes

2.1.145 It is necessary to recast the special employment programmes with a view to making them more effective in meeting not only the short-term objective of providing temporary work, but also in building up the productive capacity of individuals/areas which, in turn, would make for greater employment on a more sustainable basis. The focus would have to be on agriculture and allied activities, besides rural non-farm sectors and services, which have a high employment elasticity. This would require a high degree of convergence among the various poverty

alleviation programmes (PAPs), area development programmes and sectoral schemes, within a district plan based on the physical and human endowments of the area, the felt needs of the people and the total financial resources available. Using scientific methods, remote-sensing agencies at the Centre and State level would be asked to provide detailed maps showing land, water and other physical resources of the area, with the aid of photogrammetry and satellite imagery. The detailed maps would then be scrutinised to identify all possible watersheds. Planning along watershed lines would ensure minimum surface run-off, thus conserving water from rainfall. Viable activities in agriculture and allied sectors would have to be selected. Agro-processing activities linked with the cropping pattern, village and small industries with growth potential and other infrastructural gaps would also have to be identified and prioritised. Within this framework, poverty alleviation programmes would be integrated with area development programmes within a developmental plan at the district level.

2.1.146 So far, there has been a complete dichotomy between various sectoral as well as poverty alleviation programmes that have been planned and implemented by the concerned line departments. The Government has recognised this dichotomy but greater efforts have to be made to effect the convergence in practice. As a start, an attempt has been made to integrate DPAP and DDP, EAS and the Integrated Wasteland Development Programme (IWDP), all being implemented by a single Ministry. Watersheds are to be constructed and associated works of drainage, land development and terracing undertaken. Also, afforestation, agro-based and horticultural development, pasture development, crop demonstration for popularising new crops/varieties and upgrading of common property resources are being taken up. Clearly, there is scope for integrating other sectoral programmes of soil and water conservation, forestry, minor irrigation, animal husbandry, agriculture and other departments, funds from which flow from sectoral heads to the district level. Once the area plans are prepared, dovetailing of funds would not pose a problem.

Institutional Mechanism for Delivery

2.1.147 Consequent to the 73rd Constitutional Amendment Act, State Governments have enacted enabling legislations providing for local bodies at the village, intermediate and district levels. In almost all the States with the exception of Bihar the PRIs have been duly constituted. The State Governments are required to endow these PRIs with the requisite financial and administrative powers to enable them to function as institutions of self-government. The PRIs would be responsible for preparing the plans for economic development and social justice through the District Planning Committee and for implementing them, in respect of the items listed in the Eleventh Schedule of the Constitutional Amendment. This process of devolution is at various levels of operationalisation for individual States. It is expected, that in the Ninth Plan, the States would devolve funds on the panchayats both from the Consolidated Funds of the States and the allocations made by the Central Government for Centrally Sponsored Schemes. In addition, the panchayats have to be given their own revenue raising powers, as per the recommendations of the State Finance Commissions. It is expected that village level plans would be prepared, based on the felt needs of the people as articulated in the Gram Sabha meetings. These plans would be incorporated into the intermediate level plans and finally merged into a district plan. This district plan would then enable the dovetailing of funds from the various sectoral poverty alleviation and area development programmes. In this way, development planning would begin from below reflecting the aspirations of the people within

the constraints of the available physical and financial resources.

2.1.148 Voluntary organisations would also play an enhanced role especially as facilitators and social animators in bringing about greater awareness through advocacy. They would also help the poor to form self-help groups with the objective of improving their economic status through concerted action. In this way the PRIs, the voluntary organisations and the community would work in tandem to bring about greater development at the local level and consequent reduction in poverty levels.

Annexure - I

Financial performance under Integrated Rural Development Programme (IRDP) during Eighth Plan (1992-93 to 1996-97)

(Rs in Crore)

Year	Total Allocation	Expenditure	%age Expd.
1992-93	662.22	693.08	104.66
1993-94	1093.43	956.65	87.49
1994-95	1098.22	1008.32	91.81
1995-96 (Prov)	1097.21	1077.16	98.17
1996-97 (Prov)	1097.21	1139.49	103.85
Total	5048.29	4874.70	96.56

Physical performance under IRDP during Eighth Plan (1992-93 to 1996-97)

Lakh Families

Year	Target	Achievement	%age Ach.
1992-93	18.75	20.69	110.35
1993-94	25.70	25.39	98.79
1994-95	21.15	22.15	104.73
1995-96(Prov)	No Targe	20.89	
1996-97 (Prov)	No Targe	19.12	
Total		108.24	

Annexure - II

**Financial and Physical performance under Training of
Rural Youth For Self Employment (TRYSEM) during
Eighth Plan (1992-93 to 1996-97) - Yearwise**

(No. in Lakh)

Year	No. of Youth to be trained	No. of Youth to trained	No. of Youth Self-Employed	No. of Youth Wage Employed	Total youth Employed	Recurring Expenses (Rs. in Crore)
1992-93	3.00	2.76	0.99	0.42	1.41	47.50
1993-94	3.50	3.04	1.08	0.43	1.51	55.02
1994-95	3.18	2.82	0.86	0.45	1.31	68.46
1995-96 (Prov)	-	3.02	0.98	0.48	1.46	98.83
1996-97 (Prov)	-	3.64	1.31	0.52	1.83	100.27
Total	-	15.28	5.22	2.30	7.52	370.08

Annexure - III**Financial performance under Supply of Improved
Toolkits to Rural Artisans during
Eighth Plan - Yearwise**

(Rs in Crore)

Year	Total Allocation	Expen- diture	%age Expd.
1992-93	16.85	13.86	82.26
1993-94	23.22	18.60	80.10
1994-95	29.00	22.91	79.00
1995-96 (Prov)	40.00	28.69	71.73
1996-97 (Prov)	40.00	32.13	80.33
Total	149.07	116.19	77.94

**Physical performance under Supply of Improved
Toolkits to Rural Artisans during Eighth
Plan - Yearwise**

(Toolkits distributed in Lakhs)

Year	Target	Achievement	%age Ach.
1992-93	0.98	0.83	84.69
1993-94	1.29	1.09	84.50
1994-95	1.61	1.25	77.64
1995-96 (Prov)	2.22	1.53	68.92
1996-97 (Prov)	2.22	1.40	63.06
Total	8.32	6.10	73.32

Annexure - IV

**Financial and Physical performance under Development
of Women and Children in Rural Area (DWCRA) during
Eighth Plan (1992-93 to 1996-97) - Yearwise**

Year	Target (No. of Groups)	Achievement (No. of Groups Formed)	%age Achie- vement	No. of Women Benefitted	Utilisation of funds (Rs in Crore)
1992-93	7500	9029	120.39	128744	15.48
1993-94	11000	15483	140.75	268525	23.65
1994-95	13400	37964	283.31	592026	31.00
1995-96 (Prov)	30000	37565	125.22	697088	63.65
1996-97 (Prov)	30000	41345	137.82	580434	56.94
Total	91900	141386	153.85	2266817	190.72

Annexure - V

**Financial performance under Jawahar Rozgar Yojana (JRY)
during Eighth Plan (1992-93 to 1996-97) - Yearwise**

Rs in Crore)

Year	Total Allocation(Centre+State)			Total Expenditure			%age Expen- diture
	Ist Stream	IInd Stream	Total JRY	Ist Stream	IInd Stream	Total JRY	
1992-93	3169.05	-	3169.05	2709.59	-	2709.59	85.50
1993-94	3181.22	878.20	4059.42	3590.21	288.50	3878.71	95.55
1994-95	3498.72	878.20	4376.92	3359.88	908.45	4268.33	97.52
1995-96(Prov)	4348.70	500.00	4848.70	3966.08	493.41	4459.49	91.97
1996-97(Prov)	2236.79	-	2236.79	2156.93	-	2156.93	96.43
Total	16434.48	2256.40	18690.88	15782.69	1690.36	17473.05	93.48

**Physical performance under Jawahar Rozgar Yojana (JRY)
during Eighth Plan (1992-93 to 1996-97) - Yearwise**

Employment Generated in Lakh Mandays

Year	Target			Achievement			%age Achi- evement
	Ist Stream	IInd Stream	Total JRY	Ist Stream	IInd Stream	Total JRY	
1992-93	7537.95	-	7537.95	7821.02	-	7821.02	103.76
1993-94	10383.26	-	10383.26	9523.45	734.95	10258.4	98.80
1994-95	7997.37	1868.08	9865.45	7453.59	2063.48	9517.07	96.47
1995-96(Prov)	8042.80	437.25	8480.05	7955.89	991.27	8947.16	105.51
1996-97(Prov)	4141.37	-	4141.37	3819.14	-	3819.14	92.22
Total	38102.75	2305.33	40408.08	36573.09	3789.70	40362.79	99.89

Annexure - VI

Financial and Physical performance under Employment Assurance Scheme (EAS) during Eighth Plan (1992-93 to 1996-97) - Yearwise

(Rs. in crore)

Year	Total Release (Centre + State)	Expenditure	%age Expd.	Physical Achievement (Employment in Lakh Mandays)
1992-93	-	-	-	-
1993-94	548.77	183.75	33.48	494.74
1994-95	1410.25	1235.45	87.61	2739.56
1995-96 (Prov)	2131.64	1720.61	80.72	3465.27
1996-97 (Prov)	2423.99	2138.35	88.22	3986.45
Total	6514.65	5278.16	81.02	10686.02

EAS is a Demand Driven scheme, therefore no prior Statewise allocations are made.

Annexure - VII

**Financial and Physical performance under Million
Wells Scheme (MWS) during Eighth Plan
(1992-93 to 1996-97) - Yearwise**

(Rs. in crore)

Year	Total Allocation (Centre + State)	Expenditure	%age Expd.	Physical Achievement (Wells Constructed in Number)
1992-93	605.33	534.05	88.22	180995
1993-94	954.37	639.74	67.03	151673
1994-95	1049.62	776.18	73.95	158780
1995-96 (Prov)	559.07	538.29	96.28	142685
1996-97 (Prov)	559.07	498.77	89.21	103196
Total	3727.46	2987.03	80.14	737329

Annexure-VIII

Financial Performance under National Social Assistance Programme (NSAP) - 1995-96

(Rs. Crores)

Prog.	O.B. as on 1.4.95	Total Allo- cation	Total Release	Total Avail- able Fund (Col. 2+4)	Total Expend.	%age Expend. w.r.t. Total Available Fund
1	2	3	4	5	6	7
NOAPS	-	297.07	216.71	216.71	119.58	55.18
NFBS	-	154.49	105.07	105.07	38.01	36.18
NMBS	-	87.37	58.71	58.71	26.18	44.59
Total	-	538.93	380.49	380.49	183.77	48.30

Financial Performance under NSAP - 1996-97

(Rs. Crores)

Prog.	O.B. as on 1.4.96	Total Allo- cation	Total Release	Total Avail- able Fund (Col. 2+4)	Total Expend.	%age Expend. w.r.t. Total Available Fund
1	2	3	4	5	6	7
NOAPS	97.53	507.61	373.82	471.35	267.31	56.71
NFBS	67.36	263.80	106.89	174.25	73.88	42.40
NMBS	32.64	144.80	67.58	100.22	42.31	42.22
Total	197.53	916.21	548.29	745.82	383.50	51.42

Physical Performance under NSAP during 1995-96 and 1996-97

(In Numbers)

Prog.	1995-96			1996-97		
	Numeri- cal Ceiling	Benefi- ciaries covered	%age Achie- vement	Numeri- cal Ceiling	Benefi- ciaries covered	%age Achie- vement
1	2	3	4	5	6	7
NOAPS	-	3119077	-	5371600	4381712	81.57
NFBS	-	78607	-	456800	131796	28.85
NMBS	-	676647	-	4596700	1267495	27.57

NOAPS - National Old Age Pension Scheme.
 NFBS - National Family Benefit Scheme.
 NMBS - National Maternity Benefit Scheme.

2.2 URBAN POVERTY ALLEVIATION

2.2.1 Poverty reduction is an important goal of the urban policy. Urban growth is a result of (1) natural increase in population (2) net migration from rural areas to urban areas and (3) reclassification of towns. The common notion that migration largely fuels urban growth is only partially correct. Therefore, it is necessary to view urban poverty as distinct from rural poverty and not as mere transfer of rural poverty into urban areas.

Urban poverty leads to :

(a) proliferation of slums and bustees; (b) fast growth of the informal sector; (c) increasing casualisation of labour; (d) increasing pressure on civic services; (e) increasing educational deprivation and health contingencies.

The Urban Poverty Alleviation Programmes (UPAPs) which were in operation during eighth plan are as follows:

Nehru Rozgar Yojana (NRY)

2.2.2 In order to alleviate the conditions of urban poor, a Centrally Sponsored programme - Nehru Rozgar Yojana - was launched at the end of the Seventh Five Year Plan (October 1989) with the objective of providing of employment to the urban unemployed and underemployed poor. The Central Government indicated its overall contribution while the essential task of identifying, earmarking and coordinating the relevant sectoral inputs was undertaken by the State Governments. The NRY consisted of three schemes namely (i) the Scheme of Urban Micro Enterprises (SUME); (ii) the Scheme of Urban Wage Employment (SUWE); and (iii) the Scheme of Housing and Shelter Upgradation (SHASU). The physical and financial details of the implementation of these Schemes are at Annexure-I and Annexure-II respectively. During the Eighth Plan, 92% of the available funds were utilised and but for the shortfall in the number of dwelling units upgraded/in progress under SHASU, the targets have been achieved under all the other schemes.

Urban Basic Services for the Poor (UBSP)

2.2.3 The UBSP Programme was implemented as a Centrally Sponsored Scheme during the Eighth Five Year Plan with the specific objectives of effective achievement of the social sector goals; community organisation, mobilisation and empowerment; and convergence through sustainable support system. The expenditure on the Programme was being shared on a 60:40 basis between the Central and the State Governments and UTs (with legislatures). Further, the per capita expenditure on any slum pocket is Rs.75/- in the first year and Rs.50/- from the second year onwards after the basic infrastructure is developed. The UBSP was targetted to cover 70 lakh urban poor beneficiaries in 500 towns during the Eighth Plan period. The Programme has achieved the physical target of 70 lakh beneficiaries during the Eighth Plan period in 350 towns. Against the release of the Central share of Rs.8090 lakh, the release of the State share was Rs.3439.64 lakh. As on 31.03.1997, 353 towns and 4993 slum pockets have been selected for coverage and 75 lakh beneficiaries have been covered.

Prime Minister's Integrated Urban Poverty Eradication Programme (PM IUPEP) :

2.2.4 Recognising the seriousness and complexity of urban poverty problems, especially in the small towns where the situation is more grave due to lack of resources for planning their environment and development, the PMI UPEP was launched in November, 1995. The PM IUPEP was a Rs.800 crore scheme approved for the period up to the year 2000. Programme was applicable to all Class II urban agglomerations with a population ranging between 50,000 and 1 lakh subject to the condition that elections to local bodies have been held. The Programme was being implemented on a wholatown/ project basis extending the coverage to all the targetted groups for recuring a visible impact. During 1995-96 and 1996-97, Rs.176.40 crore were released to the States/UTs. Most of the States are in the preparatory stages of the Programme, such as house-to-house survey, patial mapping, need assessment, developing lternative project reports, building community structures etc., which take quite some time. The physical achievements as reported by the States are as under:

- (a) House-to-house survey has been completed in 213 towns.
- (b) Town-wise project reports have been prepared for 229 towns.
- (c) Under the self-employment component, 20775 applications have been forwarded to banks, out of which 3080 cases have been approved.
- (d) Under the Shelter Upgradation Component, 10386 applications have been forwarded to banks/HUDCO, out of which 4743 cases have been approved by HUDCO.
- (e) As many as 8382 Neighbourhood Groups, 1200 Neighbourhood Development Committees and 444 Thrift and Credit Societies have been formed.

2.2.5 The performance of the UPAPs in the Eighth Five Year Plan reveals:

- that although urban poverty is no less severe than rural poverty, the priority accorded to alleviation of urban poverty is low as the common perception is that urban poverty is a transfer of rural poverty into urban areas;
- that UPAPs are highly fragmented and have overlapping objectives and strategies.
- that integration of UPAPs with sectoral development and area development programmes has been overlooked.
- that the role of voluntary organisations and community based organisation in planning and implementation of UPAPs is on the periphery.

2.2.6 The Planning Commission's (Modified Expert Group) estimates of urban poverty show a decline in the percentage of urban poor from 38 percent (1987-88) to 32.36 percent (1993-94). As per the Modified Expert Group the number of urban poor is 763.37 lakh in 1993-94. The Hashim Committee, which was set up to review and rationalise Centrally Sponsored Schemes for poverty alleviation and employment generation, had gone into the question of rationalisation of the existing poverty alleviation programmes and recommended that:-

1. the self-employment component of NRY and PMIUPEP be combined into a single programme valid for all the urban areas all over the country;

2. the urban wage employment component as well as the physical infrastructure development component under the NRY and the PMIUPEP be merged and be made applicable to all the urban areas with a population less than 5 lakhs. This component may be separated from the self-employment component as a separate scheme with a distinct identity; and

3. the shelter upgradation/housing component under NRY and PMIUPEP be retained either as a separate scheme or merged with the Slum Development/Basic Services Schemes operating at present.

The Swarna Jayanti Shahari Rozgar Yojana (SJSRY):

2.2.7 In pursuance of the above recommendations, during the Ninth Plan it is proposed to launch the Swarna Jayanti Shahari Rozgar Yojana (SJSRY) and phase out NRY, PMIUPEP and UBSP. The SJSRY is to be a Centrally Sponsored Scheme applicable to all the urban areas with expenditure to be shared in ratio 75:25 between the Centre and States/UTs. The programme has become operational on December 1, 1997. This programme would have two sub-schemes, namely, (i) Urban Self-Employment Programme and (ii) Urban Wage Employment Programme. The self-employment and wage employment components of the existing NRY and PMIUPEP have been reorganised under this single programme. Further, the shelter upgradation components of both NRY and PMIUPEP will be merged with the National Slum Development Programme.

- The Planning Commission's (modified Expert Group) estimates of urban poverty show a decline in the percentage of urban poor from 38 percent (1987-88) to 32.36 percent (1993-94). As per the Modified Expert Group the number of urban poor is 763.37 lakh in 1993-94.
- The Hashim Committee, which was set up to review and rationalise Centrally Sponsored Schemes for poverty alleviation and employment generation, had gone into the question of rationalisation of the existing poverty alleviation programmes.
- Based on the recommendation of the Committee the Swarna Jayanti Shahari Rozgar Yojana (SJSRY) has been launched with effect from 1.12.97 and NRY, PMIUPEP and UBSP have been phased out.
- The programme has two sub-schemes namely, (a) Urban Self – Employment Programme and (b) Urban Wage Employment Programme. The self-employment and wage employment components of the NRY and PMIUPEP have been re-organised under this single programme. The shelter upgradation components of both NRY and PMIUPEP has been merged with the National Slum Development Programme.

2.2.8 The Swarna Jayanti Shahari Rozgar Yojana (SJSRY) seek to provide gainful employment to the urban unemployed or underemployed poor by encouraging the setting up of self-employment ventures or provision of wage employment. This programme will rely on the creation of suitable community structures on the UBSP pattern and delivery of inputs under this programme will be through the medium of urban local bodies and similar community institutional structures.

2.2.9 The Swarna Jayanti Shahari Rozgar Yojana rests on the foundation of community empowerment. Towards this end, community organisations like Neighbourhood Groups (NHGs), Neighbourhood Committees (NHCs) and Community Development

Societies (CDSs) will be set up in the target areas based on the UBSP pattern. The CDSs will be the focal point for purposes of identification of beneficiaries, preparation of applications, monitoring of recovery and generally providing whatever other support is necessary to the programme. The CDSs will also identify viable projects suitable for that particular area.

2.2.10 These CDSs may also set themselves up as Thrift and Credit Societies to encourage community savings, as also other group activities. A maximum expenditure at the rate of Rs.100 per member for the first year and Rs.75 per member for each subsequent year will be allowed for activities connected with the CDSs.

The Urban Self Employment Programme (USEP):

2.2.11 This programme will have three distinct components:-

(i) assistance to individual urban poor beneficiaries for setting up gainful self-employment ventures.

(ii) assistance to groups of urban poor women for setting up gainful self-employment ventures. This sub-scheme may be called "The Scheme for Development of Women and Children in the Urban Areas (DWCUA)".

(iii) training of beneficiaries, potential beneficiaries and other persons associated with the urban employment programme for upgradation and acquisition of vocational and entrepreneurial skills.

Coverage:

(i) The programme will be applicable to all urban towns in India.

(ii) The programme will be implemented on a whole town basis with special emphasis on urban poor clusters.

Target Groups:

(i) The programme will target the urban poor, i.e. those living below the urban poverty line, as defined from time to time.

(ii) Special attention will be given to women, persons belonging to Scheduled Castes/Tribes, disabled persons and other such categories as may be indicated by the Government from time to time. The percentage of women beneficiaries under this programme will not be less than 30 per cent. The SCs and STs must be benefited at least to the extent of their proportion in the local population. A special provision of 3 percent will be reserved for the disabled under this programme.

(iii) There will not be any minimum educational qualification set for beneficiaries under this programme. However, to avoid an overlap with the PMRY scheme, for self-employment component, this scheme will not apply to beneficiaries educated beyond the IX standard. As regards the wage employment component, there will be no restrictions of educational qualifications whatsoever.

(iv) A house-to-house survey for identification of genuine beneficiaries will be undertaken. Non-economic parameters will also be applied to identify the urban poor in addition to the economic criteria of the urban poverty line.

2.2.12 All other conditions being equal, women beneficiaries belonging to women-headed households will be ranked higher in priority than other beneficiaries.

COMPONENTS:

(i) Self-employment through setting up Micro-enterprises and Skill development:

2.2.13 To avoid duplication with the ongoing Prime Minister's Rozgar Yojana (PMRY), this component of SJSRY is confined to the below poverty line beneficiaries who have no education upto ninth standard, with emphasis on those accorded a higher priority on the basis of the non-economic criteria. The maximum unit cost will be Rs.50,000 and the maximum allowable subsidy will be 15 percent of the project cost, subject to a limit of Rs.7,500. The beneficiary is required to contribute 5 percent of the project cost as margin money. In case a number of beneficiaries decide to jointly set up a project, such project will be eligible for a subsidy which will be equal to the total of the permitted subsidy per person as per the above criteria. In this case too the provision relating to 5 percent margin money per beneficiary will apply. The overall project cost, which can be permitted, will be the total of the individual project cost allowable per beneficiary.

2.2.14 Skill development through appropriate training is another element of this programme. The unit cost allowed for training will be Rs.2000 per trainee, including material cost, trainers' fees, other miscellaneous expenses to be incurred by the training institution and the monthly stipend to be paid to the trainee. The total training period for skill upgradation may vary from two to six months, subject to a minimum of 300 hours.

2.2.15 Infrastructural support may also be provided to the beneficiaries setting up micro-enterprises in relation to marketing of their products etc.

(ii) Development of Women and Children in Urban Areas (DWCUA):

2.2.16 This scheme is distinguished by the special incentive extended to urban poor women who decide to set up self-employment ventures as a group as opposed to individual effort. Groups of urban poor women will take up an economic activity suited to their skill, training, aptitude and local conditions. Besides generation of income, this group strategy will strive to empower the urban poor women by making them independent as also providing a facilitating atmosphere for self-employment. To be eligible for subsidy under this scheme, the DWCUA group should consist of at least 10 urban poor women.

Financial Pattern

2.2.17 The DWCUA group society will be entitled to a subsidy of Rs.1,25,000 or 50% of the cost of project whichever is less.

2.2.18 Where the DWCUA group sets itself up as a Thrift and Credit Society, in addition to its other entrepreneurial activity, the group/Thrift and Credit society will also be entitled to a lump sum grant of Rs.25,000 as a revolving fund at the rate of Rs.1000 maximum per member. This revolving fund will be available to a simple Thrift and Credit Society also even if the society is not engaged in any project activity under DWCUA.

The Urban Wage Employment Programme (UWEP):

2.2.19 This programme seeks to provide wage employment to beneficiaries living below the poverty line within the jurisdiction of urban local bodies by utilising their labour for construction of socially and economically useful public assets.

2.2.20 This programme will apply to urban local bodies, the population of which is less than 5 lakhs as per the 1991 Census.

2.2.21 The material-labour ratio for works under this programme will be maintained at 60:40. The prevailing minimum wage rate, as notified from time to time for each area, will be paid to the beneficiaries under this programme.

2.2.22 This programme will be dovetailed with the State sector EIUS scheme as well as the National Slum Development Programme (NSDP). This programme is not designed to either replace or substitute the Environmental Improvement Of Urban Slums (EIUS), the NSDP, or any other State sector schemes.

Project Administration :

2.2.23 At the community level, a Community Organiser(CO) will be appointed for about 2000 identified families. The Community Organiser should, as far as practicable, be a woman.

2.2.24 At the town level, there will be an Urban Poverty Eradication Cell under the charge of a Project Officer. The Project Officer will be responsible for coordinating the activities of all the CDSs and COs.

2.2.25 At the district level, the State Government will constitute a District Urban Development Agency (DUDA) with an officer designated as the District Project Officer.

2.2.26 At the State level, there will be a State Urban Development Authority (SUDA), which will be headed by a full-time senior officer of the State Government. The SUDA will be designated as the State Nodal Agency for urban anti poverty programmes.

2.2.27 At the national level, the Department of Urban Employment and Poverty Alleviation will be the nodal department. The programme will be monitored and overseen by the UPA Division.

2.2.28 The Ninth Plan, in particular, needs to focus on the effective implementation and management of urban poverty alleviation programmes (UPAPs). Targetting of urban poor is essential for the success of any anti-poverty programme. Therefore, the UPAPs should be designed to accomodate flexibility in operation. The key components of the Ninth Plan strategy would be:

- effective targetting using either a self-identification system or a selection process by institutions responsible for financing and managing UPAPs as faulty targetting will enhance income inequalities.

- a "bottom up" approach should be adopted for UPAPs which should be routed through community based organisations. There should be effective participation

of community institutions for extending loans and for aiding loan recoveries made under UPAPs.

- since the problem of urban poverty is a manifestation of the higher incidence of marginal and low income employment in the informal sector, it is essential to upgrade informal sector occupations. Hence there is a need for emphasis on generation of self-employment in processing and services sector, improving the access to technology and credit and above all improving the general legal and physical environment which governs the working of the informal sector.

2.2.29 The policy framework adopted by the Government of India also mentions that "a frontal attack on poverty is an important element in development policy. This is the main rationale for anti-poverty programmes".

Annexure-I

NEHRU ROZGAR YOJANA

FINANCIAL PERFORMANCE

(Rs in lakh)

Scheme/ Component	Funds available during VIII Plan (Central+State) 1992-93 to 1996-97	Expenditure (upto 31.3.97)	Percent
SUME (Subsidy)	15625.26	16467.40	105
SUME (T & I)	3848.48	2738.40	71
SUWE	19703.05	19618.43	99
SHASU (Subsidy)	5124.73	5090.09	99
SHASU (T & I)	1684.46	1206.14	72
A & OE	3866.70)		
)		
ULBs	2844.99) 8232.02	4683.29	57
)		
NGOs	1520.33)		
TOTAL	54218.00	49803.75	92

Annexure-II

NEHRU ROZGAR YOJANA
Physical targets and achievement

(in lakhs)

	upto 1991-92		1992-93		1993-94		1994-95		1995-96		1996-97		Grand Total	
	T	A	T	A	T	A	T	A	T	A	T	A	T	A
No. of beneficiaries assisted to set up micro enterprises	2.87	1.42	0.92	2.37	1.25	1.52	1.02	1.25	1.17	1.25	0.87	1.29	8.10	9.10
Persons trained/under going training under SUME	0.68	0.48	0.32	0.41	0.42	0.31	0.34	0.38	0.40	0.46	0.30	0.46	2.46	2.50
Mandays of work generated under SUWE	257.84	195.24	63.74	76.27	50.84	72.17	41.12	50.85	36.22	54.64	33.74	9.57	483.50	458.70
No. of dwelling units upgraded/in progress under SHASU	2.85	0.28	1.77	2.28	1.76	0.56	1.60	0.62	-	0.23	-	0.87	7.98	4.80
Mandays of work generated under SHASU	246.87	18.16	94.46	64.22	91.89	51.50	65.00	13.11	-	38.31	-	47.46	498.22	232.00
Persons trained/under going training under SHASU	0.62	0.15	0.16	0.17	0.16	0.17	0.15	-0.05	0.15	0.21	-	0.16	1.24	0.81

T=Target A=Achievement

2.3 PUBLIC DISTRIBUTION SYSTEM

Introduction

2.3.1 The Public Distribution System (PDS) is the key element of the Government's food security system in India. It is an instrument for ensuring availability of certain essential commodities at easily affordable prices especially for the poor. The Government, via the Food Corporation of India (FCI), procures and stocks foodgrains which are released every month for distribution through the PDS network across the country. In addition to sugar, edible oils and kerosene, foodgrains, mainly rice and wheat, are distributed to the public via a network of Fair Price Shops (FPS). The system of procurement is also used by the Government of India to provide minimum support prices to the farmers so as to stabilise farm output and income. To begin with, in the sixties efforts were made to procure rice and wheat not only for normal distribution through Fair Price Shops under the PDS but also to maintain buffer stocks, which were built in the years of good production to tide over the periods of lean production. In the eighties, given the increases in the foodgrains production and the resilience in the agricultural production scenario, the Government of India decided to operate a system whereby certain norms were fixed regarding the quantities to be held by the Food Corporation of India at different points of time during the year, thus merging the stocks meant for normal distribution and buffer stocks.

2.3.2 The PDS, till recently, has been a general entitlement scheme to all consumers without any targetting. On an average, about 15-16 million tonnes of foodgrains are issued by the FCI to the States at a uniform Central Issue Price (CIP) which is much less than the economic cost incurred by the Central Government by way of procurement, storage, transport and distribution. The difference between the economic cost and the CIP, called the consumer subsidy, is borne by the Central Government through its annual non-Plan budget. In addition to this, as mentioned above, the FCI maintains a large buffer stocks of foodgrains, which entails a substantial carrying cost. The consumer subsidy and the carrying cost of the buffer stock together add up to the total food subsidy. The total food subsidy, which was of the order of Rs.2000 crore in 1987-88, has gradually increased to the level Rs.7500 crore during the year 1997-98. Despite the mounting food subsidy bills, various evaluation studies of the PDS have shown that the system has failed to translate the macro level self sufficiency in foodgrains achieved by the country into household level food security for the poor. In a system with access to all, rich and poor alike, the quantum of PDS supply to each household formed only a small proportion of a family's total requirement. The increases in the Minimum Support Prices (MSP) effected over the years, which were considered necessary by the Government to keep up the production of foodgrains, led to corresponding increases in the consumer prices in the PDS, adversely affecting the economic access of the poor to the PDS foodgrains. Another fall out of the universal PDS has been that the States with the highest incidence of poverty, viz Orissa, Bihar, Madhya Pradesh and Uttar Pradesh are the ones whose per capita PDS off-take has been the lowest. It thus became clear that the PDS, which existed till recently, did not serve the poor well, especially in the poorer States. In view of the mounting food subsidy in recent years, coupled with the fact that the PDS did not reach the poor, a view has emerged that the universal coverage of the PDS is neither sustainable nor desirable. One of the central concerns of the economic reform process, that was initiated in 1991, is to limit the quantum of explicit and implicit subsidies as well as other forms of non-Plan expenditure, while at the same time raising both tax and non tax revenues. The unbridled growth of non-Plan expenditure in relation to the revenues during the decade of the eighties had brought

about a severe fiscal imbalance, with a rapid build up of public debt and mounting interest burdens. It is in the context of correcting this macro economic imbalance that the view of curbing subsidies to the barest minimum emerged. While recognising the need to curb subsidies in general, it is important to recognise the need to provide foodgrains at affordable prices to the bottom rungs of the population, whose well being ought to be at the core of the Government's food security programme. One of the most important determinants of the changes in India's poverty level is the price of foodgrains which has a major impact on the real income, especially for the relatively poorer sections whose incomes are very largely spent on foodgrains. For example, at the all-India level the people spend on an average about 63% of their total expenditure on food in the rural areas and about 55% in the urban areas. Of the expenditure incurred on all food items the expenditure on foodgrains accounts for 45% in the rural areas and about 32% in the urban areas. The bottom 30-40% of the population spend over 70% of the total expenditure on food. Of their expenditure on food, the bottom 30-40% of the population spend about 50% on foodgrains in the rural areas and over 40% in the urban areas. In view of the fact that the poor devote a substantial part of their expenditure on foodgrains, it is essential to protect them from a continuous upward pressure on foodgrains prices, a phenomenon in-built in our system of procurement prices which need an annual increase as an incentive for increasing production. If the poor are not protected from the impact of the ever increasing pressures on prices of foodgrains through a subsidised PDS, the impact of many of the poverty alleviation measures and programmes would get neutralised. In other words, a system of food subsidy is an essential element of food security strategy. The challenge, however, is to contain the total food subsidy to the minimum necessary by devising a system of targeting so that the subsidies benefit only those sections whom the State wants to protect. The challenge lies in the fact that by international comparison most Indians are poor and most of them devote a substantial part of their expenditure on foodgrains. So naturally, there is a pressure to have a subsidised PDS with an almost open ended coverage. Open ended coverage, however, cannot be continued, not only because of its massive implication for the total volume of food subsidy but also because of the enormous price distortions that is implicit in an open ended, heavily subsidised PDS.

Targetting Public Distribution System:

Recommendations of the Working Groups(WG)

2.3.3 The logic of a targeted PDS described above was enunciated in the Report of the Working Group on National Policy on Public Distribution System (June, 1996) set up in the Planning Commission in August, 1995. The Working Group after discussing various forms and experiences of targeting, such as, through wage employment programmes (JRY,EAS etc), area-based targeting (ITDP, RPDS), exclusion of non-poor and the system of food stamps prevalent in some countries, suggested a scheme of allocation of foodgrains out of the Central Pool to the States at two sets of prices, namely, a highly subsidised price for the allocations meant for the poor and near open market prices for the non-poor. The recommendations of the Working Group are given in Box.

Recommendations of the Working Group on National Policy on Public Distribution System

- * The Central Government should adopt the Planning Commission's estimates of the proportion of population below the poverty line (BPL) available for 1987-88 as the criteria for allocating a feasible annual level of foodgrains to States/UTs for a targeted PDS.
- * Based on the levels of procurement and allocations/offtake of foodgrains in the past, the Central Government should maintain an annual allocation level of 15 million tonnes.
- * Earmark about 80% of the annual allocation i.e around 12 million tonnes for distribution to the States/UTs on the basis of their share of BPL population. This will work out to an availability of 20 kgs per month per BPL household.
- * 12 million tonnes of foodgrains meant for the BPL population should be issued to the States at highly subsidised prices and allocations to any State over and above this at near open market prices.
- * A ceiling limit should be imposed for each State based on the highest offtake of foodgrains in the past ten years. The States should be allowed full freedom to decide on the mode of distribution, pricing, identification of beneficiaries etc.

2.3.4 The Working Group also worked out the subsidy implications of the proposed targetted PDS. Distribution of 12 million tonnes of foodgrains to an estimated BPL population of 250 million (based on 29.9% BPL proportion applied on 1991 population census figure) worked out to a per capita availability of 20 kgs per poor household per month. The Working Group was of the view that the targetting exercise would be meaningless if the benefit through PDS supply was insignificant. Therefore, it suggested that the monthly savings to a beneficiary household should be at least around Rs.50.00 per month on the purchase of 20 kgs of foodgrains through the PDS. This worked out to an unit subsidy of Rs.2.50 per kg. At the time of the deliberations of the Working Group (1995-96), the weighted average Central Issue Price (CIP) of foodgrains worked out to a little over Rs.5.00 per kg. Thus, in effect the Working Group suggested an issue price for BPL population at half the normal CIP. The subsidy requirement per annum for 12 million tonnes worked to an additional Rs.3000 crore. Since the normal CIP of about Rs.5.00 per kg already involved an unit subsidy of about Rs.2.00 per kg, the actual consumer subsidy would have been Rs.4.50 per kg at 1995-96 costs and prices and the total subsidy would have been Rs.5400 crore. As the non-poor were required to purchase foodgrains at near open market price which was close to the economic cost of foodgrains to the FCI, no additional subsidy was involved on this account.

Targetted Public Distribution System (TPDS): - As Implemented

2.3.5 The principles enunciated by the Working Group were adopted by the Government while implementing the TPDS w.e.f. 1st June, 1997. However, the numbers and dimensions of TPDS as implemented differ greatly from those contained in the Report of the Working Group. Under the TPDS, a quantity of 10kgs of foodgrains per family per month is being issued at highly subsidised rates to the States on the basis of the number of BPL families as against 20 kgs recommended by the Working Group. One of the reasons that forced the Government to reduce the scale of the ration to BPL is that the number of BPL families had increased tremendously following the acceptance of the methodology of

the Expert Group under Professor Lakdawala for estimation of poverty by the Government in March, 1997. Based on this methodology, the Planning Commission estimated the proportion of BPL population for 1993-94 at 35.97% as against 29.9% (1987-88) relied on by the Working Group. To arrive at the number of BPL population under TPDS, the Government applied the revised BPL percentage of 35.97 on the projected population of 1995 as against 1991 population adopted by the Working Group. As a consequence of the changed numbers, the number of BPL families increased to 58.7 million as against 50 million estimated by the Working Group. The second reason for reducing the scale of ration for BPL was that the TPDS envisaged the continuance of a substantial unit subsidy as well as allocations of foodgrains, for the Above Poverty Line (APL) or non-poor population as against no or little subsidy assumed by the Working Group. The allocations for the APL are however, transitory and based on the average 10 years' lifting which is in excess of the allocations for the BPL. The third reason for reducing the scale of ration of BPL is that unit subsidy for BPL had to be fixed a little higher than that envisaged by the Working Group in view of escalations in the economic cost of foodgrains between 1995-96 and 1996-97. It needs to be mentioned in this connection that the Government originally decided to fix the CIP at 50% of the economic cost for BPL and at 90% of the economic cost for APL population. In practice, it became difficult to stick to these percentages, which went down to about 40% of economic cost (1996-97) for BPL and 80% for APL.

2.3.6 The dimension of the TPDS being implemented since 1st June, 1997 is detailed Table 2.3.1.

Targetted Public Distribution System 1997-98						
		BPL		APL		Total
1. No. of Families (1995) lakh		586.64		Not Fixed		Not Fixed
2. Allocations of Foodgrains (lakh tonnes)						
	Total	70		104		174
	Rice	37		62		99
	Wheat	33		42		75
3. CIP (Rs/kg)						
	Rice					
	Common	3.50		-		
	Fine	3.50		6.50		7.15 Weighted Average
	Super	-		7.50		
	Fine	-		-		
	Wheat	2.50		4.50		
4. Eco. Cost (Rs/kg)						
	Rice					
	Common	8.45		8.45		9.00 Weighted Average
	Fine	8.88		8.88		
	S. Fine	9.27		9.27		
	Wheat	7.61		7.61		
5. Unit Subsidy (Rs/kg)						
	Rice	5.50		1.85		-
	Wheat	5.10		3.10		-
6. Total Subsidy (Rs/crore)						
	Rice	2035		1147		3182
	Wheat	1683		1302		2985
G. Total Foodgrains Subsidy (Rs/crore)		3718		2449		6167

2.3.7 The subsidy implication of the TPDS at current (1997-98) costs and prices as worked out above is a little over Rs.6000 crore, roughly the same as budgeted for 1997-98. This does not include a sum of about Rs.1500 crore towards the carrying cost of a reasonable volume of buffer stock.

2.3.8 Despite a very heavy subsidy burden, the TPDS has come in for severe criticism from various quarters including many State Governments. It has been argued that a scale of ration of 10 kgs per month per BPL family is grossly inadequate since the average requirement of a family is about 30 kgs per month. An unit subsidy of about Rs.5 per kg works to a subsidy of only Rs. 50 per month which is not sufficient to make a significant dent on poverty. It has been suggested that the scale of ration to BPL families should be raised to 20 kgs per month. Several State Governments have also expressed unhappiness that the quantum of overall allocations has been restricted to 10 years' average off-take, rather than the maximum of the allocations during the last 10 years. It has been suggested that the overall allocations to the States should be restored to the maximum level of 25.5 million tonnes achieved in 1996-97. Some of the State Governments have also represented that under poverty based allocations for BPL they are being penalised instead of being rewarded for bringing down their poverty ratios as compared to other States.

Review of Targetted PDS

2.3.9 A review of the TPDS is necessary in order to make it acceptable to the participant States. A system which is acceptable to the States should also be sustainable over a period of time. Sustainability is a function of coverage, scale of allocations, unit economic cost of foodgrains and unit subsidy which together determine the amount of subsidy that the exchequer is required to bear. The key to sustainability lies in adhering to the principles of the targetted subsidy system, in particular the need for confining the subsidies to the BPL families and reducing them, and eventually eliminating them, for the APL families, as enunciated by the Working Group of the Planning Commission. Based on the current (1997-98) costs and prices, and other dimensions, the TPDS that may be acceptable to the States and sustainable from the point of view of the Central Government are outlined below.

2.3.10 The most persistent complaint against the current TPDS is the very low scale of allocation @10kgs of foodgrains per BPL family per month. The scale needs to be raised to 20 kgs. The annual requirement of foodgrains @20kgs per month for an estimated 58.7 million BPL families (based on Expert Group Methodology and the projected population of 1995) comes to about 14 million tonnes, which needs to be earmarked. The second most important demand of the States is to restore the overall annual allocations to 25.5 million tonnes achieved in 1996-97. This means that about 11.5 million tonnes of foodgrains will have to be allocated to the APL population.

2.3.11 As per the principles enunciated by the Working Group, the BPL families will have to be issued foodgrains at half the normal CIP, which should be defined as equal to economic cost of foodgrains to the FCI. At current (1998-99) economic costs, the subsidy on 14 million tonnes of foodgrains meant for BPL comes to about Rs.6300 crore as per the details given in Table 2.3.2.

Table 2.3.2
Subsidy At Half Economic Costs to BPL(1998-99)

	Rice	Wheat	Total
1. Quantity (LMT) @20 kg per month	74	66	140
2. Econ.Cost (Rs/kg)	10.00	8.00	-
3. CIP (1/2 Eco. cost) (Rs/kg)	5.00	4.00	-
4. Unit subsidy	5.00	4.80	-
5. Total subsidy (Rs/crore)	3700	2640	6340

2.3.12 If the sustainable amount of subsidy is assumed to be Rs. 7500 crore (excluding the carrying cost of buffer stock), as has been budgeted for 1998-99, about Rs.1200 crore (7500-6300) only will be available for APL. This will be just enough to provide a subsidy of Re 1.00 per kg for an allocation of 11.5 million tonnes for the APL population. One fall out of the principle of pricing foodgrains at

near economic cost for APL would be that there will be little demand from this section in normal times. With the market prices ruling at par with the economic cost, the consumers tend to rely more on the market than on the PDS. Therefore, it is expected that only a fraction of the allocation of 11.5 million tonnes will actually be lifted.

2.3.13 The second important key to sustainability is the periodic revision of economic cost following changes in any of its components, such as, procurement price, procurement incidentals and distribution cost. While all attempts should be made to reduce the economic costs, especially when they exceed the market price, and the FCI's operational system be constantly reviewed and monitored for the purpose, the need for revision of economic cost, which is inherently upwardly mobile, should not be overlooked. Otherwise, the subsidy burden, which is the gap between economic cost and CIP, will tend to rise and in no time exceed the sustainable limit.

2.3.14 In order to make the TPDS not only consistent with the principles of TPDS but also attractive to the States, a reasonable amount of additional subsidy of, say, Rs.500 crore, can be given to those States that succeed in reducing the level of poverty below the national average. For this purpose, a scheme can be introduced to distribute the additional subsidy as grant to the eligible States based on their relative share of BPL population who have been lifted out of poverty as a result of special efforts in bringing down their poverty ratios below the national average. Other important features of the current TPDS should be retained and strengthened. One such feature relates to issue of subsidised foodgrains to all workers under EAS/JRY @1kg per manday. This is in addition to the entitlement under TPDS. Under this scheme, the TPDS envisages issues of "Food Coupons" to the beneficiaries to enable them to obtain foodgrains from the FPS, to which their normal family card is attached. Another important feature of the TPDS which should be retained and strengthened is the detailed operational scheme. In order to make the TPDS transparent and accountable and thereby plug the leakages, a number of steps have been prescribed. These include: (a) release of foodgrains to the States subject to satisfactory completion of identification of eligible families; (b) involvement of the Panchayats/Nagar Palikas in the identification exercise as well as for supervision of the work of the FPS, (c)

constitution of Vigilance Committees at FPS, Taluka, District and State levels and (d) a system of monitoring and reporting on the working of the TPDS.

2.3.15 While the provision for food subsidy is made in the non-Plan budget of the Central Government, for strengthening the operational machinery of the PDS, the Planning commission provide funds under its plan programmes for the following schemes:

- 1) Construction of Godown
- 2) Purchase of Mobile Vans/Trucks
- 3) Training, Research and Monitoring.

2.3.16 The Godowns scheme is intended to assist the State Governments /UTs. for construction of small godowns of the capacity upto 2000 tonnes in interior areas where it is necessary to maintain adequate stocks to ensure regular supplies under PDS. Since 1983-84 this scheme was being implemented to supplement the resources of the State Governments. to augment the storage capacity in remote/inaccessible/hilly areas. Till 1991 the scheme was restricted to North Eastern States, Himachal Pradesh, Sikkim, J&K, Lakshadweep and Andaman & Nicobar Islands. With the launching of RPDS in January, 1992 the scheme was further extended to cover all the identified RPDS areas. In 1998, a decision was taken to extend the scheme to all such areas in the country where the need for such facilities may exist. Funds under the scheme are released for small godowns in places where Central agencies like CWC, FCI etc. do not operate. The present pattern of financial assistance is 50% loan and 50% subsidy. However, in the case of UTs without legislatures the entire assistance is in the form of subsidy only. The Mobile Vans scheme is intended to provide financial assistance to the State Governments /UT administrations for purchase of mobile vans/trucks for distributing essential commodities in rural/hilly/remote and other disadvantaged areas where static/regular Fair Price Shops are not found viable/feasible. Initially, an assistance of Rs.2.50 lakh was being provided for a delivery van/truck with 75% loan and 25% subsidy. With the liberalisation of the scheme during 1992-93 the subsidy component of the assistance was enhanced from 25% to 50% and the financial assistance per van/truck was also raised to Rs.4 lakh in the case of delivery van (for 4 tonner) and Rs.8 lakh for big truck ranging from 8-10 tonnes and above subject to the ceiling of actual cost whichever is lower. Under this scheme, vehicles can be used not only as mobile Fair Price Shops but also for effecting door delivery of PDS commodities to Fair Price Shops. The scheme is supplementary in nature as the running cost and its maintenance etc. are borne by the respective State Governments from their own budget.

2.3.17 The training scheme aims at strengthening and upgrading the skill of personnel engaged in PDS and also to improve the management of supplies. The efforts of the State Governments./UT administrations, Civil Supplies Corporations etc. are supplemented by providing financial assistance for organising training programmes on PDS. Evaluation studies, research studies on various aspects of PDS are also sponsored under the scheme. Provision also exists for organising workshops, seminars for various level officers/officials of States as well as Central Ministries/Organisations. Generally, the maximum Central Assistance for a week's training course is limited to Rs.50,000/-. The assistance for research/studies/seminars etc. however, depends on the size, merits of each case.

CHAPTER 3

HUMAN AND SOCIAL DEVELOPMENT

3.1 SECTORAL OVERVIEW

Introduction

3.1.1 Human development and improvement in quality of life are the ultimate objectives of all Planning. This is to be achieved through policies and programmes aimed at promotion of both equity and excellence. Planning takes into account the resources required for human development and human resources available for carrying out the Plan. India, the second most populous country in the world, has no more than 2.5% of global land but is the home of 1/6th of the world's population. Living in a resource poor country with high population density, planners perceived in the figures of 1951 census the potential threat posed by rapid population growth to the developmental activities, efforts to improve per capita income, availability of food, clothing, education and employment, prevention of environmental deterioration and enhancement of the quality of life. India became the first country in the world to formulate and implement the National Family Planning Programme in 1952 with the objective of "reducing birth rate to the extent necessary for stabilisation of the population at a level consistent with the requirement of the National economy".

3.1.2 The benefits of national economic progress reach different segments of the population through different channels at different rates. The needs of people above the poverty line and an improvement in their standards of living can be achieved through optimum utilisation of existing market mechanism: but market mechanism may not improve access to available facilities or fully meet the essential needs of the population with poor purchasing power. Economic growth improves the employment opportunities; employment improves purchasing power; but these alone may not be sufficient to improve the quality of the life. Social sector planning ensures that appropriate policy and programme initiatives are taken and adequate investment is provided by the State in the social sector so that the poorer and vulnerable segments of the population can access essential commodities, facilities and services based on their need and not ability to pay. It is expected that these efforts will accelerate human development and this, in turn, will ensure that the population becomes a major resource for developmental activities and acts as an important driving force for growth and development of the economy.

Population projections

Population projections are required for planning adequate investments for:

- Essential necessities such as food, shelter and clothing.
- Essential prerequisites for human development such as education, employment and health care
- Optimal utilisation of the available human resources for economic and social development.

Population projections

3.1.3 Right from 1958 the Planning Commission has been constituting an Expert Group on Population Projections prior to the preparation of each of the Five Year Plans so that the information on the population status at the time of initiation of the Plan and population

Population projections 1996-2016	
The population will increase from 934 million in 1996 to 1264 million in 2016	
Between the periods 1996-2001 and 2011-2016 there will be a decline of :	
□ CBR from	24.10 to 21.41
□ CDR from	8.99 to 7.48
□ NGR from	1.51% to 1.39%
□ IMR	
Male from	63 to 38
Female from	64 to 39

projections for future are available during the preparation of the Plan. The data from the population projections have been utilised not only for planning to ensure provision of essentials necessities such as food, shelter and clothing but also for the prerequisites for human development such as education, employment and health care. Over the years there has been considerable refinement in the methodology used for population projections and substantial improvement in the accuracy of predictions. The projections made by the Standing

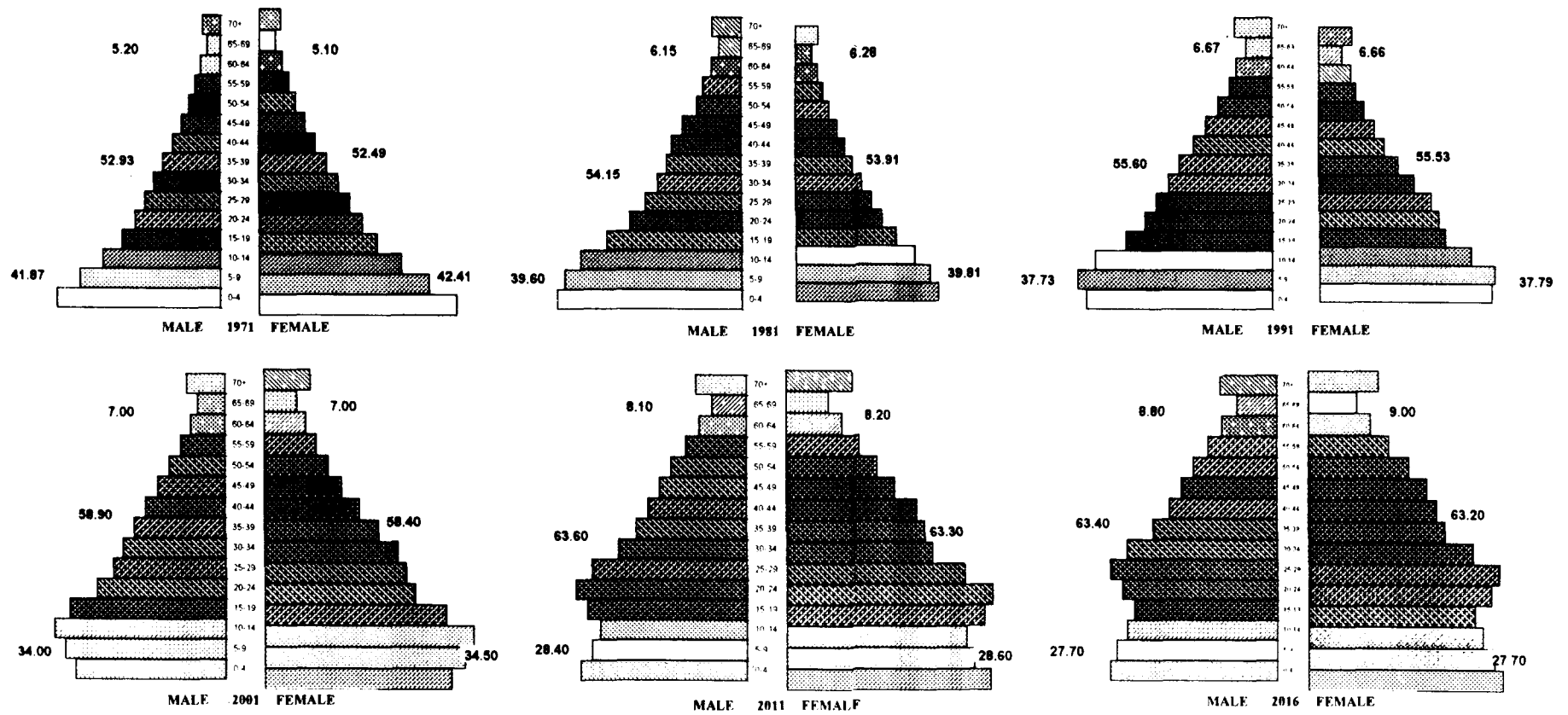
Committee on Population Projection in 1988 for the year 1991 was 843.6 million; this figure was within 0.3% of the 846.3 million reported in the Census 1991.

3.1.4 In 1996, prior to the formulation of the Ninth Plan, the Planning Commission had constituted a Technical Group on Population Projections, under the Chairmanship of Registrar General India, to work out the population projections for the country for the period 1996 to 2016 on the basis of census 1991 and other available demographic data. The Group worked out the projections for the population of the country (Table 3.1.1) and the major States for the period 1991-2016. The age and sex-wise distribution of the projected population is given in Table 3.1.2. Population pyramids for the period 1971 to 2016 (drawn on the basis of census figures for 1971,1981 and 1991 and on the basis of population projections for the period from 1996-2016) are shown in Figure 1.

3.1.5 Demographic transition is a global phenomenon. The transition is from high fertility, high mortality, stable population scenario, to low fertility, low mortality and stable population scenario. India is currently in the second stage of transition; the rate of fall in birth rate exceeds fall in death rates and for the first time after three decades the population growth rate has fallen below 2%. Surveys undertaken in the country have unequivocally shown that awareness about contraception is universal; there is substantial unmet need for contraception. The short term goals during the Ninth Plan period will be to assess and meet all the felt needs for maternal and child health care and contraception; the focus will be on meeting the unmet needs for contraception and achieving reduction in the high desired level of fertility through programmes for reduction in IMR/MMR. The medium and long term goals will be to continue this process of enabling the couples to achieve their reproductive goals and simultaneously enable the country to accelerate the pace of demographic transition and achieve population stabilisation as early as possible. Early population stabilisation will enable the country to achieve its developmental goal of improvement in economic status and quality of life of the citizens. Along with the demographic transition, there is concurrent ongoing socioeconomic, educational, information technology transition. These will improve access, enhance the awareness and promote optimal utilisation of the available services. By bringing about an accelerated convergence of all these favourable factors it will be possible not only to hasten the pace of demographic transition but also improve the quality of life.

Figure -1

CHANGES IN POPULATION PYRAMID - 1971 TO 2016



Effective implementation of RCH Programme and achievement of targets set for CBR would avert about 1 million births and 1,40,000 infant deaths in 2002 AD. If the goals of RCH Programme are met, India could achieve TFR of 2.1 at the national level a decade earlier than current projections. A reduction in birth rate of this magnitude would prevent an otherwise inevitable increase in number of births due to rise in reproductive age population two to three decades later, lead to population stabilisation earlier and at a substantially lower figure than the current projections.

**Implications of ongoing demographic transition to the social sector planning:
Economic Implications**

3.1.6 Population growth and its relation to economic growth has been a matter of debate for over a century. The early Malthusian view was that population growth is likely to impede economic growth because it will put pressure on the available resources, result in reduction in per capita income and resources; this, in turn, will result in deterioration in quality of life.

Contrary to the Malthusian predictions, several of the South East Asian countries have been able to achieve economic prosperity and improvement in quality of life inspite of population growth. This has been attributed to the increase in productivity due to development and utilisation of innovative technologies by the young educated population who formed the majority of the growing population. These countries have been able to exploit the dynamics of demographic transition to achieve economic growth by using the human resources as the engine driving the economic development; improved employment with adequate emoluments has promoted saving and investment which in turn stimulated economic growth.

<p>Economic implications of demographic transition</p> <p>The next two decades will witness:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Increase in the 15-59 age group from 519 – 800 million <input type="checkbox"/> Low dependency ratio <p>Challenge is to ensure:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Adequate investment in HRD <input type="checkbox"/> Appropriate employment with adequate emoluments <p>Opportunity is to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Utilise available abundant human resources to accelerate economic development

3.1.7 However, it is noteworthy that not all countries which have undergone demographic transition have been able to transform their economies. Sri Lanka in South Asia which underwent demographic transition at the same time as South East Asian countries still continues to have poor economic indices. It is likely that population growth or demographic transition can have favourable impact on economic growth only when there are optimal interventions aimed at human resource development and appropriate utilisation of available human resources.

3.1.8 For India the current phase of demographic transition with low dependency ratio and high working age group population represents both a challenge and an opportunity. The challenge is to utilise these human resources fully, give them appropriate jobs with adequate emoluments; if this challenge is met through well planned schemes for employment generation which are implemented effectively, there will be improved national productivity and personal savings rates; appropriate investment of these savings will help the country to achieve the economic transition from low economic growth - low per capita income to high economic growth - high per capita income. It is imperative to make the best of this

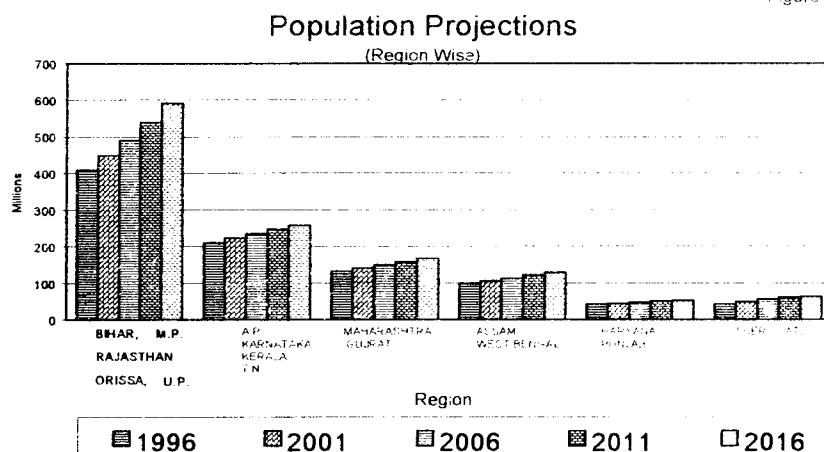
opportunity so as to enable the country and its citizens to vault to the high income- high economic growth status.

Interstate differences:

3.1.9 The projected values for the total population in different regions (Fig. 2), Total Fertility Rate (TFR) and the probable year by which the replacement level TFR of 2.1 will be achieved by different States and India, if the pace of decline in TFRs observed during 1981-93 continues in the years ahead and expectation of life at birth are shown in Tables 3.1.3, 3.1.4 & 3.1.5. There

are marked differences between States in size of the population, population growth rates and the time by which TFR of 2.1 is to be achieved. If the present trend continues, most of the Southern and the Western States are likely to achieve TFR of 2.1 by 2010.

Figure-2



Source: Registrar General India

Urgent energetic steps to assess and fully meet the unmet needs for maternal and child health (MCH) care and contraception through improvement in availability and access to family welfare services are needed in the States of UP, MP, Rajasthan and Bihar in order to achieve a faster decline in their mortality and fertility rates. The performance of these States would determine the year and size of the population at which the country achieves population stabilisation.

Interstate differences

There are massive interstate differences in population, population growth rates, time by which TFR of 2.1 and population stabilisation will be achieved.

These differences will have major impact on

- Health and nutritional status
- Education and skill development
- Appropriate employment with adequate emoluments
- Rural – urban and interstate migrations
- Social and economic development.

Efforts are to provide adequate inputs to improve performance so that the disparities between states will be narrowed.

3.1.10 There are also marked differences between States in socio-economic development. Increasing investments and rapid economic development are likely to occur in the States where literacy rates are high, there is ready availability of skilled work force and

adequate infrastructure. In these States, population growth rates are low. If equitable distribution of the income and benefits generated by development is ensured, substantial increase in per capita income and improvement in quality of life could occur in these States in a relatively short time.

3.1.11 In majority of States with high population growth rates, the performance in the social and economic sector has been poor. The poor performance could be the outcome of a variety of factors including paucity of natural, financial or human resources. Poverty, illiteracy and

poor development co-exist and reinforce each other. In order to promote equity and reduce disparity between States, special assistance has been provided to the poorly performing States. The benefits accrued from such assistance has to a large extent depended upon :

- a. the States' ability to utilise the available funds and improve services and facilities, and
- b. community awareness and ability to utilise the available services.

3.1.12 In spite of the additional assistance provided, improvement in infrastructure, agriculture and industry have been sub-optimal and the per capita income continues to be low in most of the poorly performing States. These States also have high birth rates and relatively low literacy rates. It is imperative that special efforts are made during the next two decades to break this vicious self perpetuating cycle of poor performance, poor per capita income, poverty, low literacy and high birth rate so that the further widening of disparities between States in terms of per capita income and quality of life is prevented. In addition to the special assistance available to poorly performing States, additional Central assistance from Basic Minimum Service (BMS) programme will also be available during the Ninth Plan period for achieving these objectives.

3.1.13 The higher population growth rates and low per capita income in poorly performing States are likely to have a major impact on several social sector programmes. The health status of the population in these States is poor; the health sector programme will require inputs not only for improving infrastructure and manpower, but also increasing efficiency and improving performance. The Family Welfare Programme has to address the massive task of meeting all the unmet needs for MCH and contraception so that there is a rapid decline in mortality and fertility rates. Due to high birth rate, the number of children requiring schooling will be large. The emphasis in the education sector on primary education is essential to ensure that the resource constraints do not result in an increase in either proportion or number of illiterates. Emphasis on prevocational and vocational training in schools will enable these children to acquire skills through which they will find gainful employment later.

3.1.14 The available data from census shows that until 1991 both internal and international migration has been negligible. The Technical Group while computing the population projection upto 2016, has assumed that the component of migration between major States and from India will be negligible. This assumption may not be valid if there is further widening of the disparity between States in terms of economic growth and employment opportunity. Given the combination of high population growth, low literacy and lack of employment opportunities in the poorly performing States, there may be increasing rural to urban migration as well as interstate migration especially of unskilled workers. Such migration may in the short run assist the migrants in overcoming economic problems associated with unemployment. However, the migrant workers and their families may face problems in securing shelter, education and health care. It is essential to build up a mechanism for monitoring these changes. Steps will have to be taken to provide for the minimum essential needs of the vulnerable migrant population.

Changes in Labour Force

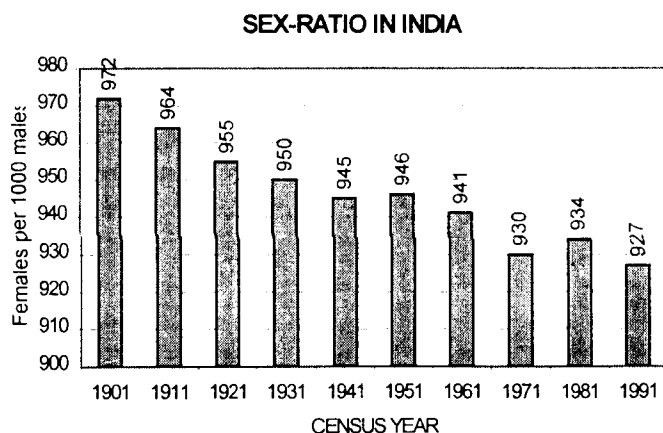
3.1.15 Currently, India's population is undergoing a relatively slow but sustained demographic transition. During the next two decades, the proportion of the population in the age-group 20-60 years in the country will be very large, because of the high birth rates during the last three decades. Increasing literacy and decreasing birth rates may result in more

women seeking economically productive work outside home. Planners have to ensure that there is sustained high economic growth rate, in sectors which are labour-intensive to ensure adequate employment generation for productively utilising this massive work force. This challenging task could be viewed as a major opportunity; this large group of literate, skilled, aware men and women if utilised as human resource could trigger off a period of rapid economic development.

3.1.16 During the next two decades, there will be a substantial reduction in birth rates and therefore a reduction in the proportion of the dependent child population. The proportion of the dependent population beyond 60 years is relatively small and will expand relatively slowly over the next two decades. Thus for the next two or three decades the country will have relatively low dependency ratios. If the massive work force in age-group 20-60 years get fully employed and adequately paid, the relatively low level of dependent children and elders might result in increased savings and investments at household level; this in turn will improve the availability of resources for accelerated economic growth.

Figure-3

Sex Ratio

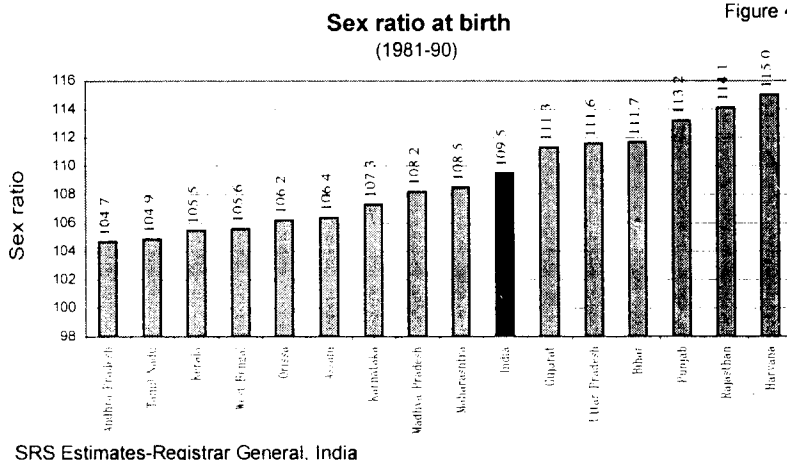


Source: Registrar General India

3.1.17 The reported decline in the sex ratio during the current century has been a cause for concern (Figure 3). The factors responsible for this continued decline are as yet not clearly identified. However, it is well recognised that the adverse sex ratio is a reflection of the gender disparity. Appropriate steps to correct this will be taken during the Ninth Plan period. There is an urgent need to ensure that all sectors collect and report data on

sex disaggregated basis; this will be of help in monitoring for evidences of gender disparity; continued collection, collation, analysis and reporting of sex disaggregated data from all social sectors will also provide a mechanism to monitor whether girls and women have equal access to these services.

Figure 4



SRS Estimates-Registrar General, India

3.1.18 The SRS based estimates of average sex ratio at birth for the period 1981-90 for the major States and India are given in Figure 4. The observed sex ratio of 110 is much higher than the internationally accepted sex ratio at birth of 106. There had been speculations as to whether female

infanticide, sex determination and selective female foeticide are at least in part responsible for this. The Government of India has enacted a legislation banning the prenatal sex determination and selective abortion. Intensive community education efforts are under way to combat these practices, especially in pockets from where female infanticide and foeticide have been reported. Higher childhood mortality in girl children is yet another facet of the existing gender disparities and consequent adverse effect on survival. In the reproductive age-group the mortality rates among women are higher than those among men. The continued high maternal mortality is one of the major factors responsible for this. Effective implementation of the Reproductive and Child Health Programme is expected to result in a substantial reduction in maternal mortality. At the moment, the longevity at birth among women is only marginally higher than that among men. However over the next decade the difference in life expectancy between men and women will progressively increase. Once the reproductive age group is crossed the mortality rates among women are lower. The proportion of women in the over- 60 age- group is expected to increase. Steps to ensure that these women do get the care they need are being taken by concerned Departments including the Departments of Health, Family Welfare and Women and Child Development.

Increasing Longevity

3.1.19 The projected level of expectation of life at birth 1996-2016 is shown in Table 3.1.6. It is obvious that over the next three decades the country will be facing a progressive increase both in the proportion and number of persons beyond 60 years of age. Over the next 20 years, there will be a small but significant increase in number and proportion of persons in the group over 60 years of the age; the subsequent decades will witness massive increase in this age

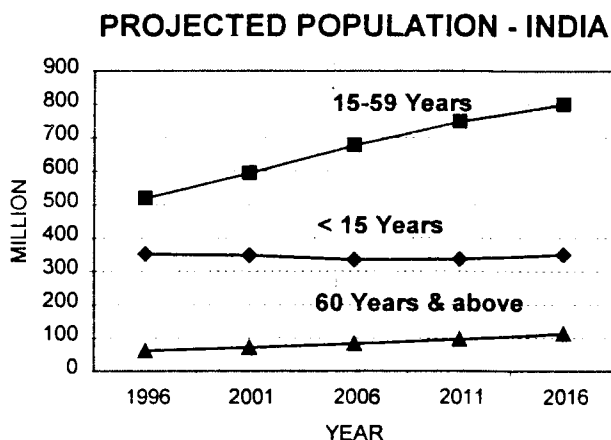
Increasing longevity:	
<input type="checkbox"/>	The population of elderly (>60 years) will increase from 62.3 million in 1996 to 112.9 million in 2016
<input type="checkbox"/>	Improved health care has added "Years to life"
<input type="checkbox"/>	Increased social sector investment is needed to add "Quality of life to years"

group. It is noteworthy that women outnumber men in the 65+ age group; it is expected that over the next two decades longevity in women will substantially increase. Increasing longevity will inevitably bring in its wake increase in the prevalence of noncommunicable diseases. The growing number of senior citizens in the country poses a major challenge; the cost of providing socio-economic security and health care to this population has to be met; currently several region and culture specific innovative interventions to provide needed care to this population are underway; among these are efforts to reverse the trend of break up of joint families. If these efforts succeed, it will be possible to provide necessary inputs for the care of rapidly increasing senior citizens population in the subsequent two decades.

3.1.20 Majority of the people in their sixties will be physically and psychologically fit and would like to participate both in economic and social activities. They should be encouraged and supported so that they do lead a productive life and also contribute to the national development. Senior citizens in their seventies and beyond and those with health problems would require assistance. So far, the families have borne major share in caring for the elderly. This will remain the ideal method; however there are growing number of elderly without family support; for them, alternate modes for caring may have to be evolved and implemented. Improved health care has "added years to life". The social sectors have to make the necessary provisions for improving the quality of life of these senior citizens so that they truly "add life to years."

Population projections and their implications for the FW programme

Figure-5



Source:- Registrar General India

3.1.21 The projected populations of India in the three major age groups (less than 15, 15-59, 60 years or above) are shown in Figure 5.

3.1.22 There will be a marginal decline in the population less than 15 years of age (352.7 million to 350.4 million). The health care infrastructure will therefore be not grappling with ever increasing number of children for providing care and they will be able to concentrate on

- (a) improving quality of care;
- (b) focus on antenatal, intranatal and neonatal care aimed at reducing neonatal morbidity and mortality;
- (c) improve coverage and quality of health care to vulnerable and underserved adolescents;
- (d) promote intersectoral coordination especially with ICDS programme so that there is improvement in health and nutritional status;
- (e) improve coverage for immunization against vaccine preventable diseases.

Age group < 15 years

There will be no increase in numbers

Focus will be to improve

- quality and coverage of health and nutrition services and achieve improvement in health and nutritional status
- improve access to education & skill development

3.1.23 The economic challenge is to provide needed funds so that these children have access to nutrition, education and skill development. The challenge faced by the health sector is to achieve reduction in morbidity and mortality rate in infancy and childhood, to improve nutritional status and eliminate ill-effects of gender bias.

Age Group 15-59 years

- There will be an increase from 519-800 million in two decades
- They will be requiring wider spectrum of health care services and improvement in quality of services
- Family Welfare programme has to cater to :
 - Maternal and child health services
 - Contraceptive care
 - Gynaecological problems
 - RTI /STD management

3.1.24 There will be a massive increase of population in the 15-59 age group (from 519 million to 800 million). The RCH care has to provide the needed services for this rapidly growing clientele. The populations in this age group is more literate and has greater access to information; they will therefore have greater awareness and expectation regarding both the access to a wide spectrum of health care related services and the quality of these services. The Family Welfare Programme has to

cater to wider spectrum of health care needs of this population – including maternal and child health care, contraceptive care, management of gynaecological problems, STD/RTI/HIV management and control; quality of services need also be improved.

3.1.25 There will be a substantial increase in the population more than 60 years (62.3 million to 112.9 million). In the next two decades, increasing numbers of the population beyond 60 years would necessitate provisions for management of some of the major health problems in this age group including early detection and management of cancers.

3.1.26 There has been a paradigm shift in Family Welfare Programme; centrally defined method specific targets have been replaced by community based need assessment and decentralised planning and implementation of the programme to fulfil these needs. The ongoing educational, info-technology and socio-economic transition have raised awareness and expectations of the population. It has been recommended that a Population Policy is drawn up to provide reliable and relevant policy frame work for the programmes in the Family Welfare and the related social sectors, for measuring and monitoring the delivery of services and their demographic impact in the new millenium.

Age group 15-59
Challenge is the massive increase in the number of people in this age group. They will:
<ul style="list-style-type: none"><input type="checkbox"/> need wider spectrum of services<input type="checkbox"/> expect better quality of services<input type="checkbox"/> expect fulfillment of their felt needs for MCH/FP care
Opportunity is that if their felt needs are met through effective implementation of RCH programme, it is possible to accelerate demographic transition and achieve rapid population stabilisation.

3.1.27 Any projection of expected levels of achievement in the demographic indices by the end of the Ninth Plan has to take into consideration the pace of improvement in these indicators during the Eighth Plan and the additional policy and programme measures envisaged to accelerate the pace of achievement during the Ninth Plan. The projections regarding expected levels of achievement have been worked out at two different levels, one on the basis of the assumption that the trend observed with regard to these parameters in the last 15 years will continue during the Ninth Plan period and the second on the assumption that the additional policy and programme initiatives provided during the Ninth Plan period will result in the acceleration of the pace and result in substantial improvement during the Ninth Plan period. The expected levels of achievement under these two sets of assumptions for CBR is 24 and 23/1000. A difference in the birth rate of this magnitude would make the difference of about one million births in 2002 AD alone. Similarly if the Programme achieves, the accelerated decline in IMR (from 56/1000-50/1000) over 140 thousand infant deaths will be averted in 2002 AD. These achievements may be the beginning of a major acceleration in pace of demographic transition and improving health status of the population.

Health Implication of the demographic transition

3.1.28 It was earlier assumed that population growth demographic transition will lead to overcrowding, poverty, undernutrition, environmental deterioration, poor quality of life and increase in disease burden. In recent years this view has been challenged. The period during demographic transition with increase number and proportion of persons in the age group 15-59 years may, if appropriate health services are made available, lead to substantial improvement in the health status of the population. The increase in population at this stage of demographic transition is mainly among younger, better educated and healthy population with low morbidity and mortality rate. The challenge for the health sector is to promote

healthy life styles, improving access to and utilisation of health care and achieve substantial reduction in mortality and morbidity. Occupational health and environmental health programme need be augmented to ensure that working population remain healthy and productive. If these challenges are fully met, it is possible to accelerate reduction in morbidity and mortality rate in this age group

3.1.29 There will be a small but significant increase in the elderly in the next decade. The impact of growing number of senior citizens is likely to result in substantial increase in health care needs especially for management of noncommunicable diseases in this population. Increasing availability and awareness about technological advances for management of these problems, rising expectations of the population and the ever escalating cost of health care are some of the challenges that the health care system has to cope with. Health care delivery systems will have to gear up to taking up necessary preventive, promotive, curative and rehabilitative care for this population.

3.1.30 From foregoing paragraphs it is obvious that the on-going demographic transition is both a challenge and an opportunity. The challenge is to ensure human development and optimum utilisation of human resources. The opportunity is to utilise available human resources to achieve rapid economic development, human development and improvement in quality of life. It has to be realised that demographic transition does not occur in isolation. Simultaneously, there are ongoing economic transition, education transition, health transition and reproductive health transition. All these affect human development. If there is synergy between these transitions, the transitions can be completed rapidly; there will be substantial improvement in human development and economic development. The focus of planners, programme implementers and the people during the next two decades will have to be in achieving the synergy so that India can achieve rapid improvement in economic and social development.

Social sector Planning

3.1.31 Social sector planning ensures that appropriate policy and programme initiatives are taken and adequate investments are provided to the social sector so that the poorer and more vulnerable segments of the population have access to essential services and needed facilities. The chapter on human and social development deals with the achievements and proposed plans in social sectors and services listed in the box.

Sectors covered in the chapter on Human and Social Development	
<input type="checkbox"/>	Basic Minimum Services
<input type="checkbox"/>	Special Action Plan
<input type="checkbox"/>	Health
<input type="checkbox"/>	Family Welfare
<input type="checkbox"/>	Education, Culture, Youth Affair and Sports
<input type="checkbox"/>	Labour, Employment and Manpower
<input type="checkbox"/>	Urban Development (including urban basic services)
<input type="checkbox"/>	Empowerment of Women and Development of Children
<input type="checkbox"/>	Empowerment of the Socially Disadvantaged Groups
<input type="checkbox"/>	Social Welfare.

Basic Minimum Services:

3.1.32 Providing integrated essential services to the population has been an objective of the social sector planning right from the first Plan period. The community development Block was the instrument of such development in rural areas during the first four Plan periods. The

initial focus was on provision of these services to the underserved rural population during the first two decades. However, by the mid- seventies, urban migration and explosive expansion of the urban population outstripped the existing services. It became imperative to invest in the provision of basic services to the urban population and urban development also.

3.1.33 In an attempt to provide greater focus and ensure achievement of objectives through careful monitoring, the Minimum Needs Programme (MNP) was formulated in the Fifth Plan. Over the last four Plans earmarked funds were provided under the MNP for establishment of a network of facilities and services for social consumption according to national norms throughout the country. The review of progress achieved so far indicates that the investment has brought about improvement in infrastructure and services available; however, the targets set are unlikely to be achieved within the time-frame. It is also a matter of concern that the performance under MNP was sub optimal in states where the access to these services were poor prior to the initiation of the programme and over years the disparities in availability of services between States and between districts has widened.

- | |
|---|
| <p>The Seven Basic Minimum Services are:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Primary health care services <input type="checkbox"/> Provision of safe-drinking water <input type="checkbox"/> Universalisation of primary education <input type="checkbox"/> Housing assistance to shelterless <input type="checkbox"/> Nutrition support <input type="checkbox"/> Streamlining of PDS with a focus on the poor <input type="checkbox"/> Connectivity of unconnected villages. |
|---|

3.1.34 Recognising that the access to basic minimum services to all in urban and rural areas is for improvement in the quality of life of the citizens, the Conference of Chief Ministers held in 1996, resolved that the core of the social development plan for the seven Basic Minimum Services should be initiated in a time bound fashion. Among these Primary Health Care, Primary Education and Provision of Safe-drinking water have been accorded higher priority, with a target of universal coverage by 2000 AD.

Special Action Plan for Social infrastructure

3.1.35 The Special Action Plan (SAP) envisages expansion and improvement of the social infrastructure - health care, education, housing (urban and rural), water supply and sanitation (urban and rural). For some sectors eg. housing specific targets to be achieved within a defined time frame have been set; for other sectors such as health the efforts are to achieve substantial expansion and improvement of availability and quality of services. The details of the Special Action Plan goals and the strategy for achievement of these goals is discussed under each of the sectoral programmes.

Health

3.1.36 Increasing realisation that healthy human resource is an essential prerequisite for all developmental activities has led to interest and investment "in" and "for" health even under severe resource constraints. Over the last 5 decades India has built a massive health care infrastructure to provide access to health care in urban and rural areas. National Programmes for combating major health problem have been evolved and implemented through this health

- | |
|--|
| <p style="text-align: center;">Health</p> <p>Major areas of concern are:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Continued high morbidity due to communicable diseases <input type="checkbox"/> Rising disease burden due to non-communicable diseases <input type="checkbox"/> Escalating cost for health care <p>Focus during Ninth Plan will be on:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Providing integrated preventive, promotive, curative and rehabilitative services in primary, secondary and tertiary health care institutions with appropriate referral linkages. |
|--|

infrastructure. These efforts have resulted in steep decline in death rate and rise in life expectancy. Some States like Kerala have health indices comparable to developed countries that have been achieved relatively at a low cost. Though there has been a steep fall in mortality rates through out the country, disease burden due to morbidity continues to remain high. Yet another cause of concern is the continued high and rising morbidity rates due to communicable and non-communicable diseases and nutritional problems. Rapid technological improvements in health care and increasing population awareness about these have further widened the gap between what is possible and what is feasible within the resources available for the individual and in the country. The focus during the Ninth Plan is therefore, on providing integrated preventive, promotive, curative and rehabilitative services for communicable and non-communicable diseases through appropriate strengthening of existing Primary Health Care Infrastructure by filling in the existing gaps in physical infrastructure and manpower and ensuring their optimal utilisation both in urban and in rural areas.

Family Welfare Programme

3.1.37 Technological advances, improvement in quality and coverage of health care, implementation of disease Control Programmes, IEC campaigns, and increasing literacy have led to increased utilisation of available health services and resultant steep decline crude death rate from 25.1 in 1951 to 9.8 in 1991. Life expectancy rose from 32 years in 1947 to 59.4 years in 1989-93. In contrast, the reduction in Crude Birth Rate (CBR) has been less steep declining from 40.8 in 1951 to 29.5 in 1991. As a result the annual exponential population growth rate has been over 2% in the period between 1961 and 1991.

3.1.38 There is usually a lag period between fall in infant mortality rates and decline in birth rates because the population has to recognise the fall in mortality rates and respond to the change by reduction in the desired fertility level. Awareness about and access to Family Welfare services have shown substantial improvement during the last two decades. Because of these factors there has been a steeper fall in birth rate and annual population growth rate during the Eighth Plan period. Reduction in population growth rate was one of the major objectives of during the Eighth Plan and continues to be a major objective during Ninth Plan. It is expected that with vigorous effective implementation of Reproductive and Child Health Care programme the rate of decline in population growth will be accelerated during the Ninth Plan period.

3.1.39 It is obvious that the decline in fertility and mortality rates have occurred in all States, the rate of decline was slower in some States like U.P. and Bihar; even within the same state there are substantial differences between districts. It is imperative that efforts are made to remove or minimise inter and intra state differences in the vital indices. For this purpose the NDC Committee recommended that there should be:

1. decentralised area specific planning based on the need assessment
2. emphasis on improved access and quality of services to women and children
3. creation of district level data base on quality and coverage indicators for monitoring of the programme

3.1.40 The Dept of Family Welfare has started implementing these recommendations. From 1.4.96 the centrally defined method specific targets for Family Planning have been replaced by:

1. need assessment and fulfillment through decentralised PHC based planning and implementation of the programme.
2. improved access and quality of comprehensive reproductive and child health services.

3.1.41 It is envisaged that this shift will enable the increasingly aware population to access available facilities so that they fulfill their reproductive goals and enable the nation to rapidly attain population stabilisation and improvement in quality of life of all the citizens.

3.1.42 The large size of the population in the age group 15-50 (60%), unmet need for contraception (20%) and high wanted fertility because of high IMR (20%) are the three major causes for the current high birth rates. During the Ninth Plan efforts will be to meet all the unmet needs for contraception by 2002 AD, and to achieve a reduction in the IMR and MMR through effective implementation of Reproductive and child health Programme .

3.1.43 If all these efforts to provide essential services to the population to meet their reproductive goals succeed, it might be possible for the country to achieve the TFR of 2.1 by 2010; this achievement in turn will enable the country to achieve population stabilisation at a substantially lower level well head of the projected year for population stabilisation. It should however be realised that even if all the efforts for achieving TFR of 2.1 are successful country's population will continue to grow during the next few decades. Adequate provision for meeting the minimum essential needs of this growing population and social sector provision to enable them to access requirements for human development have to be made during the next few decades.

Education, Culture, Youth Affairs and Sports

3.1.44 Education holds the key for increasing awareness of the population of the methods for improving their quality of life through appropriate utilisation of available resources, opportunities and facilities. Ample data exists to clearly demonstrate that investment in primary education specially education to women and girl children can play an important role in improving and sustainable on-going developmental efforts. The commitment for universal primary education and adult literacy in the past has resulted in marked improvement in literacy rates over the last five decades; however the target of universal primary education continues to elude achievement. In view of this, a special thrust under BMS will be given during the Ninth Plan so that the Nation achieves full literacy by 2005. Pre-vocational, vocational training in school and technical training aimed at providing skilled human resource for accelerated industrial and agrarian development is another thrust area of the Ninth Plan. Adequate opportunities will be provided for higher education as it is necessary for meeting the human resources required for the tasks of planning, teaching, research and similar activities. In order that the country's requirement of social scientists, creative artists and theoreticians is adequately catered to appropriate investment will be ensured in these areas of higher education. Youth will be involved in the task of nation building focussing their energies strongly in programmes of environmental protection as well as health and family-life education. Creating widespread awareness for physical and mental fitness starting from the school stage onwards and making youth and sports activities an integral part of every stage of education will be the cherished goals.

Labour Employment and Manpower

3.1.45 India is the country with the second largest population in the world. Planned optimal utilisation of the human resources will not only fuel economic development but also ensure improvement in human resources of life of the citizens. Manpower development to provide adequate labour force, of appropriate skills and quality to different sectors essential for rapid socioeconomic development and elimination of the mismatch between skills required and skills available has been the major focus of activity during the last fifty years. Employment generation in Public, private and voluntary sectors as well as providing enabling environment for both wage and self employment has received due attention both in urban and rural areas. Attempts have also been made to eliminate bonded labour, employment of children and women in hazardous industries and minimising occupational health hazards.

3.1.46 In addition to the attention paid for employment generation, elimination of such undesirable practices as child labour, bonded labour, ensuring workers safety and social security, labour welfare and providing necessary support measures for sorting out problem relating to employment of both male and female workers in different sectors will receive priority attention during the Ninth Plan period. It is also envisaged that the employment exchanges will be reoriented so that they become the source of labour related information, employment opportunities and provide counseling and guidance to employment seekers.

Urban Development, Housing, Water Supply and Civic Amenities

3.1.47 Rapid urbanisation over the last fifty years has resulted in steep increase in urban population; urban India contributes 45-50% of the GDP. The projections regarding urban population made by the Technical Group on Population projections is given in Table 3.1.6. Ongoing accelerated economic growth is expected to further increase growth of urban population. In spite of all the developmental efforts the demand for urban basic services like safe drinking water supply, sanitation including management of solid and liquid waste, urban transport has by far outstripped the availability. The needs for improvement in the urban infrastructure have not been fully met and there has been a perceptible deterioration in urban environment. During the Ninth Plan period this challenging task of meeting the felt needs for urban basic services and development of urban infrastructure will be addressed through decentralisation, innovative mechanisms for funding the urban basic services programme as also devising new methodologies for dealing with sub-sectoral issues.

Empowerment of women and development of children

3.1.48 Ample data exists indicating that undernutrition and child mortality rates are higher in girls; to a large extent this has been attributed the existing gender disparity in feeding practices and health care seeking behaviour of the parents. Health education efforts are underway to eliminate these. The National Plan of Action for the Girl Child on the theme of "survival protection and development" has been evolved and is being implemented by the concerned Departments. Efforts for universalisation of ICDS and intersectoral cooperation between concerned sectors to improve both child survival and development are underway. These efforts will be continued and augmented in the Ninth Plan period.

3.1.49 Empowerment of women to be the agents of social change and development has been recognised as one of the major objectives during the Ninth Plan. With increasing literacy,

awareness about opportunities, reduction in family size and time required for childbearing and child rearing, it is likely that there will be increasing number of women who will be seeking employment on full time or part time basis. Their entry into this sphere of economic activity and income generation will be of considerable significance specially to small scale sector, home-based agro, agriculture and handicrafts production. While encouraging this development, it is essential to take steps to prevent economic exploitation of women; efforts will be directed to prevent or reduce the potential adverse health impact of dual stress of household work and economically productive activities on women. The draft National Policy on empowering, when it comes into action, is expected to meet these goals.

Empowerment of Socially Disadvantaged Groups

3.1.50 One of the objectives of Planning is to ensure equitable distribution of yields of development among all segments of population. In order to ensure equity social welfare, and developmental programmes have been taken up over the last five decades among the disadvantaged segments of the population. Developmental activities had been directed towards socio-economic upliftment of disadvantaged groups such as SCs, STs, OBCs and minorities. The initial efforts during the fifties and sixties were through designing and implementation of programmes for the welfare of these groups; removal of economic and social disability prevalent amongst special groups through educational development, economic development and provision of social justice were the focus of efforts during the seventies and eighties. These efforts did improve the situation to some extent but large segments of these groups still did not get covered through the ongoing programmes. The thrust during the Ninth Plan will be to improve coverage, empower these groups and to provide an enabling environment for them to thrive and develop, so that they become agents of social change and economic development.

Social Welfare:

3.1.51 Social Welfare deals with the Welfare and Development of those vulnerable groups who fail to cope up with the rapid socioeconomic changes and started lagging behind the rest of the society. They include - persons with disabilities, social deviants who come in conflict with law, and the other disadvantaged. Since Independence efforts were made to improve the lot of these people through effective policies and programmes. However, a lot needs to be done to ensure their well-being. Therefore, the Ninth Plan proposes to adopt a three - fold strategy specific to each group namely, empowering the disabled, reforming the social deviants and caring for the other disadvantaged.

TABLE- 3.1.1**PROJECTED POPULATION OF INDIA-1996-2016**

YEAR	INDIA (in '000)	
	MALE	FEMALE
1996	484859	449360
1997	492571	457307
1998	500359	465249
1999	508174	473150
2000	515984	480961
2001	523780	488606
2002	531395	496212
2003	539344	504190
2004	547556	512468
2005	555964	520971
2006	564498	529628
2007	573068	538378
2008	581573	546999
2009	590018	555495
2010	598407	563876
2011	606744	572145
2012	614749	580286
2013	622966	588608
2014	631395	597111
2015	640034	605793
2016	648886	614657

SOURCE:- REPORT OF THE TECHNICAL COMMITTEE
ON POPULATION PROJECTIONS CONSTITUTED
BY PLANNING COMMISSION 1996,
REGISTRAR GENERAL OF INDIA.

TABLE-3.1.2

PERCENTAGE DISTRIBUTION OF PROJECTED POPULATION BY AGE AND SEX
1996-2016, INDIA

	1996			2001			2011			2016		
	M	F	P	M	F	P	M	F	P	M	F	P
0-4	12.6	13.0	10.6	10.6	10.8	10.7	10.1	10.2	10.1	9.7	9.7	9.7
5-9	13.2	13.3	11.3	11.3	11.6	11.5	9.4	9.4	9.4	9.3	9.3	9.3
10-14	11.9	11.5	12.1	12.1	12.1	12.1	8.9	9.0	8.9	8.7	8.7	8.7
15-19	9.9	9.5	11.0	11.0	10.5	10.8	9.7	9.9	9.8	8.3	8.3	8.3
20-24	8.6	9.0	9.1	9.1	8.7	8.9	10.4	10.3	10.3	9.0	9.1	9.1
25-29	7.8	8.5	7.9	7.9	8.2	8.0	9.4	8.9	9.2	9.7	9.5	9.6
30-34	7.0	7.2	7.2	7.2	7.7	7.4	7.8	7.3	7.6	8.7	8.2	8.5
35-39	6.2	6.0	6.4	6.4	6.6	6.5	6.7	6.9	6.8	7.2	6.8	7.0
40-44	5.3	5.0	5.6	5.6	5.5	5.5	6.0	6.5	6.2	6.2	6.4	6.3
45-49	4.4	4.2	4.7	4.7	4.5	4.6	5.3	5.4	5.4	5.5	5.9	5.7
50-54	3.6	3.4	3.9	3.9	3.7	3.8	4.6	4.6	4.5	4.8	5.0	4.9
55-59	2.9	2.8	3.1	3.1	3.0	3.1	3.7	3.6	3.6	4.0	4.0	4.0
60-64	2.4	2.4	2.4	2.4	2.4	2.4	2.9	2.8	2.9	3.2	3.1	3.1
65-69	1.7	1.8	1.9	1.9	1.9	1.9	2.1	2.1	2.1	2.3	2.4	2.4
70-74	1.3	1.2	1.3	1.3	1.3	1.3	1.4	1.5	1.4	1.6	1.6	1.6
75-79	0.5	0.5	0.8	0.8	0.8	0.8	0.9	1.0	1.0	0.9	1.0	1.0
80+	0.8	0.8	0.6	0.6	0.6	0.6	0.8	0.8	0.8	0.8	0.9	0.9
ALL AGE	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE:- REPORT OF THE TECHNICAL COMMITTEE ON POPULATION PROJECTIONS CONSTITUTED BY
PLANNING COMMISSION, 1996. RGI, INDIA

TABLE-3.1.3**PROJECTED LEVELS OF TFRs FOR MAJOR STATES AND INDIA, 1996-2016**

Major States Year	SRS 1991	Period			
		1996-2001	2001-2006	2006-2011	2011-2016
Andhra Pradesh	3.00	2.27	2.03	1.88	1.78
Assam	3.50	2.82	2.55	2.33	2.17
Bihar	4.40	2.92	2.53	3.19	2.93
Gujarat	3.10	2.73	2.48	2.26	2.11
Haryana	4.00	3.25	2.93	2.68	2.47
Karnataka	3.10	2.54	2.31	2.14	2.01
Kerala	1.80	1.62	1.61	1.60	1.60
Madhya Pradesh	4.60	3.99	3.72	3.49	3.27
Maharashtra	3.00	2.51	2.28	2.10	1.97
Orissa	3.30	2.64	2.36	2.16	2.01
Punjab	3.10	2.65	2.43	2.25	2.11
Rajasthan	4.60	3.91	3.58	3.30	3.06
Tamil Nadu	2.20	1.87	1.75	1.69	1.65
Uttar Pradesh	5.10	4.75	4.50	4.27	4.05
West Bengal	3.20	2.56	2.31	2.13	1.99
India(Pooled)	3.64	3.13	2.88	2.68	2.52
India	3.60	3.05	2.75	2.52	2.33

Source:- REPORT OF THE TECHNICAL COMMITTEE ON POPULATION
CONSTITUTED BY PLANNING COMMISSION 1996,RGI,INDIA

TABLE -3.1.4**YEAR BY WHICH TFR OF 2.1 WILL BE ACHIEVED**

	YEAR BY WHICH PROJECTED TFR WILL BE 2.1
INDIA	2026 *
ANDHRA PRADESH	2002
ASSAM	2015
BIHAR	2039
GUJARAT	2014
HARYANA	2025
KARNATAKA	2009
KERALA	ACHIEVED IN 1988
MADHYA PRADESH	BEYOND 2060
MAHARASHTRA	2008
ORISSA	2010
PUNJAB	2019
RAJASTHAN	2048
TAMIL NADU	ACHIEVED IN 1993
UTTAR PRADESH	BEYOND 2100
WEST BENGAL	2009

* BASED ON POOLED ESTIMATES OF TFR

SOURCE:- REPORT OF TECHNICAL COMMITTEE ON POPULATION PROJECTIONS
CONSTITUTED BY PLANNING COMMISSION 1996,RGI,INDIA

TABLE-3.1.5

**PROJECTED LEVELS OF EXPECTATION OF LIFE AT BIRTH- 1996-2016
INDIA AND MAJOR STATES**

	MALE				FEMALE			
	1996-2001	2001-2006	2006-2011	2011-2016	1996-2001	2001-2006	2006-2011	2011-2016
	1	2	3	4	5	6	7	8
ANDHRA PRADESH	61.55	62.79	63.92	64.94	63.74	65.00	66.16	67.23
ASSAM	57.34	58.96	60.44	61.77	58.84	60.87	62.70	64.36
BIHAR	63.55	65.66	67.46	69.98	62.07	64.79	67.09	69.05
GUJARAT	61.53	63.12	64.60	65.76	62.77	64.10	65.45	66.45
HARYANA	63.87	64.64	65.50	66.03	67.39	60.30	70.00	70.00
KARNATAKA	61.73	62.43	63.10	63.73	65.36	66.44	67.43	68.35
KERALA	70.69	71.67	72.00	72.00	75.00	75.00	75.00	75.00
MADHYA PRADESH	56.83	59.19	59.20	60.70	57.21	58.01	59.80	61.40
MAHARASHTRA	65.31	66.75	67.98	69.02	68.19	69.76	71.13	72.00
ORISSA	58.52	60.05	61.44	62.70	58.07	59.71	61.23	62.63
PUNJAB	68.39	69.78	70.88	71.74	71.40	72.00	72.00	72.00
RAJASTHAN	60.32	62.17	63.79	65.21	61.36	62.80	65.22	66.84
TAMIL NADU	65.21	67.00	68.45	69.64	67.58	69.75	71.54	72.00
UTTAR PRADESH	61.20	63.54	65.48	67.10	61.10	64.09	66.60	68.72
WEST BENGAL	64.50	66.08	67.42	68.57	67.20	69.34	71.11	72.00
INDIA(Pooled)	62.30	63.87	65.65	67.04	65.27	66.91	67.67	69.18
INDIA	62.36	64.11	65.63	66.93	63.39	65.43	67.22	68.80

SOURCE:- REPORT OF THE TECHNICAL COMMITTEE ON POPULATION PROJECTIONS CONSTITUTED BY
PLANNING COMMISSION,1996, RGI INDIA

TABLE-3.1.6**PROJECTED URBAN POPULATION OF INDIA
AS ON 1st MARCH, 1996-2016**

(IN '000)

INDIA		
YEAR	MALE	FEMALE
1996	133661	120745
1997	137163	124387
1998	140738	128092
1999	144373	131849
2000	148060	135646
2001	151796	139460
2002	155532	143327
2003	159420	147367
2004	163442	151563
2005	167579	155896
2006	171814	160347
2007	176119	164901
2008	180463	169488
2009	184849	174110
2010	189277	178770
2011	193749	183466
2012	198173	188194
2013	202724	193053
2014	207404	198046
2015	212215	203174
2016	217160	208441

Source: Report of the Technical Committee on Population
Projections constituted by Planning Commission 1996.
Registrar General of India.

3.2 BASIC MINIMUM SERVICES

3.2.1 The Minimum Needs Programme (MNP) was launched in the Fifth Five Year Plan. Its objective was to ensure a basic minimum standard of life for all sections of people living in the rural areas of the country. The strategy was to establish a network of facilities to attain an acceptable level of social consumption in respect of selected items within a stipulated time-frame. The rationale was twofold. First, it was felt that the competing demands for greater investment in other development sectors left relatively small allocations for social services. In the face of resource constraint, the tendency was to impose economy measures or cuts in the allocations for social sectors. Second, there were wide inter-State differences in the provision of social services and infrastructure which called for governmental intervention.

3.2.2 Initially, there were eight components of MNP, viz., elementary education, rural health, rural water supply, rural electrification, rural roads, rural housing, environmental improvement of urban slums and nutrition. While adult education was added to the list of MNP components in the Sixth Plan, rural domestic energy, rural sanitation and public distribution system were added during the Seventh Plan.

3.2.3 While in some areas of MNP, great strides have been made since the launching of the programme, for certain other components of the programme, the extent of achievement are below acceptable levels. Further, the inter-State differences in the levels of achievement still remained very high.

3.2.4 Recognising the shortfall in the achievement of the basic minimum standard of life for all sections of the people, a bold initiative was taken by the Chief Ministers Conference held in July, 1996 to ensure access of all to certain Basic Minimum Services (BMS) in a time-bound manner.

3.2.5 The Conference endorsed the seven basic minimum services as of paramount importance in securing a better quality of life for the people, especially those residing in rural areas. Further, it observed that it would be in the best interests of the country, if time-bound action plans are formulated to secure full coverage of the country with these seven basic services by 2000 AD. This was essential for the rapid growth of the economy and for social justice and hence, these basic services were to constitute the core of the social sector development plan.

3.2.6 The seven basic services identified for priority attention are:

1. 100 per cent coverage of provision of safe drinking water in rural and urban areas;
2. 100 per cent coverage of primary health service facilities in rural and urban areas;
3. Universalisation of primary education;
4. Provision of Public Housing Assistance to all shelterless poor families;
5. Extension of Mid-day Meal Programme in primary schools, to all rural blocks and urban slums and disadvantaged sections;
6. Provision of connectivity to all unconnected villages and habitations; and

7. Streamlining of the Public Distribution System with focus upon the poor.

Salient Features of BMS Programme

- Objective is to ensure access of all the people living in both rural and urban areas to the seven Basic Services in a time bound manner.
- Over and above the allocations being made by the States the Centre provides Additional Central Assistance (ACA) to the States and UTs.
- States and UTs have flexibility to make inter se allocation of ACA among BMS Components depending on their priorities.
- ACA for BMS increased from Rs.2244 crore in 1996-97 to Rs.2970 crore in 1997-98 and further to Rs.3410 crore in 1998-99.
- Funds for BMS are earmarked in the Annual Plan of the States/UTs.
- States and UTs are required to ensure a minimum amount of outlay for BMS in their Annual Plans.
- Release of ACA is contingent on satisfactory utilisation of funds provided for the BMS.

3.2.7 The provision of funds for items covered under the BMS are primarily part of the Plan of a State/UT, and are earmarked so that no diversion is possible. In addition, Centrally Sponsored Schemes were introduced in order to provide additional resources to supplement the resources of the States in some critical areas e.g. the scheme of Operation Black Board in the education sector and the Accelerated Rural Water Supply Scheme for drinking water in rural areas. In 1996-97, the Government of India introduced a budget head for providing additional funds for BMS in the form of Additional Central Assistance

(ACA). Therefore, the total funds available for BMS is from the State Plans, the selected Centrally Sponsored Schemes as also the ACA. The ACA is being released monthly by the Finance Ministry to the State Governments in twelve equal instalments. The ACA is in the form of 70 per cent loan and 30 per cent grant for the Non-Special Category States. For the Special Category States, it is in the form of 90 per cent grant and 10 per cent loan.

3.2.8 During the Ninth Plan, the ACA would be distributed amongst States on the basis of BMS infrastructural gaps. This exercise to assess the infrastructural gaps is being carried out by the Planning Commission in consultation with State governments. In respect of the North-East States, the 1996-97 allocations have so far been protected and are not based on the actual gaps in infrastructure.

3.2.9 In order to ensure that adequate investments are made for BMS sectors, the Planning Commission has used the notion of Minimum Adequate Provision (MAP) to be calculated on the following basis: $MAP = \text{Actual Expenditure for 1995-96} + \text{ACA} + 15\% \text{ of ACA as States share}$. However, for the special category States/UTs, the 15 per cent contribution has been waived.

3.2.10 While entire MAP will be earmarked in the Plan of a State/UT, there will be no sector-wise earmarking. Funds allocated for BMS can be spent on any of the BMS components and on any permissible item under each sector in accordance with the State's own priorities. The States can allocate outlays for BMS in excess of the MAP in the initial stage. However, at the Revised Estimate stage, they could reduce their proposed outlay on BMS but under no circumstances below the MAP. Failure to allocate and utilise MAP requirements would result in a curtailment of Central Assistance in the following year.

3.2.11 A brief discussion of each of the BMS components is given in the following paragraphs:

Primary Health Facilities

3.2.12 The primary health care infrastructure provides the integrated promotive, preventive, curative and rehabilitative services to the population close to their residence. It is estimated that over 80 per cent of the health care needs of the population can be met by the primary health care infrastructure; only the rest may require referral to the secondary or tertiary health care institutions.

Rural Primary Health Care

3.2.13 During the Sixth Plan, the national norms for a three tier rural primary health care infrastructure consisting of the Sub-Centre (SC), Primary Health Centre (PHC) and the Community Health Centre (CHC) were evolved. While the Sixth and the Seventh Plan witnessed major expansion of the rural health care infrastructure, the Eighth Plan concentrated the efforts on development, consolidation and strengthening of the existing health care infrastructure to bring about improvement in quality and outreach of services. The national norm for a Sub-Centre vary between 3000-5000 population depending upon terrain and location; on similar considerations the norm for a Primary Health Centre is 20,000-30,000 population; for four PHCs there should be a Community Health Centre. In accordance with these national norms the requirement for population of 1991 are: SC 1,34,108, PHC 22349 and CHC 5587; as against this there are only 1,32,730 subcentres, 21854 PHCs and 2424 CHCs as of 30.6.96. There is a gap between the number required and the functioning centres in all the three types of primary care institutions but the gap is widest in the CHCs which provide the critical linkage and are the First Referral Units; this gap shall be bridged during the Ninth Plan rapidly so as to provide urgently needed care for patients with complications referred from SC/PHC; the states shall during Ninth Plan restructure the existing sub-district/ taluka hospital and block level PHCs into functioning CHCs to the extent possible; similarly existing rural hospital and dispensaries have to be restructured wherever possible to meet the requirements in PHC's. Such an exercise would obviate the need for creating additional infrastructure and manpower to the extent possible. There are wide inter and intra State disparities in health care infrastructure. This will be attended to on an urgent basis so as to improve quality of service in poorly performing districts. An initiative in this respect was already taken during the Eighth Plan through the Social Safety Net Programme.

3.2.14 To fill the gap in physical infrastructure, 1378 SCs, 495 PHCs and 3163 CHCs are required to be established at a total cost of approximately Rs.7000.00 crore. The total resources required for providing essential equipment for strengthening and upgradation of rural primary health care infrastructure has been estimated to be Rs.1600.00 crore. In addition there are substantial gaps in critical manpower required (type of personnel and number indicated in the Section on Health). The estimates of the total requirement of funds to bridge the critical gap in manpower works out to Rs.1400.00 crore annually. Finally for essential drugs and supplies, mobility and other recurring expenses an amount of Rs.2000.00 crore will be required annually.

Urban Primary Health Care:

3.2.15 Nearly 30 per cent of India's population live in urban areas. Due to urban migration and massive inflow of population to the towns and cities, the health status of urban slum dwellers is at times worse than the rural population. There has not been any well planned and organised efforts to provide primary health care services to the population within 2-3

Kms. of their residence and to link primary, secondary and tertiary care institutions in geographically defined areas. As a result there is either a non-availability or at times under-utilisation of available primary health care facilities and consequent over-crowding at the secondary and tertiary care centres.

3.2.16 The NDC endorsed the Approach Paper to the Ninth Plan emphasising the need to create a well-structured organisation of urban primary health care aimed at providing basic health and family welfare services to the population within one-two kilometers of their dwellings.

3.2.17 Primary health care infrastructure in urban areas should consist of health and family welfare posts to cover 10,000 to 15,000 population manned by an ANM and one male multi-purpose worker with a helper. Urban health and family welfare centre should cater to about 1-1.5 lakh population. These centres should be provided with two Medical Officers and other required supporting staff; they will provide preventive, promotive, curative and rehabilitative services and essential maternal, child health and contraceptive care.

3.2.18 As on 30.6.1996, 871 urban health and family welfare posts and 1083 health and family welfare centres have been established. The number, type and quality of manpower in these institutions located predominantly in urban slums vary considerably. To meet the requirement for primary health care of the 1996 urban population, 19480 urban health and family welfare posts and 952 health and family welfare centres have to be established. In order to cover the urban population especially the slum dwellers effectively it may be necessary to redeploy the personnel in the existing centres, strengthen the centres with appropriate manpower besides providing essential equipment, mobility and drugs.

3.2.19 For providing essential physical infrastructure for urban primary health care a sum of Rs.900.00 crores will need to be invested. The urban posts, hospitals/dispensaries were established several years ago, thus requiring strengthening and re-equipping at the cost of Rs.100.00 crore. For recurring cost of critical manpower, essential drugs and supplies and providing mobility, Rs.400.00 crore would be annual expenditure.

3.2.20 Funds for urban and rural primary health care infrastructure are provided mainly from the earmarked funds for health under the BMS in the State Plan and funds from EAPs. The manpower costs are mainly met by the State, with some funding from Centrally Sponsored Family Welfare programme and national disease control programmes. Additional Central Assistance under BMS initiated during 1996-97, is yet another funding source which must be utilised for bridging critical gaps. However there is a large gap between the availability of total funds and the minimum stated requirements.

3.2.21 While every effort shall continue to be made to provide additional financial resources for primary health care in urban and rural areas as a part of BMS, it is imperative on the part of the States to constantly review the essential needs so as to ensure optimum functioning and utilisation of existing institutions. Some of the funding for this effort will have to be internalised within the State budget. The State will need to identify poorly performing districts and provide essential funds to meet their requirements so that existing gaps in the health and demographic indices among these districts and the rest of the country could be minimised.

Universalisation of Primary Education

3.2.22 In order to achieve universalisation of primary education (UPE), it had been estimated for the year 1993-94 that approximately 142 million children in the age-group 6-11 years would have to be provided primary schooling out of which 69 million would be girls. Therefore, UPE by the year 2000 will also have to take into account the additional children who would come into the age-group 6-11 years by that year. As against this, the total number of out of school children i.e. children who are not enrolled (44 million) and children who drop out (35 million) is estimated to be 79 million. Among these, as high as 43 million are girls.

3.2.23 The latest available data on drop-out rates in class 1-V for the year 1996-97 reveal that the drop-out rate for the country as a whole was 38.95 per cent. It was 39.37 % among boys and 38.35% among girls. Further, there were wide inter-State disparities in retention and drop-out. As against the above mentioned national average, the total drop-out rates for Bihar was as high as 61.78 per cent. For boys, it was 60.85% while for girls the figure was as high as 63.44 per cent.

3.2.24 According to the Sixth All-India Education Survey, 83.4 per cent of the habitations in the country were served by a primary school within 1 km. of walking distance. However the habitations without primary schools/ sections as per the norm of 1 km. distance is as high as 1.76 lakh habitations. While 45.25% of these habitations are having population less than 300, about 40000 habitations have population of 300 or more who have to be provided primary schools.

3.2.25 Apart from availability or access to primary school within a walking distance of habitations, there are a number of other problems which are required to be tackled on an urgent basis. Some of these are low enrolment of girls, high drop-out rates, education of disadvantaged groups, lack of physical infrastructure like school buildings, teachers, teaching learning equipments and the problem of working children, low levels of achievement and regional disparities.

3.2.26 Education being a subject in the Concurrent List, both States governments and the Centre provide funds for it. The Centrally Sponsored Schemes of Operation Blackboard, Non Formal Education, Teachers Training and the District Primary Education Project supplement, in large measure, the efforts of the State government.

3.2.27 In pursuance of the adoption of the National Policy on Education (NPE), 1986, the Scheme of Operation Blackboard (OB) was introduced as a Centrally Sponsored Scheme (CSS) to provide certain minimum facilities in the primary schools in order to increase enrolment and reduce drop out. The OB norms aimed at providing at least one additional teacher preferably a female teacher, in single teacher schools, at least two reasonably large all weather classrooms for every school and a set of teaching/learning equipment. Under OB, 1.74 lakh classrooms have been constructed, 1.47 lakh teachers have been appointed and 5.23 lakh primary schools have been provided with the teaching/learning material. According to the available statistics, teaching/learning equipment have been sanctioned to almost 100% primary schools and 96% of the targetted posts of teachers had been sanctioned for single teacher schools. Even after the implementation of the OB Scheme for full five years, a large number of schools were functioning without proper buildings. Selected statistics of the Sixth All India Education Survey with the reference date

30th September 1993 reveal that out of a total number of 5.70 lakh primary schools in the country, 38,657 schools still had no buildings in rural areas.

3.2.28 In order to address the needs of the drop-outs and the working children, the Non-Formal Education (NFE) scheme is being implemented. There are at present 2.79 lakh NFE centres in operation wherein about 70 lakh children are enrolled. However, the quality of education being imparted in the NFE centres needs to be improved as well as mechanisms to ensure greater accountability for various functionaries in the system need to be evolved.

3.2.29 There is an urgent need to impart necessary training to primary school teachers. This can reduce drop-outs and the high attrition rate of primary school teachers, besides enhancing the quality of education being imparted at the primary stage. The various Centrally Sponsored Schemes for teachers training initiated in pursuance of the NPE, 1986 need to be strengthened and implemented expeditiously.

3.2.30 The District Primary Education Programme (DPEP) aims at providing access to primary education for all children, reducing drop-out rates to less than 10 per cent, increasing the learning achievement of primary school students by at least 20 per cent and reducing the gap among gender and social groups to less than 5 per cent in the educationally backward districts with female literacy below the national average and districts where the Total Literacy Campaign (TLC) have been successful leading to enhanced demand for primary education. The DPEP needs to be implemented vigorously.

3.2.31 Conservative estimates of financial implications for achieving UEE place the requirement at over Rs.40,000 crores. Assuming that at least two third of this amount is required for achieving UPE, about Rs.26,000 crore need to be allocated for this component of Basic Minimum Services.

Safe Drinking Water For All

3.2.32 The existing norms for rural water supply is 40 litres of drinking water per capita per day (LPCD) and a public standpost or a handpump for 250 persons. Further, the sources of water supply should be within 1.6 km horizontal distance in plains or 100 metres elevation distance in hills. For cattle in DDP areas an additional 30 LPCD is recommended. Against this, the norm for urban water supply is 125 LPCD piped water supply with sewerage system, 70 LPCD without sewerage system and 40 LPCD in towns with spot sources. At least one source for 20 families within a maximum distance of 100 metres has been laid down.

3.2.33 As against these norms, the studies as on 1.4.1997 reveal that there were 61724 habitations without any safe source of drinking water (called not covered habitation), 3.78 lakh habitations which were partially covered and 1.51 lakh habitations which had quality problems like excess flouride, salinity, iron and arsenic etc. Apart from the provision in the state plans for water supply, there are major Centrally Sponsored Schemes called the Accelerated Rural Water Supply Programme and the Urban Water Supply Programme for small towns with population of less than 20,000. In order to cover this backlog in rural drinking water supply, it has been estimated that approximately Rs.40000 crore will be required including the funds required for operations and maintenance and funds to tackle quality problems. Similarly, the estimates of investment required for full coverage of urban water supply is Rs.30734 crore.

Nutrition

3.2.34 There are two major programmes which provide food supplements to the vulnerable segments of the population; these are the Special Nutrition Programme (SNP) and the Midday Meal Programme (MDM).

3.2.35 Special Nutrition Programme is one of the important component of the Integrated Child Development Services Programme. The target group receiving food supplementation are children between the age of 6 months to 6 years and pregnant and lactating mothers. Efforts are made to provide 300 calories and 10 grams of proteins per child, 500 calories and 15 to 20 grams of proteins for pregnant/nursing women and 600 calories and 20 gram of proteins to severely malnourished children as food supplements at prevailing prices. The beneficiaries receive the supplements through ICDS infrastructure which is funded by the Dept of Women and Child Development. The cost of food supplements is met by the State Governments and UTs through the State plan budget. As of 1996, there are 4,200 ICDS blocks with 5,92,571 anganwadis in the country; 426.65 lakh beneficiaries are covered. By 2002, it is planned to operationalise ICDS programme in 5614 blocks with 804671 anganwadis; 579.36 lakh beneficiaries can be covered by these. Funds required for covering all these beneficiaries under SNP in the period 1997- 2002 is Rs 6792.29 crore.

3.2.36 The Programme of Nutritional Support to Primary Education popularly known as the Mid-day Meal scheme, was launched in 1995 as a fully funded Centrally Sponsored Scheme. Under this scheme, all school children in the primary schools in government and government-aided schools are to be covered. Ideally, a hot meal is provided to the children at school but for 10 months in a year. The foodgrains are delivered directly at the district level by the Food Corporation of India under instructions from the Department of Education in the Government of India. So far, the scheme has not been universalised but once it is done the annual expenditure would be of the order of Rs.2226 crore in 1997-98 going up each year on account of the increase in cost.

3.2.37 In so far as nutrition is concerned, the funds required are in the nature of recurring costs and not for the creation of infrastructure for delivery of this service. Hence, there cannot be any time-bound plan as there will be recurring expenditure until such time as poverty has been eradicated.

Housing

3.2.38 According to 1991 census, there are 3.41 million rural households who are shelterless. Apart from this, about 10.31 million households live in unserviceable katcha houses. Therefore, the total housing shortage is about 13.72 million. It should be pointed out that this shortage covers both the poor and the non-poor households. In addition it has been estimated that another 10.75 million houses would be required between 1991-2002 AD on account of an average annual growth of 0.89 million people without shelter. Thus around 24.5 million houses would have to be constructed by 2002 AD. However, it is estimated that 6.8 million houses would have already been constructed under various housing schemes of both the Centre and the States. Therefore, the total housing shortage would be approximately 17.67 million. Of this, 10.3 million would require upgradation and 7.36 million units would have to be newly constructed. The Centrally Sponsored Scheme for providing shelter to the shelterless poor is called the Indira Awaas Yojana, wherein free houses are distributed to targetted beneficiaries belonging to the poor segments, specially those who belong to SCs/ STs or freed bonded labour. Under this programme the Centre

provides 80 per cent of the funds and the States the remaining 20 per cent . This is a major initiative taken by the Central government.

3.2.39 The financial implications of this are as under: The average unit cost of a house is estimated at Rs.20900 and therefore construction of 7.36 million new houses would cost Rs.15382 crore. In addition, upgradation of 10.3 million houses at an average unit cost of Rs.10,000 would amount to Rs.10300 crore. Thus, the total funds required to alleviate the housing shortage would be in the region of Rs.25700 crore. Of the total shortage, some would be financed by beneficiaries themselves particularly among those belonging to the non-poor families. Hence, the financial implications for the Government would be less than the estimated sum of Rs.25700 crores. There would also be some credit-linked housing schemes with part subsidy which would also reduce the financial burden of the Government. However, it is difficult to make a proper assessment of the funding required to meet the housing demand of the shelterless poor more precisely.

Rural Connectivity

3.2.40 Under the Minimum Needs Programme, connectivity of all villages was the long-term objective. However, it was envisaged that villages with population of 1500 and above and villages with population of 1000 to 1500 would be connected by all weather roads' by the end of the Eighth Plan. It is estimated that about 85 per cent of such villages would have been connected by all weather roads by the end of the Eighth Plan.

3.2.41 In the Ninth Plan, the target is to ensure that 85 per cent of the village population (not 85 percent of the villages) are connected by all weather roads. It is estimated that this would cost around Rs.13000 crore (excluding black topping) over a period of 5 years. However, if there has to be 100 per cent connectivity it would involve an expenditure of about Rs.65000 crore. This difference is on account of the fact that the cost of connecting a large number of small villages is very high particularly in the hilly and remote areas of the country with small population. Hence, it is suggested that 85 per cent of the population be covered first at an estimated cost of Rs.13000 crore; and that villages with population of 1000 and above be completely covered. As much as 75 per cent of villages with population of 500 to 1000 should also be covered on priority. However, in the hill areas and also in tribal, coastal, riverine and desert areas 100 per cent of the villages with population 500 should be covered.

3.2.42 While there is no CSS for rural roads, approximately 20-25% of the outlay on JRY and EAS is estimated to be spent on rural roads, amounting to approximately Rs.1000 crore.

Public Distribution System

3.2.43 The Public Distribution System has been an important part of the Government's strategy for ensuring food security. Foodgrains, mainly rice and wheat, are distributed through the network of Fair Price Shops. The Government procures and stocks the foodgrains which are then released for distribution through the PDS network. However, until recently it provided entitlement to all consumers without special focus on the poor. A fall-out of this has been that States like Orissa, Bihar, Madhya Pradesh, and Uttar Pradesh which have the highest incidence of poverty have the lowest per capita off-take from PDS. Consequently, a recent initiative, the targetted PDS (TPDS), was introduced w.e.f. 1st June, 1997. Under this, a quantity of 10 kilograms of foodgrains are to be issued per month to every Below-Poverty-Line (BPL) family at highly subsidised rates. The non-BPL families would also be entitled to foodgrains but on the same pattern as the existing PDS. In

fact, while the issue prices would be about 40 per cent of the economic cost for the BPL families it would be 80 per cent for the above-poverty-line families. The subsidy implications of the TPDS at 1997-98 prices works out to about Rs.6000 crore and the carrying cost to an additional cost of Rs.1500 crore. This would be the recurring cost which would increase each year as the procurement price goes up.

3.2.44 The provision for the food subsidy accrues to the non-Plan budget of the Central Government. However, for strengthening the delivery system, schemes for construction of godowns, purchase of mobile vans/trucks and manpower training are funded from the Plan. The first two schemes are largely confined to remote, inaccessible and hilly areas to augment shortage in storage capacity through construction of small godowns and also to distribute foodgrains in these areas via mobile vans where Fair Price Shops are not found feasible. The financial implications of these schemes are small, assessed at Rs.115 crore for the Ninth Plan period.

3.3 EDUCATION

SECTION - I

INTRODUCTION

3.3.1 Education is the most crucial investment in human development. Education strongly influences improvement in health, hygiene, demographic profile, productivity and practically all that is connected with the quality of life. The policies and approach to investment in the Education sector and its development in the next decade assume critical significance from this standpoint

➤ The Ninth Plan treats education as the most crucial investment in human development. The Prime Minister's Special Action Plan (SAP) has identified the expansion and improvement of social infrastructure in education as a critical area

3.3.2 The Prime Minister's Special Action Plan (SAP) has stressed the need for expansion and improvement of social infrastructure in the field of education. This goal has been further elaborated in the National Agenda for Governance (NAG) which states: "We are committed to a total eradication of illiteracy. We will formulate and implement plans to gradually increase the governmental and non-governmental spending on education upto 6% of the GDP, this to provide education for all. We will implement the constitutional provision of making primary education free and compulsory up to 5th standard. Our aim is to move towards equal access to and opportunity of educational standards upto the school-leaving stage. We shall strive to improve the quality of education at all levels - from primary schools to our universities." The approach to the 9th Plan has been formulated in the light of these objectives

Elementary Education

3.3.3 The strategy of educational development during the next decade of planning takes into account various emerging factors like (i) the national goal of providing primary education as a universal basic service, (ii) the Supreme Court judgement declaring education to be a fundamental right for children upto 14 years of age, (iii) the need to operationalise programmes through Panchayati Raj Institutions (PRIs) and Urban Local Bodies (ULBs), (iv) the legal embargo on child-labour, (v) the provisions of the Persons with Disabilities Act, 1995, and (vi) heightened awareness of human rights violations in respect of women, children and persons from disadvantaged sections of society. It is also realized that a large number of out-of-school children, who figure neither in school enrolments nor in the calculations of identifiable child-labour, are to be provided access to schooling.

3.3.4 It is equally necessary that the problem of universal elementary education and literacy is tackled through a strong social movement with clearly perceived goals and involving the State and Central Governments, Panchayati Raj Institutions, Urban Local Bodies, voluntary agencies, social action groups, the media and every supportive element in society.

Adult Education

3.3.5 Adult literacy and further education of the literates, being as vital an area of concern as universal elementary education, more intensive efforts will be made to spread literacy in the rural and tribal areas which are lagging behind, with special attention to women and such marginalised groups as small and marginal farmers, landless labourers and educationally neglected tribal groups. For this purpose, a disaggregated and decentralised mode of planning and implementation will be adopted. Interlinkage of the adult education programme with income generation, better health and nutrition, women's empowerment and overall rural development will be focussed upon. At the grass-roots level, people's participation will be ensured in planning and implementation of local programmes.

Secondary Education

3.3.6 In spite of increased enrolment in secondary and higher secondary schools, the age-cohort percentage continues to be low. More importantly, there are disparities in educational access as between the urban, rural and tribal areas. Gender disparities also exist. Secondary education curricula continue to be liberal and oriented to the first degree courses, in spite of the strong advocacy in favour of vocationalisation and investments made to divert students to vocational courses.

3.3.7 The Ninth Plan will lay emphasis on the revision of curricula so as to relate these to work opportunities. Girls and members of disadvantaged groups will be provided with scholarships, hostels and other incentives, for facilitating their participation in secondary education. Compensatory education will be provided, where necessary, for meeting the equity criteria.

3.3.8 Pre-vocational training at the secondary level and employment-oriented courses at the higher secondary level, suited both to industrial and agricultural development, will be provided along with hands-on training. The Open Learning system will be expanded and a wide variety of courses offered. Different types of further education will be made available. In view of the proposed changes in the educational policies and programmes at all levels, the pre-service and in-service training of teachers will be reorganised. The use of new educational technologies made available through Internet and computer facilities will be emphasised for all educational activities.

University and Higher Education

3.3.9 The excellence of our university products and professionals is well acknowledged both at home and abroad. The competitive advantage of the country can be maintained and improved only if the university and higher education sectors perform well. Their contribution to improving our capability to interact effectively with the fast expanding global techno-economic systems has been significant and their potential needs to be harnessed to the full.

3.3.10 A critical overview of higher education in India has brought out a number of issues. Chief among them are the deterioration in quality, the resource crunch leading to

poor infrastructure and the serious problems of governance brought about by the influence of factors and forces extraneous to educational objectives.

3.3.11 The priority for the Ninth Plan will be the expansion of education mainly in the unserved areas and with a focus on improving the coverage of women and the disadvantaged groups, using financial assistance as a leverage to secure better performance of the system, updating of syllabi to enhance their relevance, improvement in internal resource generation and implementation of a model code of governance to reduce non-academic influence in the higher education system.

SECTION II

Post-Independence Achievements

3.3.12 Right from the inception of planning, the crucial role of education in economic and social development has been recognised and emphasised. Efforts to increase people's participation in education and to diversify educational programmes in order to promote knowledge and skills required for nation-building have characterised successive Five Year Plans. Despite a series of problems that the country faced soon after independence, it has been possible to create a vast educational infrastructure in terms of large enrolments and teaching force and massive capabilities for management, research and development.

Institutions

3.3.13 In the fifty years since independence the number of institutions has increased several fold as indicated in Table 3.3.1.

Table 3.3.1

Category of Institutions	1950-1951	1996-1997
Primary Schools ('000)	210	598
Upper Primary Schools ('000)	13	177
Secondary Schools ('000)	NA	73
Higher Secondary Schools ('000)	17 (1961)	25
Pre Degree/Junior Colleges ('000)	-	4
Universities	27	228*

Table 3.3.1 (Concl'd.)		
Category of Institutions	1950-1951	1996-1997
Colleges :		
General (Nos.)	370	6759
Professional (Nos.)	208	1770
Teacher Training (Nos.)		
Schools	782	1234
Colleges	53	697
* Includes Deemed Universities and Institutions of National Importance.		

Enrolment

3.3.14 Enrolments in different types of institutions have recorded a substantial growth. The primary stage enrolment increased from 19.2 million in 1950-51 to 110.40 million in 1996-97, and that of upper primary stage from 3.1 million to 41.06 million. Taking these together, the enrolment in the two stages increased about sevenfold from 22.3 million to 151.45 million. At the high/higher secondary stage, the enrolment increased from 1.5 million in 1950-51 to 24.27 million in 1996-97. There has been a significant increase in the enrolment of girls over this period.

Teachers

3.3.15 The number of teachers working in elementary and secondary schools recorded a six-fold increase from 7.5 lakh in 1951 to 45.28 lakh in 1996, with female teachers constituting 34.3 per cent of the total number in 1996. The budgeted expenditure on education increased from Rs. 644.6 crore, in 1951-52 to Rs. 36,529.29 crore in 1996-97.

3.3.16 As a consequence of the growth that has taken place, educational facilities are now available closer to the homes of children. The Sixth All India Education Survey (1993) has indicated that 83.4 per cent of the rural habitations had a primary education facility within the habitation or within a walking distance of 1 km. In the case of middle school education, 76.15 per cent of the habitations had this facility within the habitation or within a walking distance of 3 kms. Table 3.3.2 sums up the data.

Table 3.3.2			
Educational Facilities within the Rural Habitations			
Facility	Habitations with facility of		Percentage Increase
	('000)		
	1986	1993	
i) Primary Stage	502.3	528.0	5.1
ii) Upper Primary Stage	129.0	147.1	14.0
iii) Secondary Stage	43.5	53.2	22.3
iv) Higher Secondary Stage	8.9	12.0	34.8
v) Total Number of Habitations	981.9	1060.6	8.0

3.3.17 The increase in the availability of educational facilities within the habitation has been particularly high in the case of secondary and higher secondary stages considering that the number of habitations itself had increased by 8 per cent during this period

3.3.18 Given the constitutional directive that the State should provide free, compulsory and universal education for children upto the age of 14, universalisation of elementary education has become a major goal of educational policy and programmes. The progress in the achievement of this objective has been considerable. The total enrolment at primary stage during the period 1950-51 to 1996-97 increased by 5.75 times, while for girls the increase is nine times. At the upper primary stage, the increase during this period is more than 13 times, while for girls the increase is more than 32 times which is quite commendable. At the secondary and senior secondary stage the total increase is 18 times and that of girls 49 times.

Adult Literacy

3.3.19 Considerable progress has been made in making India's population literate, as indicated in Table 3.3.3.

	Rural	Urban	Total
1951 (Total Population)			
Male	19.0	45.1	24.9
Female	4.9	12.3	7.9
Total	12.1	34.6	16.7
1991 (7 years and above)			
Male	57.9	81.1	64.1
Female	30.5	64.1	39.3
Total	44.7	73.1	52.2

3.3.20 As in other cases, there are wide variations in literacy levels among the States, from a low of 38.6 per cent to a high of 89.8 per cent (1991 Census). The variations for sex-wise literacy rates were between 55 per cent and 93 per cent for males and 20.4 per cent and 86.1 per cent for females. Within the States, there are substantial variations according to area and sex.

University and Higher Education

3.3.21 There has been a tremendous expansion of facilities at the higher education stage. At the dawn of independence, the number of universities and colleges of all types stood at 27 and 370 respectively. In 1996-97 there were 228 universities and 6759 affiliated colleges. Besides, there is one Central open university (IGNOU) and 3 open universities in the States, in addition to departments of correspondence courses in different universities. The total enrolment through the distance mode of learning is about 15 lakh.

3.3.22 There has been a sizeable expansion in student enrolment during the last 50 years. The number of students at the university stage, which stood at 0.2 million in 1950-51 rose to over 6 million by the end of the Eighth Plan. There has been a significant increase in the proportion of girls. From a modest 13.7 per cent in 1950-51, the percentage rose to about 34 by 1996-97. Special efforts have been made to promote the enrolment of special groups, including reserved categories and the minorities.

3.3.23 Various steps have been taken to improve the quality of higher education. These include regulations prescribing minimum qualifications of teachers and schemes for enabling teachers to improve their academic and professional competencies through Academic Staff Colleges, teacher fellowships, travel grants, etc. For promoting research, Special Assistance Programmes were initiated. The scheme of Centres of Advanced Studies (CAS) was introduced in order to promote research in various university disciplines. Assistance was provided to universities for major research projects. In order to improve quality, the National Assessment and Accreditation Council (NAAC) was set up to evolve a process of systematic assessment.

3.3.24 With a view to enhancing the relevance of higher education, the University Grants Commission initiated a scheme of career orientation for students at the first degree level by equipping them with competencies for moving into job markets and self-employment. The scheme has been introduced in 31 universities and about 1000 colleges covering about 40,000 students. Restructuring of courses was also taken up in order to relate the course content to the needs of society.

3.3.25 The schemes of Adult and Continuing Education and Women's Studies were initiated in order to promote greater involvement of institutions of higher education in socio-economic and cultural development. As many as 104 universities have set up departments of adult and continuing education. In addition, more than 2600 colleges have set up Adult Education Units, while 22 universities and 11 colleges have set up centres for women's studies.

Open University System

3.3.26 The Open University System is offering a broad-based curricular content in humanities, social sciences, physical and natural sciences as well as in professional disciplines like agriculture, computer applications, education, engineering, management, nursing, nutrition, etc. The institutes of correspondence education of the dual mode universities registered an enrolment of about 7 lakhs. In addition, the four open universities had an aggregate enrolment of over 8 lakhs. In order to provide support to the open universities in the States, the Distance Education Council has been set up under the Indira Gandhi National Open University (IGNOU). Emphasis is laid on establishing a common pool of programmes that can be shared by all the open universities. The IGNOU has a state-of-the-art production facility in electronic media and a Staff Training and Research Institute in Distance Education (STRIDE), which constitutes a national resource for the Open Learning System.

Technical Education

3.3.27 There has been substantial growth of technical education during the post-Independence period. The number of technical institutions at the first degree level increased from 49 in 1950-51 to 418 in 1996-97. The output of technical graduates increased from a level of 2200 in 1951 to about one lakh per annum. For diploma courses, the increase was from 2480 to 1.7 lakh annually. Postgraduate and Doctoral programmes in engineering are now available in 150 institutions. About 60 polytechnics offer advanced and post-diploma courses, most of them initiated during the Eighth Plan under the Technical Education Project assisted by the World Bank. The four Technical Teachers Training Institutions have assisted in the development of more than 500 polytechnics under this scheme.

3.3.28 The Indian Institutes of Technology have been pursuing the aim of creating excellence in academic work and research. A fifth institute was established in Assam in 1994. The 17 Regional Engineering Colleges (REC's) tended gradually to focus more on post-graduate education and research programmes. A Centrally funded scheme was initiated in all the RECs to develop them as centres of excellence and to augment their facilities in computing, library resources and infrastructure for taking up industrial projects. The number of Community Polytechnics increased to 375 during the Eighth Plan.

3.3.29 The All India Council of Technical Education (AICTE) has been reorganised and strengthened. The Council has developed an evaluation system for regulating the opening of new institutions. The National Accreditation Board set up by the AICTE finalised proposals from 92 institutions covering 570 programmes. The Board is also finalising the criteria for accreditation of institutions of management education.

SECTION III

ACHIEVEMENTS DURING THE EIGHTH PLAN PERIOD

Elementary Education

Thrusts

3.3.30 Elementary education, especially universalisation of free and compulsory education up to the age of 14, received a high priority in the Plan. The major effort was in the direction of reducing the disparities in access existed among various States and within States, between boys and girls and among different segments of the population and in improving the retention and achievement of children of the relevant age-group. A major effort was to provide alternative channels for education to children of deprived sections and working children who, for various reasons, could not be enrolled and stay for the entire period in full-time schools. The reduction of drop-out rates, which have continued to be high, particularly among girls and children belonging to scheduled castes, scheduled tribes and other economically and socially disadvantaged communities, was an important objective of the elementary education plan. A national programme of mid-day meals was started in August, 1995 to promote access,

retention and nutritional care of primary school children. Improvement in the quality of schooling and achievement levels of children enrolled in schools was attempted through the introduction of minimum levels of learning (MLL) and enhancement of infrastructural facilities. A number of innovative programmes were implemented to improve the management of schools, with emphasis on the involvement of people and voluntary organisations.

Major Achievements

3.3.31 Between 1992-93 and 1996-97, the number of primary schools increased from 5.73 lakh to 5.98 lakh and middle schools from 1.54 lakh to 1.77 lakh, indicating a percentage increase of 4.5 and 14.8 respectively. The growth in enrolment was significant, the increase being 4.8 per cent in the case of grades I-V and 6.1 per cent in grades VI-VIII. There was an appreciable decline in the drop-out rates from 42 per cent to 34.5 per cent in classes I-V and from 58.7 per cent to 51.6 per cent in classes VI-VIII. It is estimated that additional enrolment in classes I - VIII would have reached 73.79 lakhs between 1992-93 and 1996-97.

3.3.32 The following Centrally Sponsored Schemes were implemented:

- i) *Operation Black Board* : Launched in 1987, the scheme was intended to improve the school infrastructure by providing essential facilities like an additional teacher in single-teacher schools, construction of classrooms and provision of books and teaching equipment. As many as 5.23 lakh schools have been provided with books and teaching equipment worth Rs. 10,000 each, 1.47 lakh single teacher schools a second teacher and the construction of 1.74 lakh classrooms undertaken. The scheme was extended to cover upper primary schools and, with Central assistance, 47,000 schools have been allowed to purchase teaching-learning materials worth Rs. 40,000 each (Rs. 50,000 for schools in tribal areas) and 33,600 posts have been created for adding a third teacher in schools with enrolment exceeding 100. In the Eighth Plan, the expenditure on Operation Blackboard is likely to be Rs. 816.26 crore against the outlay of Rs. 279 crore. About 4.5 lakh teachers have undergone special orientation for the use of teaching materials provided under the Operation Blackboard Scheme. This training programme was called the Special Orientation of Primary Teachers (SOPT) during the Eighth Plan.
- ii) *National Programme of Nutritional Support*: Launched in August 1995, the programme provides three Kgs. of foodgrains per month to each primary school student. The programme is being implemented in all the States. The scheme is expected to cover 5.54 crore children by 1996-97. The total expenditure is estimated to be of the order of Rs. 1050 crore.
- iii) *Minimum Levels of Learning (MLL)* : The programme was introduced with the objective of specifying competencies which all primary school students should attain at mastery level in Language, Mathematics and Environmental studies and to develop curricula and text-books in relation

to these. The first phase was implemented through voluntary organisations, research institutions, SCERTs and DIETs. At present, the programme is being implemented in 12 States through 200 DIETs. The MLL approach has been introduced in 50,000 schools in different States. It is now possible to direct effort and resources to schools where the levels of learning have fallen below the prescribed ones.

- iv) *District Primary Education Programme* : The programme, partially funded by the World Bank in the form of a loan, was initiated in November, 1994. The programme aims at operationalising strategies required for achieving the goal of universal elementary education through specific planning and target setting at the district level. The intervention is based on the concept of decentralised management, community mobilisation and contextual and research-based inputs. The first phase was launched in 42 districts of Assam, Haryana, Karnataka, Kerala, Maharashtra, Tamil Nadu and Madhya Pradesh. The programme was extended to 17 more districts of Orissa, Himachal Pradesh, Andhra Pradesh and Gujarat. It was planned to cover 120 districts by the end of the Eighth Plan.
- v) *Bihar Education Project* : The programme was launched in 1991 with a sharing of costs among the UNICEF, the Government of India and the Government of Bihar. The project is being implemented in 7 districts for bringing about quantitative and qualitative improvement of primary education. A mid-term review in 1994 recommended consolidation of the programme, establishing linkages between the project and the Education Department of Bihar Government, more emphasis on MLL and teacher training etc.
- vi) *U.P. Basic Education Project*: Assisted with a soft loan from International Development Agency the project involves construction of classrooms and Block Resource Centres and training of teachers. About 40,000 teachers have been trained.
- vii) *Mahila Samakhya* : The project aims at empowerment of women through their mobilisation and a change in their perception about themselves and society. The programme was launched in 1991 in 10 districts of U.P., Gujarat and Karnataka. It now covers 5000 villages in 35 districts of seven States. An evaluation, conducted in 1993, indicated that the project had laid the foundation for empowerment of women at grass-roots level.
- viii) *Non-formal Education* : In pursuance of the National Policy on Education 1986, the Central Government provides help for the establishment of non-formal education centres. Assistance is given to the extent of 60 per cent of the expenditure incurred on Centres established by State Governments and 100 per cent for Centres established by voluntary organisations. Centres run by the State Government and exclusively meant for girls are eligible for 90 per cent

assistance. At present 2.79 lakh Centres - 2.40 lakh of the State Governments and 39000 run by voluntary agencies are functioning. The enrolment during 1996-97 is estimated to be 70 lakh. The Centres provide education through condensed courses of 2 to 2-1/2 years' duration.

- ix) *Teacher Education*: The Centrally Sponsored Scheme of reorganisation of teacher education continued in the Eighth Plan. The major programmes for which assistance was given included establishment of District Institutes of Education and Training, upgradation of selected training colleges into Colleges of Teacher Education/ Institutes of Advanced Study, strengthening and establishment of university departments of education and strengthening of State Councils for Educational Research and Training. So far, 425 DIETs have been established, 108 training colleges upgraded and 5 university departments selected for assistance. A special orientation programme covering 4.5 lakh primary teachers was organised for Operation Blackboard and introduction of MLL. A satellite-based interactive teacher orientation programme was implemented in Karnataka and Madhya Pradesh on an experimental basis.

3.3.33 The National Council for Teacher Education was established as a statutory body to promote planned and coordinated development of teacher education. The Council has developed norms and criteria on the basis of which applications are processed. It has organised a number of programmes and brought out useful publications dealing with different aspects of teacher education.

3.3.34 During the Eighth Plan, a number of innovative projects like Lok Jumbish and Shiksha Karmi were implemented by non-governmental organisations, Government of India and the State Governments.

Secondary Education

Thrusts

3.3.35 The thrust in the Plan was on consolidation and improvement. The Plan proposed to regulate expansion, with new facilities being created for deprived sections like girls, scheduled castes and scheduled tribes and in rural areas. In order to meet the educational needs of those who were unable to enrol themselves in the formal system, opportunities were provided through the National and State Open Schools, utilising multi-media packages and contact centres. For those who intended to discontinue education after ten years of schooling, vocational courses with strong linkages to the world of work were recommended. Improvements in the quality of education, particularly in science, mathematics and computer literacy, were emphasized with Central support being provided for the purpose.

Major Achievements:

3.3.36 During the Eighth Plan the number of secondary stage institutions (Classes IX-XII) increased from 84,076 in 1992-93 to 1,02,183 in 1996-97. The enrolment increased over

the period from 20.71 million to 27.04 million. Girls constituted 36.2 per cent of the total students in 1996-97

3.3.37 There were 697 teachers' training colleges in 1996-97 with an enrolment of 1.16 lakh. Girls numbered 50,023 or about 43 per cent of the enrolment. The percentage of trained teachers was 88 in secondary schools and 89 in higher secondary schools.

3.3.38 By the end of 1995-96, the programme of vocationalisation had been extended to 6476 schools with intake capacity of 9.35 lakh students, indicating that 11.5 per cent of the students were in vocational streams. In spite of creating capacity for diversion of 11.5 per cent secondary pass students to vocational courses, only 4.8 per cent students could be diverted. A programme to provide pre-vocational training to students enrolled at the secondary stage was initiated in 1993-94.

3.3.39 For the improvement of science education, assistance was provided to 14,734 secondary/higher secondary schools for improvement of libraries and to 15,775 schools for strengthening of laboratories. The scheme of Computer Literacy and Studies in Schools (CLASS) continued to be implemented and an amount of Rs. 146 crore was provided for maintaining the programme in 1,598 schools and covering an additional 2,290 schools.

3.3.40 The National Open School, which was set up in 1979 and converted into an autonomous organisation in 1989, offered foundation courses, secondary and senior secondary level courses, vocational and life enrichment courses. The number of subjects offered included 51 foundation courses and 23 secondary courses including vocational courses in the areas of Agriculture, Commerce and Business, Technology, Para-medical and Home Science. The number of study centres increased from 161 in 1990-91 to 666 in 1996-97. Of the latter, 105 are vocational study centres.

Adult Education

Thrusts

3.3.41 The thrust in the Eighth Plan was on sustainability of literacy skills and on remediation. Learning of useful skills and their application in actual living and working situations was emphasised in the programmes. The main strategy emphasised an area-specific approach along with the campaign mode, with particular attention to women, the disadvantaged groups and backward rural areas. The National Literacy Mission along with the State Literacy Missions, provided the main mechanisms for the implementation of literacy and post-literacy programmes. The services of non-governmental organisations were utilised for various literacy and post-literacy activities, including skill development among the adults.

Major Achievements:

3.3.42 During the Eighth Plan, the organisation of campaigns and adoption of areas for intensive work constituted the two elements of the strategy. The strategy of total literacy campaign was reviewed in 1993 which envisaged funding the Tribal Area Sub-Plan between the Centre and the State Governments in the ratio of 4:1, instead of the earlier

ratio of 2:1; launching of an Operation Restoration Programme in those districts where total literacy campaign had not taken off due to various causes. During the Eighth Plan about 75.66 million have been enrolled out of which 40.96 million are estimated to have been made literate.

3.3.43 The scheme of Shramik Vidyapeeths, which offers specially designed non-formal programmes by integrating literacy, general education and skill training for identified groups, was expanded by establishing 25 new Vidyapeeths during the Plan period. The Centre provided assistance to State Governments for strengthening of administration and to voluntary organisations for various activities.

University and Higher Education

Thrusts

3.3.44 The major emphasis in higher education during the Eighth Plan was on (i) integrated approach to higher education, (ii) excellence and equity, (iii) relevance of higher education, (iv) promotion of value education and (v) strengthening of management system in university institutions.

3.3.45 In order to provide facilities for higher education, particularly to the deprived sections of the population and neglected regions of the country, several new universities and colleges were opened, particularly in the North-Eastern region. Special efforts were made to provide facilities for specialised groups like SCs, STs and women. The new facilities include increased intake and greater utilisation of distance education mode. Mobility of the faculty and students has been facilitated by expanding the schemes of staff quarters and student hostels.

Major Achievements:

Quality of Higher Education

3.3.46 Several programmes were initiated to improve the quality of higher education. These included faculty development through Academic Staff Colleges, prescribing minimum qualifications for teachers, teacher fellowships, travel grants and career awards. Special efforts were made to enhance the library facilities and network (INFLIBNET).

3.3.47 Research facilities were upgraded through a special assistance programme for universities. The Centres of Advanced Studies were continued in a number of universities. Major and minor research projects were continued. The scheme of University Science Instrumentation Centres was expanded. Model curricula were produced in the Curriculum Development Cells in different subjects. For quality improvement through a systematic assessment procedure the National Assessment and Accreditation Council was set up. *Relevance*

3.3.48 Concerted efforts were made to make higher education relevant by introducing career-oriented courses as a part of the first degree programme. Further restructuring of courses was undertaken to provide an application component to university education. A study was undertaken to examine the concept of community colleges.

3.3.49 The schemes of adult and continuing education and women's studies were further expanded. At the end of the Plan, there were 104 Centres of Adult Education, 22 Centres of Women's Studies in addition to 11 colleges which had Cells for Women's Studies.

Management of Higher Education

3.3.50 The Gnanam Committee Report entitled "Towards New Educational Management" was accepted and formed the basis for action taken by the UGC.

Technical Education

Thrust

3.3.51 The thrust areas in Technical Education during the Eighth Plan were : modernisation and upgradation of infrastructure; quality improvement; responding to new industrial policy and consequent interaction between institutions, industry and R & D organisations; resource mobilisation and institutional development.

Major Achievements

3.3.52 The Eighth Plan concentrated on allowing the system to expand and ensuring that regulatory and support infrastructures were provided. To achieve these objectives, more than 800 laboratories were modernised, about 550 projects were undertaken for strengthening the crucial technology areas, and training was imparted to more than 50,000 working professionals from industry. Further, the schemes of resource mobilisation and rationalisation of fee-structure in technical institutions were operationalised. The targets of admissions to post-graduate courses were exceeded. The IITs took up consultancies and programmes under Technology Development Missions. The RECs were empowered under the scheme of Centres of Excellence and Indo-UK RECs' Project. At the end of the Plan, 60 polytechnics offered advanced and post-diploma programmes under the Technician Education Project. The AICTE sponsored and managed a substantial number of development programmes.

Management Education

Thrusts

3.3.53 The All India Council for Technical Education (AICTE) is entrusted with the responsibility of regulating, controlling and ensuring the quality of Management Education in the country. The formation of a National Board of Accreditation (NBA) and organisation of a number of workshops contributed substantially to widespread awareness and concern for quality in Management Education. For regulating the entry of new institutions, the AICTE developed an effective and transparent evaluation system based on certain norms and standards which were developed in active collaboration with the leading management academicians. The critical norms related to curriculum development, academic standards, admission process, number and quality of faculty members and the governance system.

Major Achievements

3.3.54 Two new Indian Institutes of Management were set up, besides the 422 institutions recognised by the AICTE. The annual intake of these institutions is 38,500, of which 25,600 are in full-time, 6,600 in part-time and 6,300 in distance education programmes.

SECTION IV

Ninth Five Year Plan

3.3.55 In view of its significance for human resource development and economic and social transformation, education needs to be given a high priority in the allocation of resources. Considering that the present share of education in GDP is around 3.9 per cent, raising it to any substantially higher level would require a substantial enhancement of expenditures on education. The system's capacity to absorb financial resources of a large magnitude and use them productively and efficiently would also require careful consideration. As regards the convergence of Basic Minimum Services for contributing to educational development, emphasis will be laid on providing all primary schools with clean drinking water, sanitary facilities, better nutrition for the pupils through mid-day meals, health check-up and primary health-care facilities and a network of roads for making the schools easily accessible.

Early Childhood Education

3.3.56 Early Childhood Education (ECE) in the Ninth Plan requires attention for the following issues:

- (a) Strengthening the educational component of ICDS.
- (b) Its linkage, as pre-school education, with universalisation of primary education and consequential steps in that connection.
- (c) The promotion and management of ECE under the decentralised system of Panchayati Raj institutions and Urban Local Bodies.
- (d) The role of the private sector and NGOs in ECE.
- (e) Convergence of health education and other services at the local level in the interest of ECE.
- (f) Social mobilisation for ECE, through mass media and other activities.

3.3.57 The issues that will be addressed in the Ninth Plan are as follows.

- (a) Combining pre-school and primary level methodologies, along with health and nutritional concerns, in teacher-training programmes, pre-service as well as in-service.
- (b) Encouraging the adaptation of ECE to the environment and home-conditions of the children through innovative alternatives.
- (c) Orienting PRIs and ULBs to provision of community-supported creches and day-care centres attached to Anganwadis/Primary schools.
- (d) Mobilisation of local women's groups to set up and manage ECE centres.

- (e) Production of inexpensive play materials for children by using local materials and talents of local artisans and school children engaged in socially useful productive work and social service activities according to their curriculum
- (f) Strengthening resource groups for ECE at the NCERT and SCERTs as also research institutes, NGOs and other such organisations to conduct research, training, materials production and extension activities for ECE.

Primary/Elementary Education

3.3.58 The Indian Constitution attaches high priority to education. Article 45 declares "The State shall endeavour to provide, within a period of 10 years from the commencement of the Constitution, for free and compulsory education of all children until they complete the age of 14 years." The Constitution also guarantees educational rights for minorities and calls for the educational development of weaker sections of society. Through the 42nd Amendment of the Constitution, the subject of education has been brought to the Concurrent List in the Constitution for fulfilment of nationally accepted goals. The 73rd and 74th Constitutional Amendments further empowered the Panchayati Raj Institutions (PRIs) to render their contribution to the development of education at the grass-root level. The Judgement of the Supreme Court in Unnikrishnan J.P. Vs. Andhra Pradesh (1993) states: "The citizens of the country have a fundamental right to education. The said right flows from Article 21 of the Constitution. This right is, however, not an absolute right. Its contents and parameters have to be determined in the light of Articles 45 and 41. In other words, every child/citizen of this country has a right to free education until he completes the age of 14 years. Thereafter his right to education is subject to the limits of economic capacity and development of the State."

3.3.59 Critical Issues at Primary/Elementary Stage:-

(i) Backlog of unenrolled children :

In order to achieve Universalisation of Primary Education (UPE), it had been estimated for the year 1993-94 that approximately 142 million children in the age-group 6-11 years would have to be provided primary schooling, out of which 69 million would be girls.

(ii) Drop-outs

The problem is further accentuated by high drop-out rates. Among those who are enrolled, it is estimated that large number of children in Classes I-V drop out in between, before completing their class V. The latest available data on drop-out rates for Classes I-V for the year 1996-97 reveal that the drop-out rate for the country as a whole was 38.95 per cent. It was 39.37 per cent among boys and 38.35 per cent among girls. Further, there were wide inter-State disparities. The major problem of drop-outs as well as access to schooling is in the educationally backward States of Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, J&K, Madhya Pradesh, Orissa, Rajasthan, U P and West Bengal.

(iii) Unserved Habitations with Primary/Upper Primary Schools/Sections

According to the Sixth All India Educational Survey* out of 10.60 lakh rural habitations, 8.84 lakh (83.4%) were served within the national norm of one-km distance. Thus about 16.6 per cent of habitations were not served by primary schools within a distance of 1 km. The survey results also revealed that about 41,198 primary schools were being run in thatched huts, tents and open space. In case of upper primary schools, about 23.85 % habitations were not served within the official distance norm of 3 km. 5,638 upper primary schools were being run in thatched huts, tents and open space.

(iv) Lack of other Physical Infrastructure

Apart from availability of access to primary school within a walking distance of habitations there are other problems which have to be addressed on an urgent basis. These relate to lack of physical infrastructure like toilet facilities for girls, drinking water facilities in schools, teaching-learning equipment etc.

(v) Availability of Teachers

With regard to availability of teachers, the Survey further pointed out that about 4000 schools were without teachers and 1.15 lakh primary schools were being run by single teachers. However, the position has improved since then, as additional teachers have been provided under Operation Blackboard (OB).

(vi) Low Levels of Achievement

It is not only physical infrastructure that is inadequate to achieve UPE, there is the equally important dimension of quality which needs attention. For instance, evaluation studies on children's achievement show low levels in language and mathematics.

(vii) Equity and Regional Disparities

Then, there are regional disparities. Some States (like Kerala, Maharashtra, Gujarat, Tamil Nadu) have done well in providing physical access to schooling facilities as well as in improving quality of education. Some others (like Uttar Pradesh, Bihar, Madhya Pradesh, Orissa & Rajasthan) have still a long way to go. There are equity concerns like low enrolment of girls, educational requirements of special need groups, like SCs/STs, OBCs, minorities, disabled children, working children, children from disadvantaged locations like deserts, hilly, coastal and deep forest areas, children from migratory families etc.

Primary education will be a major thrust area during the 9th Plan. There will be an additional enrolment of 2.5 crore children at the lower primary stage and 1.6 crore children at the upper primary level. 75000 additional rooms /buildings will be constructed at the elementary stage. 2,36,000 teachers will be appointed additionally at the lower primary level and 1,75,000 teachers at the upper primary level.

* Excluding J&K where Survey was not done

3.3 60 Action Plan:-

(i) **Broad Approach** : The action plan needed to address the critical issues and achieve the desired objectives will be based upon ground realities. It will resort to a multi-pronged strategy which is both imaginative and innovative and also carries with it the attributes of flexibility, decentralisation, improvement of quality, cost-effectiveness, result-oriented and time-bound commitment. This can be achieved through micro- planning with a focus on 'area approach' and 'target population'. It will also mean community involvement, monitoring, supervision and academic support at all levels. The existing schemes will be examined with respect to these parameters and those found suitable will be promoted.

(ii) **Phasing**: Under the Constitutional obligation, Government is to provide free and compulsory education upto Class VIII. Greater emphasis will naturally have to be laid on achieving UPE at the lower primary stage, in the first phase.

(iii) Mobilisation of Community Support for School Improvement Programme

The 73rd and 74th Constitutional amendments have further empowered the Panchayati Raj Institutions (PRIs) to make a positive contribution for development of education at the grass-root level. Village Education Committees (VECs) will be actively involved in School Improvement Programme (SIP).

➤ Panchayati Raj Institutions will be empowered to serve as the nucleus in programme implementation. Non-governmental organisations will be encouraged to supplement the governmental efforts, while the private sector will also be facilitated to grow particularly in higher and technical education.

Training will be imparted to VEC members wherever such committees have been constituted. Arrangements for this will be made through District Institutes of Education and Training (DIETs), Block and Cluster Resource Centres and through the Distance Mode.

Areas of concern of VECs in the development of SIP will be -

- (a) door-to-door survey of children of school-going age and help in enrolment, particularly of girls,
- (b) planning and execution of civil works of school buildings;
- (c) mobilisation of physical and financial resources;
- (d) provision of free accommodation to teachers, wherever possible;
- (e) improvement in children's attendance;
- (f) institutional capacity building for sustainability of schools;
- (g) Community ownership of the School Improvement Programme;
- (h) to help in implementation of the Scheme of National Nutritional Support to Primary School Children.
- (i) Other functions delegated by the State Governments.

(iv) Strengthening Teacher Education Programme

(a) Curriculum Development:

The draft curriculum framework developed by the National Council for Teacher Education (NCTE) will be finalised and made the basis for curriculum change in institutions for teacher education. This will help to improve the quality of Teacher Education Programme.

(b) Initiative for North-Eastern States

The North-Eastern States, which have a larger percentage of untrained teachers in elementary schools will launch programmes to cover this gap by adopting the following measures :

- A Diploma Programme for Primary Education developed by Indira Gandhi National Open University (IGNOU) will be launched in collaboration with the State Governments.
- NCTE will establish a Regional Committee for North- Eastern States to provide the necessary fillip to the teacher training institutions.
- Induction programmes of 4 to 6 weeks' duration by DIETs will enrich the capabilities of freshly appointed teachers.

(c) Upgradation of Infrastructure:

The process of strengthening Teacher Education Programme will be given a further impetus by upgrading the physical and academic infrastructure of :

- State Councils of Educational Research & Training (SCERTs)
- Colleges of Teacher Education (CTEs)
- Institutes of Advanced Studies in Education (IASEs)
- District Institutes of Education and Training (DIETs)
- Block Resource Centres/Cluster Resource Centres (on a pilot basis).
- National Council for Teacher Education (NCTE)
- Departments of Education in Universities

(d) Reaching out to Primary School Teachers in Remote Areas

To supplement the efforts to improve school effectiveness, an institutional mechanism will be put in place to provide on-the-spot counselling and guidance to teachers located in remote areas. This will be in the form of Mobile Teams of Resource Persons (MTRPs). Logistic arrangements will be location- specific, based upon felt needs and environment.

(v) Alternative Education

In order to provide access to drop-outs, working children, girls, migratory population and other similar categories, alternative education will be provided through institutional arrangements.

Non-formal Education centres for such categories of children as are unable to avail themselves of the formal system of schooling in hilly, desert and forest areas, or due to the migratory nature of the population will be expanded. The expansion will be based upon a 'cluster approach', so as to make the scheme cost-effective.

It has been found by experience that NFE centres achieve more meaningful results when these are run by NGOs. Accordingly, the number of centres run by NGOs will be enhanced significantly. Where NGO participation is not forthcoming, State-run NFE centres will be established.

The scope of the National and State Open Schools will be expanded by bringing elementary education within their fold for the purpose of providing a lateral entry to NFE children as well as to neo-literates for certification.

Private initiative will be tapped in industrial project sites to run "project schools". Incentives like allotment of land on a subsidised basis and other concessions under the Companies Act or the Income Tax Act will be provided.

(vi) Education of Working Children

According to the 1991 census, there were 11.28 million working children in the country. More than 90 per cent of them were engaged in agricultural labour, rearing of livestock, forestry and fisheries.

Ministry of Labour has a direct responsibility at the Centre for the following:

- (a) to lay down policies and programmes for elimination of child labour, particularly in hazardous trades,
- (b) to monitor the progress of implementation of programmes, projects and schemes for elimination of child labour; and
- (c) to coordinate implementation of child labour-related projects of the various sister Ministries of the Government of India in order to ensure convergence of services for the benefit of the families which have child labour. Ministry of HRD will extend all support to the Ministry of Labour in the setting up of 'education-related projects'. These will be 'area-specific' and focussed particularly in States of Andhra Pradesh, Madhya Pradesh, Maharashtra and Uttar Pradesh, where there is a large concentration of child labour.

Adult Education

3.3.61 Literacy, the key to most of India's development programmes, is the catalyst to accelerate initiatives in health care, agriculture, primary education and in all critical areas of development.

3.3.62 In the light of the 73rd and 74th constitutional amendments, literacy has assumed even greater significance. If power for local self-governance is to devolve to the panchayats and nagar palikas, literacy is an essential prerequisite for these institutions to be effective.

Critical issues in Adult Education:

3.3.63 Despite this key role, much still needs to be done. India has the largest number of non-literate people in the world - about a third of the world's total of around 900 million. Although literacy levels have increased from 16.67 per cent to 52.21 per cent since independence, unrestrained population growth has proved to be a serious impediment.

3.3.64 The literacy levels of women are low - 39.29 per cent as compared to 64.13 per cent for men. The fact that female literacy is acknowledged as being one of the most significant indicators of development makes this all the more alarming. With one third of the seats in panchayats and nagar palikas reserved for women, the need for them to become literate is vital.

3.3.65 There are large regional disparities in literacy rates - between urban and rural areas, as well as between states. While about three quarters of the urban population is literate, the literacy rate in rural areas is less than 45 per cent. The literacy rate of women in rural areas is even lower at 31 per cent.

3.3.66 Seven states - Uttar Pradesh, Bihar, Madhya Pradesh, Rajasthan, Andhra Pradesh, West Bengal and Maharashtra - account for around 70% of India's non-literate population. The first four of these states alone, are home to around half of India's non-literate people.

3.3.67 In its endeavour to achieve the goals it has set for itself in adult education, India faces several challenges. Studies by expert groups and the constant evaluation of the programme, indicate several principal challenges.

3.3.68 The four Hindi speaking states - Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan - account for half of India's non-literate population. The large number of non-literate people, and therefore the relatively small number of educated people from whom volunteers can be drawn, as well as the overall socio-economic backwardness of these states, combine to make the achievement of literacy particularly difficult in these areas.

3.3.69 There are large regional disparities - between states, between districts in a state, between males and females and between tribal and non-tribal areas.

3.3.70 Campaigns have sometimes been launched without adequate planning, and quality has suffered in certain places in the preoccupation with total literacy. This preoccupation has also sometimes led to overestimation of achievements, with some districts being prematurely declared totally literate.

3.3.71 The vital importance of post-literacy efforts to prevent a relapse into illiteracy has already been mentioned. Post Literacy Campaigns have often not been implemented adequately or in time, even in districts where TLCs have been successful. There have often been unnecessarily long time gaps between the completion of a TLC and the beginning of a PLC in a district. To ensure that the gains of TLCs are realized, post literacy needs far greater attention and emphasis, to sustain the interest of the neo-literates, and to make them 'functionally literate' in the true sense.

3.3.72 Greater community involvement is required to convert literacy into a people's movement.

3.3.73 Action Plan.

- i) Literacy campaigns have already covered 447 districts, of which 215 are in Total Literacy Campaigns, 173 are in Post Literacy Campaigns and 59 are in Continuing Education Phase. In addition, 38 districts have been covered under Rural Functional Literacy Projects. Hence the total coverage comes to 485 districts. Efforts would be made to bring the remaining 40 odd districts under the coverage of literacy.

➤ Eradication of illiteracy is a top priority in the National Agenda for Governance. A major dent would be made by making 10 crore adults literate in the 9th and 10th plan periods.
- ii) Gradually, all districts will be brought under the Continuing Education programme which will be further strengthened as well as linked to other socio-economic programmes such as health and hygiene, nutrition and sanitation, skill upgradation and capacity building, culture, sports, etc.
- iii) For such neo-literates who wish to pursue further education, an equivalency programme is being developed to enable neo-literates to enroll in courses at the national/ state open schools.
- iv) Efforts have been set in motion to decentralise and devolve administrative and financial powers to State Literacy Mission Authorities. The sanctioning of projects will largely be done by these authorities.
- v) Sensitisation and orientation workshops are proposed to be conducted for functionaries of panchayati raj institutions so as to involve local government bodies in the literacy programme.
- vi) It is proposed to further strengthen and revitalise State Resource Centres and Shramik Vidyapeeths (proposed to be renamed as Jana Shiksha

Sansthans). This will provide additional fillip in the areas of training, skill upgradation, capacity building and preparation of materials.

- vii) The stress on awareness generation among women and their empowerment is proposed to be continued as one of the major planks of the programme.

Secondary Education

3.3.74 Conceptually, secondary education is meant to prepare young persons both for the world of work and entry into higher education. But traditionally, it has come to be looked upon as a bridge between the elementary and higher education stages. This process has to be reversed

3.3.75 Critical Issues in Secondary Education

(i) Revision of Curricula

After the formulation of the New Policy on Education in 1986 (revised in 1992) the need for change of curriculum has arisen. The change will take into account the areas of scientific development, environmental education, computer education and social issues in the context of economic liberalisation.

(ii) Vocationalisation of Education

The scheme of Vocationalisation of Education at 10+2 stage was introduced to regulate admissions at College level. The purpose was to divert at least 25% students of 10+2 stage to self-employment or wage-employment, while providing them with vocational competence in a field of their choice. However, the scheme has not taken off due to logistic and academic constraints which require streamlining and strong industry-institution linkages. At present, only 4.8% students are opting for vocational stream, against a target of 25%.

(iii) Distance Education

Distance Education is an alternative approach for providing secondary education. With the tremendous expansion of elementary education in the country, the demand for secondary education is likely to grow enormously in the next decade. This challenge has to be met by providing distance mode of education through the Open Learning System (OLS) in the country.

(iv) Quality Improvement of Teaching in Mathematics, Science and Computer Education

The quality of teaching in Science and Mathematics has deteriorated so much that it has started having adverse effects at under-graduate and post-graduate levels. Further, with the fast development of Information Technology, the need for quality education in computers at school stage has become imperative

(v) Hostel Facilities for Girls

In remote and tribal areas, secondary schools do not have adequate hostel facilities for girls, and this results in failure to attract girls to them.

(vi) Minority Education

In spite of adequate facilities at secondary stage, children from minority groups are not taking full advantage of these.

(vii) Integrated Education for the Disabled

After the enactment of the Disabled Act 1995, the education of the disabled upto age 18 has become a legal obligation. Though efforts have been made to provide educational facilities to this special group, these are not commensurate with the tremendous needs.

3.3.76 Action Plan

(i) Revision of Curricula

- (a) National Council of Educational Research & Training (NCERT) in collaboration with State Councils of Educational Research & Training (SCERTs) will revise curricula and a National Draft will be prepared for discussion and adoption. New areas of concern will be included in the curriculum. After the draft is adopted, the same organisations will upgrade the text-books so as to keep pace with international standards.
- (b) Simultaneously, NCERT and SCERTs will review the training needs of in-service teachers and take steps to meet the new challenges.
- (c) National Council for Teacher Education will prepare a framework for pre-service teacher education, so that the standards are upgraded.

(ii) Vocationalisation of Education (VE)

The Scheme of Vocationalisation of Education at 10+2 stage will be restructured so as to provide employability to the target group. An Empowered Committee representing the Government, industry and trade will be constituted to promote a meaningful partnership and better inter-departmental coordination. Vocational courses with strong linkages with industrial units will be encouraged.

(iii) Distance Education

Distance Education will be broad-based by providing wider responsibilities to National Open School (NOS) and the State Open Schools (SOSs). These will be in the areas of elementary education, vocationalisation of education for neo-literates, drop-outs, secondary students and adult population, including working women. Special initiatives will be taken to derive full advantage from the state-of-art Information Technology (IT).

(iv) Teaching of Mathematics, Science and Computer Education

- (a) Special measures will be taken to promote teaching of Mathematics and Science at the secondary stage by devising new popular source-books. A Science Talent Research Scheme will be promoted.
- (b) Science & Mathematics will be linked to the immediate environment of the child. Efforts will be made to avoid the unnecessary load of a crowded curriculum.
- (c) The recommendations made by the Task Force on Computer Education will be implemented in a time-bound manner.

(v) Hostel Facilities for Girls

Additional hostel facilities for girls will be provided, particularly in tribal and remote areas, so that the attendance rate of girls improves. MHRD will coordinate its programmes with those of the Ministry of Welfare.

(vi) Minority Education

- (a) The Scheme of Modernisation of Madararas will receive all possible attention, so as to cover more Madararas and improve the access of Muslim children to education.
- (b) Area Intensive Programme for Educationally Backward Minorities will be strengthened by allocating a higher outlay. A vigorous publicity drive will be undertaken to generate necessary awareness among the minority communities so that they come forward to take full advantage of the scheme. The cooperation of the leaders of the minority communities will be elicited for the fulfilment of the same objective.

(vii) Integrated Education for the Disabled

A composite area approach will be adopted and additional blocks covered under the programme. Training of teachers for these special groups will be organised in universities.

Technical Education

3.3.77 Despite efforts in the past, only a few technical institutions have managed to achieve high academic standards. Major qualitative reforms are necessary to upgrade the Regional Engineering Colleges (RECs). While the Indian Institutes of Technology (IITs) have enjoyed autonomy, flexibility and responsive governance, there is an urgent need to enhance their output and quality.

3.3.78 Critical Issues in Technical Education

(i) Quality Improvement

The areas which need specific attention are adequacy & quality of faculty, modernisation of institutional resources, upgradation of educational technology, relevance and flexibility of curricula, interaction with industry etc.

(ii) Infrastructure Development and Innovations

Over the years, regional imbalances have emerged in respect of infrastructure development. Further, paradigm shifts are needed across the board from knowledge-based education to skill and competence development and from classroom learning to workplace learning.

(iii) Flexibility, Mobility, and Curricula

Economic liberalisation and industrial expansion have brought in new institutions and programmes. Hi-tech programmes, curriculum development, flexibility and mobility assume special significance in this rapidly changing scenario.

(iv) Governance of Institutions

Governing and management structures at the Central and State levels need to be strengthened, so as to manage the manifold changes described above.

(v) Excellence in Polytechnic Education

Technical staff produced through polytechnics form the backbone of middle level management and technical manpower and demand for them is steadily growing. There is need for greater flexibility and autonomy to these institutions, which have also to forge close linkages with technical institutions of higher level on the one hand and industry on the other.

3.3.79 Action Plan

(i) Quality Improvement

- (a) To meet the growing manpower needs as well as improve the quality of technical education, the intake capacity of Indian Institutes of Technology (IITs) and other reputed institutions will be doubled, particularly in high-demand areas like software engineering

➤ The intake capacity of the IITs, other reputed engineering institutions and IIMs will be doubled, particularly in high-demand areas like software engineering and information technology. Vocational education at the secondary and undergraduate levels will be expanded and restricted so as to have strong linkages with industry and improve employability.

- (b) There will be an attempt at quality improvement in RECs & other technical institutions. They will be given greater functional autonomy and their

performance would be closely watched. RECs will be integrated into the academic and faculty improvement programmes of IITs.

(ii) Infrastructure Development and Innovations

- (a) To promote innovations and help meet gaps in infrastructure, institutions of technical education will be encouraged to create a corpus of funds by suitably remodelling and restructuring their tuition fees and development charges. Necessary autonomy will be allowed to these institutions so that they can adopt innovative practices for institution building. Training of staff will be paid more attention.

(iii) Flexibility, Mobility and Curricula

- (a) To cope with the globalisation of the economy and rapid industrial expansion in the country, hi-tech and new technology programmes will be promoted. All possible steps will be taken to devise in-built flexibility in course structure, credit transfer and upward vertical mobility through modular design of the curriculum.
- (b) To meet the shortage of faculty for post-graduate teaching, special incentive schemes for M.tech, M.Phil and Ph.D programmes will be devised.

(iv) Governance of Institutions

- (a) Autonomy and deemed university status will be granted to identified technical institutions. The style of management will be more responsive and accountable through induction of eminent academicians, technologists, industrialists and other men of stature. These bodies will focus on vision, goals, objectives and policies for the institutions and not meddle with issues of micro-management.

(v) Excellence in Polytechnic Education

- (a) The implementation of the Technician Education Project during the 8th Plan attempted to bring Polytechnics closer to industrial establishments, other technical institutions of higher education and industrial training institutes. This process will be further facilitated in the times to come.
- (b) The scheme of Community Polytechnics will be brought closer to target groups' requirements by transfer of appropriate technology to the community and training in such technology to rural folk.

University & Higher Education

3.3.80 The country is going through major economic and technological changes. The system of higher education has to prepare its products for participation in the emerging social, economic and cultural environment. Universities are witnessing a sea change in their outlook and perspective. Information technology is leading to fundamental changes in the structure, management and mode of delivery of the entire educational system.

3.3.81 Critical Issues

(i) Relevance and Quality

Today, the relevance and quality of education is the most critical issue in higher education. The delivery system is under tremendous pressure.

(ii) Use of Media & Educational Technology

Information technology has changed the educational systems throughout the world. India is at the cross-roads and can easily use this opportunity, as she has a major potential for supplying software to the world.

(iii) Structure of Curriculum

It is widely argued that the structural arrangement of the curriculum is rigid and fails to respond to the emerging needs of the student community.

(iv) Access and Equity

Although there has been massive development and expansion of University and higher education in the country, we are faced with the issue of regional imbalances. There are numerous institutions without adequate physical infrastructure and academic climate. The representation of women is also much lower than that of men.

(v) Management of Education

Management of education is being done on traditional lines with rigid structures, high wastage and low efficiency.

(vi) Resource Utilisation

There is a problem of under-utilisation of the existing physical infrastructure due to proliferation of institutions of higher education.

3.3.82 Action Plan

(i) Relevance & Quality

- (a) **Vocational Education:** At the under-graduate level, vocational education will be expanded in disciplines which have strong linkages with industry and improve employability. UGC, in collaboration with the universities, will re-structure the under-graduate courses and actively involve industrial houses in the development of curriculum, on-the-job training etc.

- (b) **Higher Education:** Teaching in post-graduate and doctoral programmes and research will be oriented towards applied fields so as to establish relevance, need-based specialisation and market-driven skill generation.
- (c) **Faculty Improvement:** Faculty improvement scheme will be strengthened through incentives, self-development, sponsored research, in-service training through distance mode etc. Academic staff colleges will be re-structured accordingly.
- (d) **Faculty Exchange:** Faculty exchange between industrial houses and universities will be promoted in technical disciplines so as to enrich the content of education.

(ii) Use of Media and Educational Technology

A purposeful action plan will be formulated in consultation with the field agencies in order to impart a multi-media approach to teaching. Quality will be ensured through Internal Quality Assessment Cells and accreditation through the National Assessment and Accreditation Council.

(iii) Structural Arrangement of Curriculum

Universities will be asked to develop a system of credit and credit transfers. This will help in shifting from rigid, structured, undisciplinary programmes to the credit-based cafeteria system with core, optional and extra-developmental courses at under-graduate and post-graduate levels.

(iv) Access and Equity

- (a) **Unserved Areas:** Unserved areas will be brought into the fold by providing additional educational facilities. College mapping will be done on an area-based approach so that there is optimal utilisation of existing resources and regional imbalances are removed.
- (b) **Distance Education:** Since resources for expanding physical facilities are limited, Distance Education in conventional as well as open universities will be strengthened and promoted.

(v) Linkage Changes

Necessary changes will be made in the legislation pertaining to the UGC and the Universities so as to cope with newly emerging requirements and challenges.

(vi) Resource Utilisation

- (a) **Fiscal Discipline:** Fiscal discipline will be strongly enforced in institutions of higher education.

- (b) **Resource-Sharing:** Adoption of a cluster approach to sharing of resources by neighbouring institutions and setting up of inter-university centres will help in achieving economies of scale.

(vii) Resource Mobilisation

Additional Resources will be mobilised by :

- (a) **Fee Restructuring:** Restructuring of fees based upon the criteria of Unit Cost and the socio-economic background of the student.
- (b) **Public Funding:** Widening the public funding resource-base by attracting contributions from various departments of the Government and the community, in order to support basic infrastructure such as laboratories, libraries and new courses.
- (c) **Industrial Funding:** Encouraging contributions from industrial establishments for sponsored research projects.

(viii) Performance and Accountability

UGC will work out a concrete programme of action for ensuring better accountability. This will be done by:

- (a) **Leveraging UGC Funds:** Using UGC's plan and non-plan financial assistance as a leverage to encourage better performance.
- (b) **Evaluation:** Utilising the UGC's evaluation machinery much more vigorously to rank universities and publicising evaluation reports as widely as possible.
- (c) **Model Code:** Developing a model code of governance which would minimise political interference and improve standards.

(ix) Extension Education

- (a) **Continuing Education:** Adult and continuing education programmes will be targetted for those who have had the benefit of university education but need to return, for updating or acquiring knowledge or skills.
- (b) **Skill-based Courses:** Extension education programmes will be aimed at the needs of specific groups who would not otherwise be entrants to the university system. Such courses could be based on skills for income generation, entrepreneurship, para-legal work, etc.
- (c) **Community Education:** Community education programmes will be focussed on transfer of skills which require upgradation due to technological progress.

Women's Empowerment

3.3.83 The National Agenda for Governance also states, "We will institute plans for providing free education for girls up to college level, i.e. under-graduate level including professional courses would be made free". An adequate provision will be made for the scheme for this purpose during the 9th Five Year Plan. On a long-term basis and in close collaboration with State and local governments, the financial implications of making education free for girls upto the graduation level will be worked out, in so far as these relate to the Department of Education.

3.3.84 Critical Issues

Free Education for Girls:

The concept of free education has to be defined explicitly in terms of its coverage. The components could be:

- (a) tuition fees;
- (b) basic text books;
- (c) maintenance expenditures in hostels; and
- (d) library books

3.3.85 Action Plan

Free Education for Girls:

(a) **Financial Requirements:** The financial requirements for implementation of the concept of free education to girls upto college level will be worked out by Ministry of Human Development (MHRD).

➤ Education will be free for girls upto college level. The contours of the scheme are being worked out. A new scheme will be launched shortly.

(b) **New Scheme:** A new scheme called "Free Education for Girls" will be devised and implemented in a time-bound manner.

Management Education

Critical Issues

3.3.86 In view of the emerging needs of Indian economy, the new dimensions of management education and research have necessitated technology upgradation to achieve quality control, use of information technology for overall improvement in output and performance as well as competitiveness. There is an imperative need for networking and linkages between leading management institutes, university departments of

management and centres of management education, especially in private sector on the one hand and industrial establishments and user organisations on the other.

Action Plan

3.3.87 In view of the acute shortage of teachers in management education, particularly in areas like marketing and finance, programmes will be restructured to meet the demands for managerial cadres for the growing infrastructural and service sectors and in areas like International Business, Environment, Technology Management, Entrepreneurship, Material Management, etc. Institutes-industry linkages will be strengthened through consultancy, faculty/professional exchange programmes

Language Development and Book Promotion

3.3.88 Language is a potent instrument of artistic expression and literary creativity. India has inherited a multiplicity of languages, which are at various stages of development. During the successive Plans, the endeavour had been to help the different languages develop to their optimum level. Emphasis was also laid on the promotion of literature in various languages.

3.3.89 Since Independence various programmes have been formulated and implemented for the promotion of Hindi, as a link language, and modern Indian Languages, as provided in the National Policy on Education besides giving equal stress to Sanskrit, Arabic, Persian, Sindhi, Urdu English and other languages, both spoken as well as written.

Review of Eighth Plan

3.3.90 During the Eighth Plan period, the schemes for the promotion of Hindi as a link language were further strengthened. As many as 1521 posts of Hindi teachers were created and assistance was provided to 19 Hindi teachers' training colleges. Besides this, 160 voluntary organisations working for the promotion of Hindi were provided financial assistance for publication of 54 Hindi manuscripts. Fifty scholarships were given to foreign nationals for studying Hindi. Books in Hindi were supplied to the Missions/Embassies abroad.

3.3.91 The Central Hindi Directorate published 6 dictionaries and 30 bilingual and trilingual dictionaries and organised 37 book exhibitions. It also gave awards to 48 writers, organised 32 camps of new Hindi writers and conducted 8 study tours. Twelve lakh books were distributed in non-Hindi speaking areas free of cost. As many as 51,932 students were enrolled in the correspondence course for teaching Hindi language and 66 personal contact programmes were organised for these students.

3.3.92 The Kendriya Hindi Shikshan Mandal, Agra continued the extension programmes for Hindi teachers in tribal areas and conducted training courses for them. It also developed text books and infrastructural materials for teaching Hindi in Non-Hindi speaking areas. The Commission for Scientific and Technical Terminology continued the job of evolving a uniform format of scientific and

technical terminology in Hindi and other Modern Indian languages. It also developed Glossaries of technical terms of all discipline ranging from basic Sciences to Medicine, Engineering, Social Sciences and Humanities. A revised enlarged edition of a comprehensive glossary of about 50,000 technical terms of Medical Sciences, Pharmacology, and Physical Anthropology was published. Similarly, an enlarged Comprehensive Agriculture Glossary was brought out. As many as 2.5 lakh technical terms were keyed into the data base of computer-based National Terminology Bank towards the modernisation of lexicography and facilitating instant dissemination of updated technical terms to the users. It also organised terminology associated workshops.

3.3.93 The Central Institute of Indian Languages in Mysore assisted 40 NGOs for the development and promotion of Modern Indian Languages, besides continuing its regular programmes. It assisted in the publication of 23 manuscripts in Modern Indian Languages. During 1993-94, a Centrally Sponsored Scheme of Appointment and Training of Modern Indian Language teachers, other than Hindi, was launched for enabling the implementation of the three language formula. Eleven State and Regional Institutes of English were provided financial assistance, 30 District Centres for English were sanctioned in different States/UTs and about 4015 teachers received training at these centres. Twenty five NGOs were assisted every year for promotion and development of English language. Twenty one manuscripts in English language were published and 75 books were purchased.

3.3.94 The National Council for Promotion of Urdu (formerly known as Bureau for Promotion of Urdu) assisted 48 voluntary organisations and academic institutions for running of Calligraphy Training Centres and for undertaking various activities for promotion of Urdu language. Academic literature was also prepared and made available to Urdu speaking people of the country. During 1993-94, the Scheme of Modernisation of Madaras was introduced to provide assistance to madaras to introduce science, mathematics, social science, Hindi and English as part of their curriculum. The National Council for Promotion of Sindhi Language was established in 1994 to help in the development, promotion and propagation of Sindhi language.

3.3.95 Two more Kendriya Sanskrit Vidyapithas were started during the Eighth Plan, in addition to the seven already functioning. Two new Adarsh Sanskrit Mahavidyalaya/Shodh Sansathan were also recognised. The construction of the building of the headquarters of Rashtriya Sanskrit Sansathan and Kendriya Sanskrit Vidyapitha at Trichur was also taken up during the Eighth Plan. For the promotion and development of Sanskrit language, 750 registered voluntary organisations were assisted and the services of 125 retired scholars availed of. The Allahabad Sanskrit Vidyapitha took the work of correction and preservation of Sanskrit manuscripts. The Janapitha Sanskrit Vidyalaya corrected and edited the Kashmir Shaiv Darshan Kosha.

3.3.96 The National Book Trust increased its net sale considerably during the Eighth Plan. The National Centre for Children's Literature organised eight extension programmes and workshops and participated in 15 international book fairs, besides organising 13 book exhibitions abroad. The main focus of NBT was on promotion of books for export to South Asia and African countries.

Action Plan

3.3.97 During the IX Plan, emphasis will be laid on enhancing access to tribal languages through various activities. Schemes dealing with development of Sanskrit education and for its promotion will be strengthened with an emphasis on promoting use of Sanskrit in conversation. Sanskrit is also well suited for Computer-based natural language processing activities. It is, therefore, proposed to give a thrust to this area under the scheme for the development of Sanskrit language. New programmes are proposed to be initiated for developing Hindi as a link language, particularly in non-Hindi States. Due emphasis will be given to the promotion of Urdu and Sindhi languages, modernisation of madarsas and development and promotion of English and modern Indian languages. The publication programmes of the National Book Trust will be strengthened further. Special thrust will be given to the effective implementation of the Copy Right Amendment Act by initiating new schemes.

Programmes

3.3.98 For the promotion and preservation of tribal languages, a programme of publication of tribal oral literature, their translation into major Indian languages and provision of training to people to preserve tribal oral literature, etc. will be undertaken. For the promotion of Sanskrit, seminars, symposia and workshops on different topics, particularly relating to science and technology and study of Sanskrit indology by exchange of scholars with other centres/ universities within the country and abroad will be organised.

3.3.99 For the documentation of available Sanskrit treasures, a library with a documentation and computer centre is proposed to be attached with Rashtriya Sanskrit Sansathan. A new scheme will be initiated for the production of suitable teaching material and for starting new correspondence courses. Activities relating to production of simplified Sanskrit learning material along with computer-aided teaching of shastras will be given due emphasis. The Maharishi Sandipani Rashtriya Ved Pratishthan will be helped to expand its activities of preservation, conservation and development of the oral tradition of vedic knowledge and studies.

3.3.100 Schemes for promoting Hindi as an effective link language, particularly in the non-Hindi speaking States, will be expanded /extended further. Teaching of Hindi will be taken up in two more regional languages, Telugu and Kannada, through correspondence courses. New centres of Kendriya Hindi Shikshan Mandal will be established in the States of Orissa, Gujarat and West Bengal and a computer laboratory will be established at the Kendriya Shikshan Mandal at Agra. An audio-visual laboratory will be established under the Commission for Promotion of Scientific and Technical Terminology. Awards will be given to the users of scientific and technical terminology in Hindi. In order to enable faster translation of technical books and manuals using computers, computer assisted translation from English to Hindi of technical books will be undertaken.

3.3.101 For the promotion of Urdu language, the activities of the National Council for Promotion of Urdu Language will be further extended by providing additional funds for the production and publication of books, for conducting correspondence courses in Urdu, calligraphy etc. A Central Urdu Language and Documentation Centre will be established for conservation and preservation of Urdu manuscripts and books.

3.3.102 The activities of the National Council for Promotion of Sindhi language will be promoted by initiating new schemes for the production of technical terminology, learning through correspondence courses, preparation of Sindhi- Hindi-English dictionaries, encyclopaedia etc.

3.3.103 The Central Institute of Indian Languages (CIIL), Mysore will initiate new schemes for developing models for translation among Indian languages, development of common core grammar for machine translation and for setting up a facility for information on Indian languages, etc. The Central Institute of English and Foreign Languages (CIEFL), Hyderabad will focus on improving the standard of teaching of English language and translation of literature from one language to another. For speedy translation of technical books from English to Hindi by using computers, a new scheme will be initiated by CIEFL.

3.3.104 The National Book Trust will be strengthened to give thrust to production of reference material for children. Comprehensive data base of published books will also be prepared. For promoting books and reading habits, special programmes over the mass media will be promoted.

3.3.105 The Copyright Amendment Act will be enforced effectively. The Copyright Cells will also be established for documentation and information on Copyright Rules, related issues etc., besides promoting formation of Copyright Societies in various areas.

NINTH PLAN OUT-LAY AND PHYSICAL TARGETS

3.3.106 The basic agenda for the Ninth Plan is to fulfil the objectives of Article 45 of the Constitution by charting out a clear course of action to make primary education free and compulsory upto Vth standard, though the ultimate object is to universalise upto VIIIth Standard. This phasing is necessary because of the resource constraint on the one side and enormous complexity of the problem on the other.

3.3.107 Bulk of the Plan Outlay will be spent on elementary education. Physical targets for the education sector are at Annexure-3.3.1. The IX Plan will aim at :

- a) Additional enrolment at lower primary stage - 250 lakh
- b) Additional enrolment at upper primary stage - 160 lakh
- c) Construction of school buildings/additional rooms at the elementary stage - 75 thousand
- d) Appointment of primary school teachers - 236 thousand
- e) Appointment of upper-primary school teachers -175 thousand

3.3.108 In addition, there is a target of making 5 crore adults in the age group (15-35) literate during the plan period.

A Perspective for Education During the Next Decade

3.3.109 Since the task of Universalisation of Elementary Education will remain unfulfilled in States like Andhra Pradesh, Assam, Bihar, J&K, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal, particularly at upper primary stage, it is obvious that there is need for a longer time horizon. The Xth Plan will continue to lay emphasis on a higher allocation for primary education so as to complete the unfinished task.

3.3.110 The details of the proposed physical targets are at Annexure – 3.3.2. The Xth Plan will aim at :

- a) Additional enrolment at lower primary stage - 300 lakh
- b) Additional enrolment at upper primary stage - 250 lakh
- c) Construction of school buildings/additional - 125 thousand rooms at the elementary stage.
- d) Appointment of primary school teachers - 275 thousand ✓
- e) Appointment of upper-primary school teachers -250 thousand.

The Xth plan will make another 5 crore adults population in the age-group 15-35 literate.

Physical Targets : IX Plan (1997-98 -- 2001-2002)

Items	1997-98	1998-99	1999-2000	2000-2001	2001-2002	Total
1. Additional Enrolment at Lower Primary Stage (in lakhs)	45	48	50	52	55	250
2. Additional Enrolment at Upper Primary Stage (in lakhs)	25	28	32	35	40	160
3. <u>Civil works</u> Elementary Stage (in thousand units)	15	15	15	15	15	75
4. <u>Supply of Teaching Learning Equipment (TLE)</u>						
(a) Lower Primary Schools (in thousand units)	8	9	10	11	12	50
(b) Upper Primary Schools (in thousand units)	6	7	8	9	10	40
5. <u>Sactioning of Post of Teachers/NFE Instructors</u>						
(a) Lower Primary Stage (in thousands)	43	45	48	50	50	236
(b) Upper Primary Stage (in thousands)	30	32	35	38	40	175
6. <u>Strengthening of Teacher Education Programme</u>						
(a) Upgradation of Colleges of Teacher Education (CTEs), Institute of Advance Studies in Education (IASEs) (Nos)	5	5	5	5	5	25
(b) District Institutes of Education and Training (DIETs)	20	20	20	20	20	100
(c) Block Resource Centres	--	5	10	15	20	50
(d) Cluster Resource Centres	--	10	20	30	40	100
7. <u>Adult Education Programmes</u>						
(a) Coverage of addl. Districts Under literacy and to post-literacy campaigns (incl. Operation Restoration)	45	50	40	40	40	215
(b) Covering of addl. Districts Under cont. Edn. Programme	15	40	40	40	40	175
(c) Opening of Shramik Vidyapeeths (Jan Sikshan Sansthans)	5	5	10	15	15	50
(d) Making Adult Literate (millions)	10	10	10	10	10	50

Physical Targets : Xth Plan (2002-03 – 2006-07)

Items	2002-03	2003-04	2004-05	2005-06	2006-07	Total
1. Additional Enrolment at Lower Primary Stage (in lakhs)	55	58	60	62	65	300
2. Additional Enrolment at Upper Primary Stage (in lakhs)	40	45	50	55	60	250
3. <u>Civil works</u> Elementary Stage (in thousand units)	25	25	25	25	25	125
4. <u>Supply of Teaching Learning Equipment (TLE)</u>						
(a) Lower Primary Schools (in thousand units)	10	15	20	25	30	100
(b) Upper Primary Schools (in thousand units)	10	10	15	20	25	80
5. <u>Sactioning of Post of Teachers NFE Instructors</u>						
(a) Lower Primary Stage (in thousands)	50	52	55	58	60	275
(b) Upper Primary Stage (in thousands)	40	45	50	55	60	250
6. <u>Strengthening of Teacher Education Programme</u>						
(a) Upgradation of Colleges of Teacher Education (CTEs) Institute of Advance Studies in Education (IASEs) (Nos)	10	10	10	10	10	50
(b) District Institutes of Education and Training (DIETs)	10	10	10	10	10	50
(c) Block Resource Centres	25	25	25	25	25	125
(d) Cluster Resource Centres	50	50	50	50	50	250
7. <u>Adult Education Programmes</u>						
(a) Coverage of addl. Districts Under literacy and to post-literacy campaigns (incl. Operation Restoration)	45	50	40	40	40	215
(b) Covering of addl. Districts Under cont. Edn. Programme	15	40	40	40	40	175
(c) Opening of Shramik Vidyapeeths (Jan Sikshan Sansthan)	5	5	10	15	15	50
(d) Making Adult Literate (millions)	10	10	10	10	10	50

3.4 HEALTH

3.4.1 India was one of the pioneers in health service Planning with a focus on primary health care. In 1946, the Health Survey and Development Committee, headed by Sir Joseph Bhore recommended establishment of a well-structured and comprehensive health service with a sound primary health care infrastructure. This report not only provided a historical landmark in the development of the public health system but also laid down the blueprint of subsequent health planning and development in independent India.

3.4.2- Improvement in the health status of the population has been one of the major thrust areas for the social development programmes of the country. This was to be achieved through improving the access to and utilization of Health, Family Welfare and Nutrition Services with special focus on under served and under privileged segment of population. Main responsibility of infrastructure and manpower-building rests with the State Government supplemented by funds from the Central Government and external assistance. Major disease control programmes and the Family Welfare Programmes are funded by the Centre (some with assistance from external agencies) and are implemented through the State infrastructure. The food supplementation programmes for mothers and children are funded by the State and implemented through the ICDS infrastructure funded by the Central Government. Safe drinking water and environmental sanitation are essential pre-requisites for health. Initially these two activities were funded by the Health Department, but subsequently Dept. of Urban and Rural Development and Dept. of Environment fund these activities both in the State and Centre.

3.4.3 At the time of Independence, the country's health care infrastructure was mainly urban and clinic based. The hospitals and clinics provided curative care to patients who came to them. Outreach of services in the rural areas was very limited; there were very few preventive and rehabilitative services available. From the First five-year Plan, Central and State Governments made efforts to build up primary, secondary and tertiary care institutions and to link them through appropriate referral systems. The private and voluntary sector also tried to cater to the health care needs of the population (Table 3.4.1). Efforts to train adequate number of medical, dental and paramedical personnel were also taken up. National Programmes for combating major public health problems were evolved and implemented during the last fifty years. Efforts to further improve the health status of the population by optimising coverage and quality of care by identifying and rectifying the critical gaps in infrastructure, manpower, equipment, essential diagnostic reagents, drugs and enhancing the efficiency of the health system are underway.

3.4.4 Improvement in coverage and quality of health care and implementation of disease control programmes resulted in steep decline in the crude death rate (CDR) from 25.1 in 1951 to 9.0 in 1996. Life expectancy rose from 32 years in 1947 to 61.1 years in 1991-96 with female life expectancy (61.7 yr.) higher than the male (60.6-yr.). However, the morbidity due to common communicable and nutrition - related diseases continue to be high. Morbidity due to non-communicable diseases is showing a progressive increase because of increasing longevity and alterations in life style. During the Ninth Plan efforts will have to be made to tackle this dual disease burden effectively so that there is sustained improvement in the health status of the population.

3.4.5 India today has a vast network of governmental, voluntary and private health infrastructure manned by large number of medical and paramedical persons.

Current problems faced by the health care services include:

1. Persistent gaps in manpower and infrastructure especially at the primary health care level.
2. Suboptimal functioning of the infrastructure; poor referral services.
3. Plethora of hospitals not having appropriate manpower, diagnostic and therapeutic services and drugs, in Govt., voluntary and private sector;
4. Massive interstate/ interdistrict differences in performance as assessed by health and demographic indices; availability and utilisation of services are poorest in the most needy states/districts.
5. Sub optimal intersectoral coordination
6. Increasing dual disease burden of communicable and noncommunicable diseases because of ongoing demographic, lifestyle and environmental transitions.
7. Technological advances which widen the spectrum of possible interventions
8. Increasing awareness and expectations of the population regarding health care services
9. Escalating costs of health care, ever widening gaps between what is possible and what the individual or the country can afford.

3.4.6 The Special Action Plan for Health envisages expansion and improvement of the health services to meet the increasing health care needs of the population; no specific targets have been set.

3.4.7 During the Ninth Plan efforts will be further intensified to improve the health status of the population by optimising coverage and quality of care by identifying and rectifying the critical gaps in infrastructure, manpower, equipment, essential diagnostic reagents and drugs. Efforts will be directed to improve functional efficiency of the health care system through:

- a) Creation of a functional, reliable health management information system and training and deployment of health manpower with requisite professional competence
- b) Multi professional education to promote team work
- c) Skill upgradation of all categories of health personnel, as a part of structured continuing education
- d) Improving operational efficiency through health services research.
- e) Increasing awareness of the community through health education.
- f) Increasing accountability and responsiveness to health needs of the people by increasing utilisation of the Panchayati Raj institutions in local planning and monitoring
- g) Making use of available local and community resources so that operational efficiency and quality of services improve and the services are made more responsive to user's needs.

Approach During the Ninth Plan:

3.4.8 The approach during the Ninth Plan will be:

i. An absolute and total commitment to improve access to, and enhance the quality of, primary health care in urban and rural areas by providing an optimally functioning primary health care system as a part of the Basic Minimum Services;

ii. To improve the efficiency of existing health care infrastructure at primary, secondary and tertiary care settings through appropriate institutional strengthening,

improvement of referral linkages and operationalisation of Health Management Information System (HMIS));

iii. To promote the development of human resources for health, adequate in quantity and appropriate in quality so that access to essential health care services is available to all so that there is improvement in the health status of community, periodically organise programmes for continuing education in health sciences, update knowledge and upgrade skills of all workers and promote cohesive team work;

iv. To improve the effectiveness of existing programs for control of communicable diseases to achieve horizontal integration of ongoing vertical programmes at the district and below district level; to strengthen the disease surveillance with the focus on rapid recognition, reporting and response at district level; to promote production and distribution of appropriate vaccines of assured quality at affordable cost; to improve water quality and environmental sanitation; to improve hospital infection control and waste management;

v. To develop and implement integrated non-communicable disease prevention and control program within the existing health care infrastructure;

vi. To undertake screening for common nutritional deficiencies especially in vulnerable groups and initiate appropriate remedial measures; to evolve and effectively implement programmes for improving nutritional status, including micronutrient status of the population;

New Initiatives in the Ninth Plan

- Horizontal integration of vertical programmes
- Develop Disease Surveillance and Response mechanism with focus on rapid recognition, report & response at district level
- Develop & implement integrated Non-Communicable Disease control Programme
- Health Impact Assessment as a part of environmental impact assessment in developmental projects.
- Implement appropriate management systems for emergency, disaster, accident & trauma care at all levels of health care.
- Improve HMIS and logistics of supplies

- vii. To strengthen programmes for prevention, detection and management of health consequences of the continuing deterioration of the ecosystems; to improve linkage between data from ongoing environmental monitoring and that on health status of the population residing in the area including health impact assessment as a part of environmental impact assessment in developmental projects;
- viii. To improve the safety of the work environment and worker's health in organised and unorganised industrial and agricultural sectors especially among vulnerable groups of the population;
- ix. To develop capabilities at all levels for emergency and disaster prevention and management; to implement appropriate management systems for emergency, disaster, accident and trauma care at all levels of health care;
- x. To ensure effective implementation of the provisions for food and drug safety; strengthen the food and drug administration both at the Centre and in the States;
- xi. To increase the involvement of ISM&H practitioners in meeting the health care needs of the population;
- xii. To enhance research capability with a view to strengthening basic, clinical and health systems research aimed at improving the quality and outreach of services at various levels of health care;
- xiii. To increase the involvement of voluntary, private organisations and self-help groups in the provision of health care and ensure inter-sectoral coordination in implementation of health programmes and health-related activities;
- xiv. To enable the Panchayati Raj Institutions (PRI) in planning and monitoring of health programmes at the local level so that there is greater responsiveness to health needs of the people and greater accountability; to promote inter-sectoral coordination and utilise local and community resources for health care.

Health Care Infrastructure

Primary Health Care

3.4.9 The primary health care infrastructure provides the first level of contact between the population and health care providers upto and including primary health care physicians and forms the common pathway for implementation of all the health and family welfare programmes in the country. It provides integrated promotive, preventive, curative and rehabilitative services to the population close to their hearth and home. Majority of the health care needs of the population is taken care of by the trained health personnel at the primary health care level. Those requiring specialised care are referred to secondary or tertiary care. Thus, the three-tier system consisting of Primary, Secondary and Tertiary care facilities with adequate referral linkages will provide essential health and family welfare services to the entire population.

Rural Primary Health Care Infrastructure

3.4.10 At the time of Independence, Health Care services were mainly urban-centered and hospital-based. Realising the importance of creating a functional Primary Health Care infrastructure, national norms for the primary health care infrastructure were drawn up. These take into account the population, population density and terrain. Earmarked funds were provided under the Minimum Needs Program in the State Plan allocations. The funds received from the Department of Family Welfare and through the Externally Assisted Projects (EAPs) were utilised to build up the Rural Health infrastructure. The current functional status of Primary Health Care infrastructure (Sub Centres, Primary Health Centres and the Community Health Centres), and the additional requirements, wherever necessary, to meet the norms for population as per 1991 census are given in Table-3.4.2.

3.4.11 At the national level the total number of functional Sub centres and the PHCs nearly meets the set norms (one sub-centre for 3000-5000 population, one Primary Health Centre for 20,000- 30,000 population; one Community Health Centre for four PHCs) for the population in 1991 (Table-3.4.2). However, there are marked disparities at the State and district level. It is a matter of concern that many of the districts with poor health indices do not have adequate health infrastructure. There is considerable backlog in terms of construction of the buildings for Sub Centres and PHCs. Some States have adopted innovative measures including mobilisation of local resources to clear this backlog. Taking cognizance of the widening disparities among the States in the availability of Basic Minimum Services (BMS), the Conference of the Chief Ministers in July 1996, recommended that Additional Central Assistance (ACA) may be provided to the States for correcting the existing gaps in the provision of seven Basic Minimum Services (BMS). The modalities of implementation of the programme are discussed in detail in the section on Basic Minimum Services. Of these, access to primary health care, safe drinking water and primary education were given higher priority with the mandate that universal access to these services is to be achieved by 2000 AD. Increasing involvement of the people's representatives, voluntary organisations and the people themselves in these activities will be further encouraged during the Ninth Plan.

3.4.12 While computing the requirements for primary health care infrastructure for the growing population, the fact that population increase has occurred in and around the already established centres have to be kept in mind. The already established physical infrastructure cannot be shifted and it will be difficult to add additional centres to serve the population in geographically convenient locations. It might be more feasible to increase the number of functionaries required to cater to the populations need rather than increase the number of centres.

3.4.13 In some areas, the existing Primary Health Care Institutions (PHIs) are functioning sub-optimally because of one or more of the following factors:

Factors responsible for sub-optimal functioning of Primary Health Care Institutions:

- ❑ Inappropriate location, poor access, poor maintenance
- ❑ Gaps in critical manpower
- ❑ Mismatch between personnel & equipment
- ❑ Lack of essential drugs/diagnostics
- ❑ Poor referral linkages
- ❑ Appropriate remedial measures to improve functional status will be initiated in the Ninth Plan

- (i) Inappropriate location, poor access, lack of maintenance;
- (ii) Lack of professional and para-professional staff at the critical posts;
- (iii) Mismatch between the requirement and availability of health professionals especially physicians at PHC;
- (iv) Lack of funds for essential drugs/diagnostics
- (v) Lack of First Referral Units (FRUs) for linkage of referral services.

3.4.14 These problems need urgent resolution at the local level through adequate provision of resources and intervention of the Panchayati Raj Institutions (PRI).

3.4.15 Unlike the SC and PHCs, the number of functioning CHCs, which form the First Referral Unit (FRU), is far below the projected requirement. This gap should be filled quickly so that the PHCs and Sub Centres do have a nearby referral hospital for the management of 'high-risk patients' who are referred. In most of the States there are functioning sub-district and taluk hospitals. With the restructuring of the Primary Health Care Institutions in the Seventh Plan, these institutions were to be redesignated as CHCs and suitably strengthened. The Eighth Plan had also reiterated this strategy. States that had implemented this suggestion report that these FRUs are well utilised, as they are located in towns that are well connected with villages by transport and are well known.

3.4.16 During the Ninth Plan, all the States will restructure the existing sub-district, taluk hospitals and block level PHCs into functioning CHCs (FRUs); it is expected that once this restructuring is completed, the current large gaps in functioning CHCs will be narrowed substantially. Similarly existing rural hospital and dispensaries have to be restructured wherever possible to meet the requirements in PHC. Earmarked funds under BMS could be utilised for completing the restructuring and strengthening of these hospitals/dispensaries.

Health Manpower in Rural Primary Health Care Institutions

3.4.17 Health manpower position in Primary Health Care Institutions in the last year of the Eighth Plan period is indicated in Table-3.4.3.

Paramedical Personnel

3.4.18 As per the national norms, one male and one female multi-purpose worker should be available at the Sub-Centre catering to the Health needs of 3000 to 5000 population. The number of sanctioned posts of male multi-purpose workers is only half the number required. This has been cited as one of the major factors responsible for the sub-optimal performance in health sector programmes. There are large numbers of male-workers employed in the malaria, leprosy and TB Control programmes. These workers need be trained and redeployed as male multipurpose workers and given the responsibility of looking after health and family welfare programmes in their sub-centre area. The availability of the female multi-purpose workers in adequate number

Ninth Plan priorities for Rural Primary Health Care Institutions

- Ensure existing SC, PHC are fully operational
- Fill the gaps in CHCs through re-structuring existing block level PHC, Taluk, Sub-divisional hospital
- Establish functional referral linkages
- Provide need based manpower on the basis of distances, difficulties and work load

has been the major factor for the near universal coverage under the immunisation Programme and improvement in ante-natal care; however the quality of care provided needs improvement. The vacancies as well as the lack of sanctioned posts of radiographers, lab-technicians and other para-professionals have adverse impact on ongoing Health and Family Welfare Programmes. These need be rectified as rapidly as possible and funds provided under BMS in 1996-97 have been utilised by some States to fill the critical gaps in health manpower

3.4.19 During the Ninth Plan, several of the Centrally Sponsored Schemes including Family Welfare Programme, Revised National Tuberculosis Control Programme (RNTCP), National Malaria Eradication Programme (NMEP) will provide funds for recruitment of appropriate manpower. Funds provided under ACA for BMS may also be utilised to fill the critical gaps in health manpower. Every district will undertake district-level manpower survey and planning, so that funds from all these sources are optimally utilised to fill the existing gaps in vital manpower and unnecessary duplication is avoided.

3.4.20 So far, the national norms for manpower requirement have been computed on the basis of the population. During the Ninth Plan the requirement of personnel will be computed not only on the basis of population, but also on the basis of workload, distance to be covered and difficulties in delivery of Health Services. A flexible approach to recruitment of staff, if necessary on part time basis, will be adopted to ensure that the programmes do not suffer due to lack of key personnel.

Physicians in PHCs

3.4.21 The number of PHC doctors at the national level exceeds the requirement as per the norms. However, there are marked differences in their distribution. About 10% of the PHCs are without doctors, while a similar number have three or more doctors. The PHCs without doctors are mostly located in remote areas where health care facilities under voluntary or private sector are also limited. The State Governments are taking steps to redeploy the PHC doctors so that the needs of the population in under-served areas are met on a priority basis. Some of the innovative approaches to fill the vacancies in under-served areas currently being tried in some States include:

- (i) local recruitment of doctors, if necessary on part-time basis;
- (ii) adoption of a village/PHC/district by industrial establishments, cooperatives, self-help groups and religious/charitable institutions;
- (iii) permitting local practitioners to pay a rental and practice in the PHCs after OPD hours.

3.4.22 During the Ninth Plan, the feasibility and usefulness of these approaches will be evaluated and those found useful in any area will be utilised as a part of local area-specific micro planning for effective delivery of essential Primary Health Care.

Specialists at CHCs

3.4.23 A substantial proportion of specialist's posts even in the functioning CHCs is vacant. Hence, these CHCs are unable to function as First Referral Units. In view of the serious implications of this lacuna in the establishment of referral system, as well as effective

provision of health, MCH/FP care, there is an urgent need to rectify this. Improving the service conditions and providing a conducive environment are essential to ensure that specialists in CHCs do stay and provide the needed services. At the moment, there is no post of Public Health Specialist or Anaesthetist, in the CHCs. Services of Anaesthetist are vital because without an Anaesthetist, emergency/routine surgery in CHCs will not be possible. Efforts will be made to provide this critical manpower, if necessary on part-time basis. As a long-term measure, sufficient number of in-service candidates may be trained in this speciality. It is vital to provide inter linkage between preventive, promotive and curative services in the CHCs so that health and family welfare programmes, disease surveillance and response mechanisms get strengthened. Until the specialists in public health get posted in CHCs, the existing specialists in these Centres who presently are mainly responsible for curative services, will have to be given Public Health orientation, training in Epidemiology and Health Management so that each one of them assumes the responsibility of looking after the Disease Control Programme in their respective specialities e.g. Immunisation by paediatrician and FP by the obstetrician. This would also improve the linkages between the CHC and the PHCs.

Tribal Health

3.4.24 The Scheduled Castes and Scheduled Tribes constitute 16.48% and 8.08% respectively of the total population of the country as per 1991 census. The highest concentration of tribal population is found in the North Eastern States and also in the UTs of Lakshadweep and Dadra and Nagar Haveli. High concentration of tribal population is also present in the States of Madhya Pradesh, Orissa, Gujarat, Maharashtra and Bihar. The factors that contribute to increased disease burden in these communities include:

High disease burden in Tribals is due to :

- Poverty and under nutrition
- Poor sanitation, lack of safe drinking water
- Diseases which are more prevalent in tribals
- Lack of awareness about and access to health care
- Social and economic barriers to utilisation

- a. poverty and consequent undernutrition;
- b. poor environmental sanitation, poor hygiene and lack of safe drinking water, leading to increased morbidity from water and vector-borne infections;
- c. lack of access to health care facilities resulting in increased severity and/or duration of illness;
- d. social barriers preventing utilisation of a available health care services;
- e. specific diseases they are prone to such as genetic diseases (G-6 PD deficiency), infections (Yaws) etc.

3.4.25 The tribal population is not a homogeneous one. There are wide variations with regard to education and health status, access and utilisation of health services among the tribal populations. The tribal populations in North Eastern States have high literacy levels, they access available health facilities, and hence their health indicators and demographic indices are better than national level inspite of the fact that the region is endemic for malaria.

On the other hand, the Onges in Andaman and Nicobar remain a primitive tribe with very little access to either education or health care. Differential area-specific strategies will therefore have to be developed for each of the tribal areas to improve access and utilisation of health services.

3.4.26 The National Health Policy accorded a high priority to provision of health services to those residing in the tribal, hilly and backward areas as well as to detection and treatment of endemic diseases affecting the tribal population. The strategy adopted for meeting the health care needs during the Eighth Plan period included provision of preventive, promotive and curative services through the primary health care institutions, and at the village level through link health workers and trained Dais. Keeping in view the far-flung areas, forest land, hills and remote villages, where most of the tribal habitations are concentrated, the population coverage norms for PHIs is relaxed to one PHC for every 20,000 population and one Sub Centre for 3,000 population. While choosing the villages for establishments of sub centres the States have been advised to set up at least 15% of these in Scheduled Castes' habitations or villages having 20% or more Scheduled Caste population and 7.5% in tribal areas.

3.4.27 Till June 30, 1996 there were 20097 sub-centres functioning against a requirement of 28383 sub-centres for tribal areas. The number of functioning PHCs were 3260 against a requirement of 4180 and functioning CHCs were 446 against a requirement of 492. There are also 1122 Dispensaries and 120 Hospitals in Modern Medicine, 78 Mobile Clinics in Modern Medicine, 1106 Dispensaries and 24 Hospitals in Ayurveda, 251 Dispensaries and 28 Hospitals in Homeopathy, 42 Unani Dispensaries, 7 Siddha Dispensaries functioning in the tribal areas in the country. As many as 16,845 Sub Centres, 5987 PHCs and 373 CHCs have been established in Scheduled Caste Basties/Villages having 20% or more Scheduled Caste population. In addition 980 Dispensaries in Modern Medicine, 1042 Ayurvedic Dispensaries, 480 Homeopathic Dispensaries, 68 Unani/Siddha Dispensaries are functioning in the Scheduled Caste concentrated areas in the country. Mobile dispensaries and camps were organised to provide health facilities wherever feasible.

3.4.28 Even though efforts have been made to create primary health care infrastructure and sanction necessary manpower both under modern medicine and under ISM&H, there is lack of both professional and paraprofessional manpower, mainly because the State Govt. personnel do not prefer to work in these areas.

Strategies to improve Health Care in Tribal areas:

- Ensuring availability of adequate infrastructure and personnel.
- Area specific RCH programmes.
- 100% central Plan funds for NMEP.
- Effective implementation of the health & FW programmes.
- Close monitoring, early detection of problems in implementation and midcourse correction.

The State Governments are trying to minimise vacancies by taking even part time staff in tribal areas. A Central Planning Committee has been set up to review the health care activities in 39 districts of 12 States with pockets of extremely backward tribal population. The States have been requested to restructure the existing primary health care institutions, redeploy existing personnel and make them fully operational. After this is done, it will be possible to compute the gaps in manpower/infrastructure and take steps to ensure that these are filled. In addition to State Government funds, allocation from appropriate

Centrally Sponsored Schemes will also be available for filling critical manpower gap. For example, under the National Malaria Eradication Programmes 100% Central assistance is

being provided for filling critical manpower gaps, and for drugs and insecticides in North Eastern States many of which have predominantly tribal population. The Tribal sub-project of RCH will also provide funds for manpower, equipment, drugs and training of staff.

3.4.29 Priority was also accorded to research in diseases to which Scheduled Tribes/ Scheduled Castes are prone. The Indian Council of Medical Research has set up five regional medical centres in tribal areas in the country one each at Jabalpur, Bhuvaneshwar, Jodhpur, Dibrugarh and Port Blair to carry out research on health problems of people in these regions, especially the scheduled tribes. The All India Institute of Hygiene and Public Health has also initiated a project "Integrated Health Development of Scheduled Castes and Scheduled Tribes of Sunderbans area of West Bengal." The Central Council for Research in Ayurveda and Siddha has set up research projects, and conducted service-oriented survey to provide medical aid to Scheduled Tribes and Scheduled Castes.

3.4.30 A review of all these activities will be undertaken in the Ninth Plan so that information generated so far is transformed into well-structured action programme. During the Ninth Plan period priority action will be:

- a) norms for establishment and staffing pattern of Sub Centres and PHCs will be specifically relaxed in the tribal areas taking into account the difficulty in terrain and problems in health care delivery;
- b) implementation of all ongoing programmes will be intensified and closely monitored in these areas;
- c) 100% assistance under NMEP to tribal districts in other States will be provided;
- d) specific projects will be evolved to meet the requirements for RCH care of the tribal population in the States such as MP, Bihar and Orissa.

Operational strategy for the Ninth Plan

State specific strategies

3.4.31 States have to prioritise and utilise funds available for primary health care on the basis of the existing infrastructure and the performance indices as follows:

1. States such as Kerala and Tamil Nadu with good infrastructure and good performance require only uninterrupted supply of drugs and devices; management of non communicable diseases should get attention in these states.
2. States like Bihar and Uttar Pradesh with poor infrastructure and poor performance: provision of additional funds to health sector from the states outlay to improve the infrastructure, ensure availability of skilled manpower to effectively manage the programme are critical for improvement of performance.

3. States with below average level of infrastructure but average level of performance such as Himachal Pradesh and Andhra Pradesh: attempt should be made to improve infrastructure through optimal utilisation of funds from all the sources as this may result in rapid improvement in performance.
4. States like Punjab and Haryana with above average level of infrastructure and below average performance in some health indices: specific efforts need be made to identify the factors responsible for the relatively poor performance and correct them.

Rural Primary Health Care

1. Ensure that geographically delineated rural areas are covered by the three tier primary health care institutions as per the norms defined above through integration of the existing hospitals/dispensaries in rural areas into the appropriate tier of the rural primary health care infrastructure.
2. Accord high priority to filling the reported large gap in the vital CHC/FRU by redesignating and appropriately strengthening the existing block level PHCs, subdistrict/ subdivisinal hospitals., rural hospitals, subdistrict post partum centres.
3. In all FRUs:
 - a) ensure that there are specialist/trained doctors in the following specialities: Medicine, surgery, obstetrics, paediatrics and anaesthesia;
 - b) ensure that there are no vacancies (if necessary by providing for part time appointments) and that referred patients and those requiring emergency care do receive the treatment they need; until such time that there are qualified PSM personnel to monitor progress in ongoing national programmes, the specialist available in the CHC may be given the additional responsibility of monitoring these programmes (e.g., paediatrician will monitor the immunisation programme); enable the staff to stay and provide good quality

Ninth Plan Strategies for improving Urban Primary Health Care:

- Create and strengthen primary health care infrastructure through:
 - ❖ Re-organisation & restructuring of existing institutions
 - ❖ Re-deploy existing manpower to operationalise these institutions
- Link primary health care infrastructure with existing secondary and tertiary care institutions in the same geographically delineated areas
- Establish effective referral services
- Involve Nagar Palikas in effective inter-sectoral co-ordination & improving community participation

services to the population by improving the service conditions and providing a conducive work environment to doctors (including specialists) and paramedical personnel.

4. Ensure that there are no vacancies in the critical para professional posts by skill development and redeployment of already available manpower; where absolutely necessary manpower gaps may be filled through part time appointments.

5. Available funds to be utilised on priority basis for purchase of equipment, consumables, drugs

required for improving quality of services; funds may be provided for construction only when absolutely necessary.

6. Strengthen the referral services

Urban Health and Family Welfare Services

3.4.32 Nearly 30% of India's population lives in urban areas. Urban migration over the last decade has resulted in rapid growth of people living in urban slums. The massive inflow of the population has also resulted in the deterioration of living conditions in the cities. Some of the available data on health and related indices in urban and rural population is given in Table-3.4.4. From the data it would appear that the urban population has better health facilities and health indices than the rural population. However in many towns and cities the health status of urban slum dwellers is worse than that of the rural population. The urban health facilities provide health care, especially tertiary care to both the urban and rural population. The available urban health care infrastructure is insufficient to meet the health care needs of the growing urban population.

3.4.33 Realising this the municipalities, State Governments and the Central Government have tried to provide funds for building up urban health care. Unlike the rural health services, there have not been any well-planned and organised efforts to provide primary, secondary and tertiary care services in geographically delineated areas in urban health care. As a result, there is either non-availability or substantial under utilisation of available primary care facilities along with an over-crowding at secondary and tertiary care centres.

3.4.34 During the Ninth Plan period, efforts will be made to evolve a well-structured organisation of urban primary health care to remedy the existing situation. A health care delivery system aimed at providing basic health and family welfare services to the population within 1 - 3 kms. of their dwellings will be made available by establishing Urban Health and Family Welfare Centres manned by medical and para-medical persons. These Centres will have:

1. adequate outpatient facility;
2. in-patient facility (at least 10 beds of which four will be for maternity care and the remaining beds will be for medical, surgical and paediatric care);
3. supportive services including laboratory and radiology facilities and pharmacy;
4. provision for referral/ transport of patients.

The essential services, to be provided, will include

1. medical and surgical services including eye and ENT care;
2. obstetric care and new-born care and child health;
3. counseling for reproductive health and contraception
4. dental services;
5. emergency and trauma care;
6. prevention and control of communicable and noncommunicable diseases;

3.4.35 For effective integration of health-related services the urban health centres will co-ordinate with other assigned social sector activities of Nagar Palikas especially for provision of safe drinking water and sanitation.

3.4.36 An overview of all the facilities available in a defined geographical area will be undertaken and appropriate linkages between primary, secondary and tertiary care centres in the area will be established so that provision of basic minimum health services and optimal utilisation of the available health care facilities for referral services will be ensured. Earmarked funds under BMS and the ACA for BMS will be effectively utilised to fill the critical gaps in health manpower and infrastructure in urban areas also so that the performance of both health and family welfare programmes improve.

Operational Strategy for the Ninth Plan

States/ Nagar Palikas will:

1. create and strengthen primary health care infrastructure in urban areas by reorganizing and restructuring of the existing institutions and manpower created under various agencies;
2. link these to the existing secondary and tertiary care institutions in the geographically delineated area.

Involvement of Local Self-Government Institutions

3.4.37 With the 73rd and 74th Constitutional amendments the Nagar Palikas and Panchayati Raj Institutions, are becoming operational in many States. During the Ninth Plan period, these institutions will play increasing role in ensuring planning, implementation and monitoring of health and family welfare services at the local level. They will also ensure effective coordination of programmes at the local level between related sectors such as sanitation, safe drinking water and women and child development, so that optimal benefit from all these programmes become available to the community and the vulnerable segments receive the attention that they need.

Monitoring mechanism

3.4.38 The status of primary health care infrastructure and manpower is being monitored by the Department of Family Welfare; it is also being monitored as a part of the MNP/20 point programme. The Central Bureau of Health Intelligence monitors the health care infrastructure, manpower and health status of the population. Planning Commission monitors the progress in PHC infrastructure/manpower annually during the Annual Plan discussions. These existing mechanisms of monitoring will continue and be strengthened in the Ninth Plan.

Secondary Health Care

3.4.39 The secondary health care infrastructure at the district hospitals today functions both as primary health care infrastructure for taking care of the needs of the population in the city/town in which it is located and as secondary care Centres. This dual role dilutes its effectiveness. To remedy the situation, initiatives were taken during the Eighth Plan to ensure

that these hospitals are able to cope with the referred cases. Four States - Andhra Pradesh, Karnataka, West Bengal and Punjab - have initiated Secondary Health System Development Projects with special focus on strengthening the District Hospital and the referral services. This step is expected to reduce the burden on the tertiary care hospitals, besides providing a credible and effective linkage with Primary Health Care Institutions. In order to raise resources to meet the recurring costs of good quality diagnostic and curative services, the feasibility of collecting user charges from patients (except those below the poverty line) is also being explored. These experiences will enable the States to evolve and implement appropriate schemes for strengthening these hospitals so that they cater to the increasing need for secondary care services during the Ninth Plan period. Increasing involvement of private and voluntary sector in secondary health care has been reported from many states. The mechanisms by which secondary health care services could be made readily available and affordable through collaboration between Government, private and voluntary sector will be explored during the Ninth Plan period.

Secondary Health Care: Priorities in the Ninth Plan

- Provide adequate diagnostics, consumables and drugs
- Strengthen emergency services
- Provide care for high risk cases
- Establish effective, credible linkages with primary and tertiary care facilities in geographically delineated areas.

Operational Strategy for the Ninth Plan

3.4.40 Nagar Palikas/ State governments will strengthen the primary health care network in urban areas so that the district hospitals act only as referral centre. This step is expected to reduce the burden on the secondary care hospitals and result in creation of a credible and effective linkage with Primary Health Care Institutions. In order to raise resources to meet the recurring costs of good quality diagnostic and curative services, the feasibility of collecting user charges from patients (except those below the poverty line) is being explored by some States. The mechanisms, by which secondary health care services could be made readily available and affordable through collaboration between Government, private and voluntary sector may have to be explored.

Tertiary Health Care

Problems:

- Growing demand for complex, costly diagnostic & therapeutic modalities
- lack of skilled manpower, equipment & consumables to meet the demand
- overcrowding

Ninth Plan priorities

- Provide funds for capacity building
- Levy user charges to people above poverty line
- Explore alternative modalities to meet the growing cost of care

Tertiary Health Care

3.4.41 Along with the emphasis on enhancing the outreach and quality of primary health care services and the strengthening of linkages with secondary care institutions, there is a need to optimise the facilities available in the tertiary care centres. At this level, there is an ever-widening gap between what is possible and what is affordable either for the individual or for the country. Majority of the tertiary care institutions in governmental sector lack adequate manpower and facilities to meet the rapidly growing demand for increasingly

complex diagnostic and therapeutic modalities. Over the last two decades these institutions have been facing increasing resource crunch and have not been able to obtain spares for equipment maintenance, to replace obsolete equipment, to maintain supply of consumables and to upgrade the infrastructure necessary to provide high technology, high quality care at affordable cost to meet the ever increasing needs and rising expectation of the population. Several States have started levying user charges for the diagnostic and curative services offered in these institutions from people above the poverty line, to meet some of the recurring costs in providing such services. During the Ninth Plan, efforts will be made to provide a one time support to selected tertiary care institutions in each State and Union Territory to update their technical capabilities and to evolve and implement a rational user charge policy that would enable these institutions to provide high quality tertiary care at affordable cost. Some of the States are also taking up experimental projects of establishment of pay clinics/ pay cabins for generating funds required by the institutions. Other States are exploring the feasibility of providing land, water and electricity at lower cost to private entrepreneurs for setting up tertiary care/ super speciality institutions if these entrepreneurs agree to provide 30% in-patient facilities and 40% of the out-patient /diagnostic services free of cost for people below poverty line. Exemption from import duty for import of diagnostic equipment has been given in the past to private/ voluntary agencies that had agreed to provide diagnostic services to poor patients free of cost. The advantages, disadvantages in these experiments need to be documented and those found useful replicated in other settings.

Operational Strategy for the Ninth Plan

3.4.42 Levying user charges for the diagnostic and curative services offered in these institutions from people above the poverty line, to meet some of the recurring costs in providing such services have to be explored. The feasibility of providing a one time support to selected tertiary care institutions in each State and Union Territory to update their technical capabilities and to evolve and implement a rational user charge policy that would enable these institutions to provide high quality tertiary care at affordable cost may be tested. Some of the States are also taking up experimental projects of establishment of pay clinics/ pay cabins for generating funds required by the institutions. Necessary amendments have to be made to enable these hospitals to retain the funds generated by these activities so that they could be utilised to improve quality of services available. If found successful it might also be possible to use the income from pay clinics as cross subsidy for treatment of patients below poverty line.

Quality and Accountability in Health Care

3.4.43 Ensuring quality and bringing in accountability in health care provided is of utmost importance. In recent years, there has been increasing public concern over these issues because of both increasing awareness of the population and mushrooming growth of institutions providing health care especially in the private sector. The Consumer Protection Act provides one mechanism for redressal of grievances pertaining to quality of care. Some States have attempted to provide a legal framework for the functioning of private health care institutions on the lines of Bombay Nursing Home Registration Act 1949. Until now these legislative measures have not been effectively implemented mainly because of lack of objective criteria for defining 'quality of care' and the possible impact of such regulations on cost of care. The cumulative experience generated thus far will be utilised to evolve norms for quality and cost of health care and ensure accountability in a uniform standardised manner.

Bio-medical and Health Care Technologies

3.4.44 Development and utilisation of appropriate technologies for diagnosis and management of patients at primary, secondary and tertiary care is an essential pre-requisite for improvement in quality of health services without unnecessary escalation in cost of health care. Realising the need for an in-depth review of the requirement for supportive and diagnostic services at primary, secondary and tertiary care a separate Working Group on this subject was constituted prior to the formulation of the Ninth Plan.

3.4.45 During the Ninth Plan period the recommendations of the Working Group regarding diagnostic and supportive services at each level, technologies and equipment appropriate for each of these levels and maintenance of these will be implemented. In all major institutions, a Technical Appraisal Committee will be constituted to assess the essential requirements and prioritise the same according to funds available. A national mechanism for total quality appraisal of new technologies will be established. Efforts will be made for the development and testing of appropriate inexpensive technologies for :

1. measuring weight and height to facilitate early detection of under nutrition in adults and children;
2. colourimeters for bio-chemical tests to improve diagnostic facilities at PHCs;
3. accurate self-recording instruments for measuring arterial blood-pressure for use by ANMs/male multi-purpose workers;
4. hand-held electronic data entry machines for ANM/MMPW to enable record maintenance and updating for Health and Family Welfare Programmes.

Health Insurance

3.4.46 Surveys carried out by NSSO indicate that high cost of hospitalisation is one of the factors leading to indebtedness especially among low and middle-income group population. Health insurance to meet the cost of hospitalisation for major illness will ensure that health care costs do not become a major financial burden or cause of indebtedness among these patients or their families. Over the last two decades several health insurance schemes have been introduced. There are individual, family and group insurance schemes for health care, senior citizens insurance and insurance for specific diseases. Some of the currently operationalised insurance schemes include Mediclaim, Group Medical Insurance Scheme, Group Health Insurance Scheme, Bavishya Arogya (Insurance for senior citizens), Senior Citizen Unit Plan, Cancer Insurance, Asha Deep and Jan Arogya Bima Policy. The experience gained in the implementation of these schemes will provide useful inputs for planning health insurance schemes during the Ninth Plan period. The premium of health insurance may have to be adjusted on the basis of health status of the person and age of the person and his /her family at the time of entry into health insurance. Yearly 'no claim bonus'/ adjustment of the premium could be made on the basis of previous years hospitalisation cost reimbursed by the insurance scheme. This would be a mechanism through which the health education messages regarding the importance of remaining healthy through optimum utilisation of the preventive and promotive services as well as adopting a healthy life style get reinforced by economic incentives. Guidelines regarding what are the services for which

reimbursement of treatment cost will be borne by the insurance company may have to be discussed, drawn up and implemented. Appropriate mechanisms through which the insurance premiums for the people below the poverty line are to be met will have to be evolved, tested and implemented.

DEVELOPMENT OF HUMAN RESOURCES FOR HEALTH

3.4.47 The outcome and impact of any health programme depends on the competencies and skills of the personnel who implement it. Both in the State and in the Central sector, over 75% of the funds provided are spent to meet the salary of the employees. Personnel costs form a major portion of investment in health service delivery in voluntary and private sector. Unlike health service planning, health manpower planning in India has not received adequate attention. There has been very little attempt to assess the requirement in manpower and to match health manpower production with requirement. While the production of physicians and specialists has been more than the estimated requirement, dental and para-professional manpower production has lagged far behind the present and projected needs. The curricula have not kept pace with the changing health care requirements of the population or skills and attitudes required for implementation of health and family welfare programmes. Continuous updating of skills and knowledge have not been made an essential mandatory requisite for all practicing health professionals. There are regional disparities both in quantity and quality of available health care professionals. These factors constitute a major impediment to effective implementation of the health and family welfare programmes.

During the Ninth Plan, the objectives will be:

1. to establish an Education Commission of Health Sciences with the assigned responsibility of planning and producing health manpower that is appropriate in quantity to the present and projected needs of the health system;
2. to strengthen the educational process for all categories of health professionals at all levels so that health care professionals possess necessary knowledge and have appropriate skills, health programme orientation and people orientation;
3. to ensure continuing knowledge and skill upgradation of all health care providers through Continuing Education Programmes with emphasis on multi-professional problem solving learning strategies.

National Education Policy in Health Sciences

3.4.48 The need for National Education Policy in Health Sciences was emphasised in the reports of Medical Education Review Committee 1983 and Expert Committee on Health Manpower Planning, Production and Management 1986. A draft National Education Policy in Health Sciences was prepared by a Consultative Group under the Chairmanship of Member(Health). This draft Policy was adopted in the meeting of the Central Council of Health and Family Welfare held in 1993 and its salient features shall be implemented during the Ninth Plan. The Council recommended urgent action with respect of establishment of Education Commission in Health Sciences.

Education Commission in Health Sciences

3.4.49 The Committee on Health Manpower Planning, Production and Management and the Ninth Plan Steering Committee on Human Resource Development for Health recommended that Education Commission in Health Sciences (ECHS) must be established as a Central Organisation on the lines of UGC to provide requisite financial and technical support for professional and para-professional education in health sciences, to provide realistic projection for national health manpower requirement and to establish suitable mechanism to continuously review the projections based on felt needs.

3.4.50 Major functions of the Education Commission to be constituted during Ninth Plan shall include :

- (1) provision of realistic projections for national health manpower requirements and to recommend the establishment of mechanism(s) through which such projections could be continuously reviewed in the context of evolving social epidemiological and demographic requirements.
- (2) creation of educational institutions and facilities, or strengthening of such facilities in already existing educational institutions through adequate financial and technical support so as to facilitate the production of projected health manpower, and establishment of one or more Universities of Health Sciences in all States/regions.
- (3) implementation of desired changes required to be brought about in the curricular contents and training programmes of medical and allied health professionals, at various levels of functioning, to optimise health care delivery system.
- (4) planning and implementation of appropriate changes in the educational system that would facilitate the establishment of essential inter-linkages between health functionaries of various grades.
- (5) establishment of a continuing review mechanism for the strengthening of health-related pedagogic communication and information technologies; development of such health-related community educational programmes, using distance education mode that could effectively and optimally utilise these technologies.
- (6) development of in-built mechanism of reviewing, monitoring, and mid-course corrections through financial and technical assistance so as to ensure expeditious implementation of recommendations and decisions.
- (7) co-ordination of intersectoral health systems research by interlinking the education of suitable manpower with mission oriented research needs.

3.4.51 The Commission will in consultation with the Universities and Professional Councils concerned, take all such steps as they may deem appropriate for the promotion and coordination of Education in Health Sciences, including medical sciences at all levels, nursing, pharmaceutical and dental sciences and other categories of health care providers.

3.4.52 The Central Government has already initiated the process for obtaining approval for establishment of the Commission as a statutory body. Due to paucity of funds only a token

provision of Rs.1 crore was made for establishment of the Commission during 1996-97. Sufficient funds shall be provided during the Ninth Plan to make the Commission fully operational.

Universities of Health Sciences

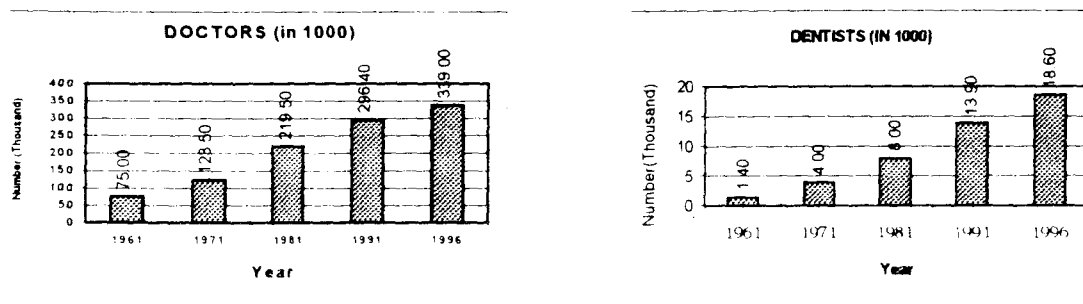
3.4.53 The Universities of Health Sciences will be the implementing arm of ECHS for production, evaluation and sustenance of health manpower policy. The aim of the Universities of Health Sciences is to create a physical and academic environment where all Faculties of Health Sciences can interact together and provide a model for the education and training of health care teams, through multiprofessional and inter-professional education. In order to achieve this it was recommended by the Bajaj Committee that such Universities of Health Sciences be established in the country, one in each region to begin with and subsequently one for each major State. The Universities will affiliate all Medical Colleges, Dental Colleges, Para professional Colleges and Nursing Colleges, besides possibly considering grant of affiliation to Colleges of ISM&H, imparting graduate level education in the State. These Universities may have one or more constituent professional colleges, and a number of study centres and field project areas. Three Universities have already been established in Andhra Pradesh, Tamil Nadu and Karnataka and another is being started in Punjab. Networking of these Universities with each other and through the ECHS shall be established. Attempts will be made to establish at least one University of Health Sciences in each region during the Ninth Plan period.

Health Manpower Planning

3.4.54 The Bhore Committee was the first to recommend a population-based norm for medical (1/1500) and nursing personnel(1/500). The Mudaliar Committee made realistic recommendations for progressive improvement in health manpower. A comprehensive situation analysis is available in the 1987 Report of the Expert Committee on Health Manpower, Planning Production and Management (Bajaj Committee). This Committee suggested that for assessment of health manpower requirement several parameters including functionary to population ratio, inter-professional ratio and manpower-mix must be considered. It was further emphasised that health manpower requirements would vary depending upon the income-elasticity and the public and private expenditure on health. During the Ninth Plan, health manpower planning will be linked to the needs and demands of health services. In addition, a fine tuning will be undertaken regarding health manpower development required for components of the programme and health manpower requirements in voluntary and private sector.

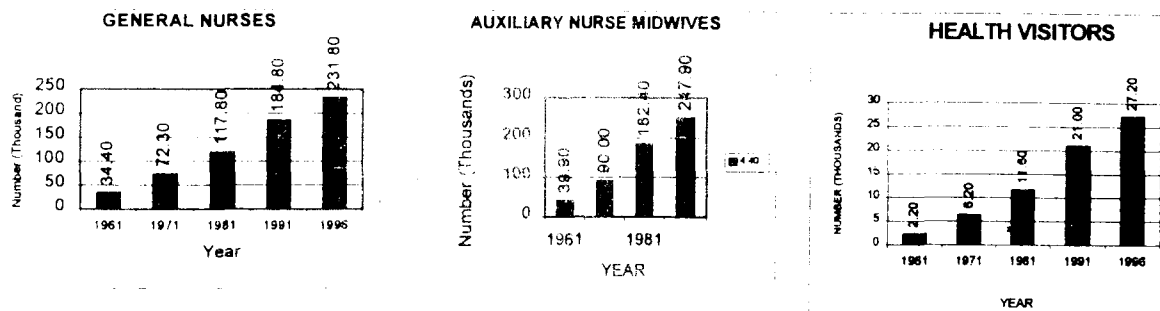
FIGURE - 1

CHANGES IN HEALTH MANPOWER OVER FIVE DECADES



Health Manpower Production

3.4.55 The changes in medical, dental and nursing personnel over the last five decade are given in Fig-1. The Eighth Plan clearly stated that "the existing facilities for training of medical graduates has outstepped the needs. No new medical college or an increase in the admission capacity of the existing colleges will be supported during the Eighth Plan". The



Indian Medical Council Act was amended in 1993. According to this amendment "no person shall establish a medical college and no medical college shall open a new or a higher course of study or training including a post graduate course of study or training or increase in its admission capacity in any course of study or training, without the prior permission of the Central Government". The Central Government after due clearance from the Medical Council of India may grant permission for establishment of new Medical Colleges if there was a requirement for manpower in the field of practice of medicine and if other conditions specified in the enabling provisions of the Act are fulfilled. A strict compliance of these provisions is called for.

3.4.56 The current stock of medical, dental, nursing and para-professionals in the country and the number of training institutions for each category are given in Table-3.4.5. During the Ninth Plan, no new medical college will be opened nor will there be any expansion in the admission capacity of existing institutions as there are adequate number of doctors in the country. Already, over two third of the doctors are undergoing postgraduate training. Hence there is no need for any addition to existing number of seats in various post graduate institutions, except for identified specialities with unmet manpower needs.

3.4.57 There is an acute shortage of dental manpower in the country. There is a need to ensure that adequate number of dental professionals of appropriate quality is trained. The dental colleges are unevenly distributed in the country. As many as 41 out of 96 dental colleges are in one State. The quality of dental education needs to be reviewed and appropriate remedial measures instituted.

3.4.58 Nursing education and nursing services have been given a high priority in order to bridge the large gap between requirement and availability of nurses and ensure quality of nursing training. These efforts will be continued during the Ninth Plan. In addition, efforts will be made to meet the increasing demand for nurses with specialised training in speciality and sub-speciality areas intensive medical and surgical care in hospitals and for public health nurses in health care system.

3.4.59 Many programmes are faltering because of lack of critical para-professional manpower. Over the last three decades, there has been an increasing requirement of several categories of para-medical persons such as male multipurpose worker, laboratory technicians,

radiographers. Their availability and requirement vary from State to State and from time to time. Till the Eighth Plan the medical colleges, dental colleges and nursing training institutions have been the major training institutions for para-professionals. During the Eighth Plan the Open University system and the vocational training courses at 10 + 2 stream have provided two additional mechanisms for education and training of para-medical manpower. During the Ninth Plan the State manpower cells will assess the changing requirements for para-professionals, preferably at the district level and take necessary steps to meet the requirement through all available training channels. The Universities of Health Sciences (UHS) will ensure that appropriate curricula are evolved and followed. The State Governments will make necessary amendments in recruitment rules for these posts so that those who qualify through vocational courses and open university system become eligible for the jobs in Government, voluntary and private sectors. The feasibility of introducing pre-vocational courses at the 9th and 10th standards will be explored.

Bio-Informatics, Telematics and Distance Education

3.4.60 As early as 1986-87, the Expert Committee on Health Manpower Planning, Production and Management (Bajaj Committee) recommended: "for an effective support to

Ninth Plan priorities for Human Resources Development for Health include:

- ❑ Creation of a district data base on requirement, demand and availability for health manpower in the Govt., Private and voluntary sectors
- ❑ Periodic updating of information on:
 - Requirement of different categories of health manpower
 - Availability of health manpower
- ❑ Health manpower production based on the needs
- ❑ Improvement in quality of undergraduate/ postgraduate education
- ❑ Efforts to promote appropriate health manpower distribution
- ❑ Continuing medical education for skill upgradation and appropriate people and programme orientation
- ❑ Continuing multiprofessional education for promoting team work & intersectoral co-ordination

the health manpower management, information system is vital for managerial efficiency. The health manpower information should encompass all the components of the health manpower management. The Committee recommends development of national health manpower information system as an important support to the health manpower development strategies." While recommending the establishment of Universities of Health Sciences, it was further emphasized that "it is entirely likely that several new faculties will grow in the University of Health Sciences: It is expected that

a faculty of health information systems shall also be established in the Health Science Universities".

3.4.61 In spite of these far reaching recommendations, necessary action plans have yet to be concretised. Information Technology (IT) is now becoming one of the major components of the technological infrastructure for health management. All sub-sectors dealing with the generation, transmission and utilisation of demographic and epidemiological data such as bio-informatics, bio-statistics, health management information system (HMIS) and decision support systems (DSS) are finding increasing use in health planning and management. With the nation-wide network, NICNET, under the Planning Commission, giving health information support through its MEDLARS, Bio Medical Informatics Programme and Tele-Medicine Programme, a viable nucleus has already been set up which will be enhanced during the Plan period to cover all the Primary Health Centres and district hospitals. MEDNET, when operational, may become a major tool of continuing multiprofessional

education and distance learning. Policy initiatives shall be undertaken during the Ninth Plan with the aim of developing clinical leadership, deciding which applications are to be supported, providing the appropriate technology, gaining clinician acceptance, setting up in Universities of Health Sciences one or more clinician-driven academic unit(s) and network(s) that are multidisciplinary and multisite to provide support for new and existing biomedical applications.

Health Manpower Information System

3.4.62 At the moment only infrastructure and manpower at the primary health care institutions are monitored and information periodically updated. There is no mechanism for obtaining and analysing information on health care infrastructure and manpower in private and voluntary sectors in the district. Unless this information is available it will not be possible to undertake any effective area-specific microplanning so that the health manpower required to meet the local health needs of the population is provided. This exercise becomes even more important in the current context when the population is undergoing a demographic, health and economic transition and there are marked differences in the health profile between States and districts. There is also the need for aggregating this data at the State and Central level so that appropriate policy and programme initiatives can be undertaken and adequate resources allocated.

3.4.63 During the Ninth Plan, attempts will be made to create a district data base on health manpower belonging to various categories (including the ISM&H practitioners) working in Central and State Government, voluntary, private sectors, defense services and Railways and public sector undertakings. The District Manpower Cell will assess district manpower requirement and availability and assist the State in manpower planning at district level. District-based manpower profile data will be updated at least once a year. Health manpower planning exercise at district, State and regional level by the University of Health Sciences will be carried out utilising this data and the information on the health care needs of the population and health facilities available. The Education Commission for Health Sciences (ECHS) will act as the nodal agency for the exercise at the national level.

3.4.64 The Health Manpower Planning, Production and Management Committee in 1987 recommended that the ECHS must be established as a central organisation on the lines of UGC for professional and para-professional education in health sciences, inter alia to provide realistic projection for national health manpower requirement and suitable mechanism to continuously review the projections based on felt needs. During the Ninth Plan period, the ECHS will promote all educational activities for all categories of health manpower at all levels. The UHS will develop newer faculties such as health management, health economics, social and behavioural sciences. UHS will also initiate necessary steps to enhance computer literacy among medical students and expose them to emerging technologies of informatics and telematics which are likely to be the base and basis for 21st century mode of communication through telemedicine and distance learning by open learning system in medicine and health sciences. Health manpower cells in the States will coordinate collection of data on manpower at district level and implement the recommendations of UHS for health manpower production.

Quality of Education in Health Sciences

3.4.65 One of the important reasons for the sub-optimal performance of health care institutions is the poor quality and inappropriateness of the education and training of health care providers, resulting in a lack of problem-solving competencies and skills. During the Ninth Plan period, appropriate changes in syllabi, curricula, teaching methods and assessment system will be made through various professional Councils to improve the undergraduate and post-graduate training so that the medical and dental graduates as well as allied health professionals acquire necessary technical knowledge and managerial skills to solve health problems and implement ongoing major national health and family welfare programmes within the existing constraints.

3.4.66 Medical colleges are periodically inspected by the Medical Council of India (MCI) regarding both the physical facilities and training process. During the Ninth Plan, inspection by the MCI will be not only for initial recognition but also for continued recognition as medical colleges and admissions will not be permitted unless the college is recognised. Attempts will be made to reorient education in health sciences so that the health care system becomes more efficient and effective. The existing professional Councils and any other Council which may be established in the future, will be responsible for ensuring the quality of medical and para-medical education, training and ethics of conduct and practices as per the statutory requirements.

Continuing education for health professionals

3.4.67 In the context of the rapidly evolving technology, demographic transition, changing lifestyles and disease patterns it is imperative that the process of continuing education is internalised throughout the working career of all health professionals so that their knowledge and skills are updated. Currently, in-service training courses in various institutions, thematic CME programmes conducted by National Academy of Medical Sciences, National Board of Examinations, and various professional bodies and associations have played a major role in CME. All these programmes will be expanded and intensified during the Ninth Plan. In addition, Open Universities will play a major role in periodically updating the skills and knowledge of various categories of health personnel. The Open University mechanism can efficiently and cost effectively provide specific training programmes where there is a major component of didactic learning eg. epidemiology, hospital administration and health management. It is also likely to be one of the most effective, efficient and cost-effective method of CME involving practitioners in Government, private and voluntary sectors and hence requires increased utilisation.

3.4.68 During the Ninth Plan, a major programme of multi-professional and inter-professional education will be initiated for training the members of health care delivery team, so as to enable them to accomplish group tasks in providing health care in the community. At the national level there will be training of the trainers in newer technologies, national programmes on emerging diseases and their management. At the State level there will be a similar training of personnel with special reference to the State's requirement. At the district level two types of training programmes have to be undertaken: 1) the multi-professional health team training in delivery of integrated health and family welfare service

at the primary health care level; and 2) the training of the multi-professional team for the delivery of evolving programmes eg. the delivery of RCH care programme.

3.4.69 In addition, there will be training of the health professionals working in the government, voluntary and the private sectors together as a team to tackle the identified health problems in the district. Inter-sectoral training of personnel from related sectors e.g., nutrition, agriculture, water resource management and environmental sanitation will be undertaken as and when necessary.

Operational strategy for the Ninth Plan

1. Attempts will have to be made to create a district data base on health manpower belonging to various categories including ISM&H practitioners working for Govt., voluntary and private sectors. Based on the availability, need and demand appropriate policy and programme initiatives for manpower development have to be made at State/district level.
2. Improvement in quality of pre-service and in-service training for medical and paramedical personnel.
3. Periodic updating of knowledge/skill for all categories of health manpower throughout their working careers so that they are able to provide appropriate quality of health care is essential. In addition to available training programmes increasing use may have to be made of the distance learning.

Control of Communicable Diseases

3.4.70 At the time of independence communicable diseases were the major cause of morbidity and mortality in the country. Efforts were therefore initially directed towards their

Strategies to improve performance of Disease Control Programmes during Ninth Plan:

- Rectify identified defects in design and delivery
- Fill critical gaps in infrastructure and manpower
- Make service delivery responsive to user needs
- Ensure skill upgradation, supplies, and referral services
- Improve community awareness, participation and effective utilisation of available services

prevention and control. Small pox, a major killer in pre-Independence era has been eradicated. In 1953, malaria affected over 75 million and killed 0.8 million people. The National Malaria Control Programme, which was launched in 1953, successfully brought down the incidence of malaria to 0.1 million cases with no death by 1965. Subsequently, there has been a resurgence of

malaria. The Modified Plan of Operation has, however, succeeded in keeping morbidity and mortality at relatively low levels. The use of antibiotics has resulted in a substantial reduction in deaths due to common infections. Effective therapy for infections and vaccines for prevention of infection were the major factors responsible for the steep fall in crude death rate from 25.1 in 1951 to 8.9 in 1996. However, the morbidity due to communicable diseases

continues to be high. Deteriorating urban and rural sanitation, poor liquid and solid waste management and overcrowding have resulted in an increasing prevalence of common communicable diseases. The re-emergence of diseases like Kala Azar, and emergence of new infections like HIV have added to the existing disease burden due to communicable diseases. Control of communicable diseases is becoming more difficult because of emergence of drug-resistant pathogens and development of insecticide-resistant vectors.

3.4.71 Even though health is a State subject, the Central Government has over the last forty years provided additional funds through Centrally Sponsored Schemes (CSS) for control of some of the major communicable diseases. Of these, the National Leprosy Eradication Programme is likely to achieve its objective of reduction in leprosy prevalence to below 1 per 10000 by the end of the Ninth Plan. However, malaria, tuberculosis and HIV infection require vigorous and intensified efforts for their containment and control.

3.4.72 The performance in, and shortcomings of, these National Programmes have been evaluated during the Eighth Plan period by Expert Committees. Accordingly, following remedial measures will be taken during the Ninth Plan period to:

1. rectify the identified defects in the design and delivery of these programmes;
2. fill the critical gaps in infrastructure and manpower;
3. improve the operational efficiency and the quality of services;
4. make service delivery system more responsive to users needs;
5. ensure that health care providers have the necessary skills and support, including referral facilities and supplies they need;
6. improve the community awareness of the existing services through IEC efforts so that there is optimal utilisation of available services.

3.4.73 External assistance has been obtained to augment available funds for implementing these programmes. These National Programmes will continue as CSS during the Ninth Plan period.

New initiatives during the Ninth Plan

Horizontal Integration of Vertical Programmes:

3.4.74 Initially, when sufficient infrastructure and manpower were not available for management of major health problems, several vertical programmes eg. National Malaria Eradication Programme (NMEP), National Leprosy Eradication Programme (NLEP) were initiated. Subsequently, over the years a three-tier health care infrastructure has been established. During the Ninth Plan period, efforts will be made to integrate the existing vertical programmes at district level and ensure that primary health care institutions will provide comprehensive health and family welfare services to the population.

3.4.75 In order to assist the PHC/ CHCs officers to effectively implement such a horizontal integration, the middle level public health programme managers who are currently heading

the vertical programmes at district level will be given the additional task of ensuring coordination and implementation of integrated Health and Family Welfare Programme at Primary Health Care institutions in defined blocks. Involvement of the public health specialists at the subdistrict level will also improve data collection, reporting, strengthening HMIS, improving the supply of essential drugs/devices for all programmes at PHCs/CHCs and enabling operationalisation of the disease surveillance and response at district level.

Disease Surveillance & Response

3.4.76 Given the existing conditions of poor environmental sanitation and the weakness of the public health system it may not be possible to completely prevent outbreaks of communicable diseases in the near future. Delays in recognition and reporting of focal outbreaks, absence of functioning HMIS and disease surveillance system result in delays in implementation of appropriate response and consequent high morbidity and even mortality. The Expert Committee on Public Health System chaired by Member (Health), Planning Commission recommended the establishment of an epidemiological surveillance system. During the Ninth Plan, establishment of a functioning system for early detection and prompt response for rapid containment and control of the disease outbreak will receive high priority. Disease surveillance and response will be at district level to ensure prompt, effective, efficient remedial action utilising the existing infrastructure. This system will be given the necessary back-up, laboratory and epidemiological support so that containment measures are based on sound data and scientific rationale. This back-up system will be evolved by strengthening and optimal utilisation of the facilities and expertise available in the national institutions/medical colleges.

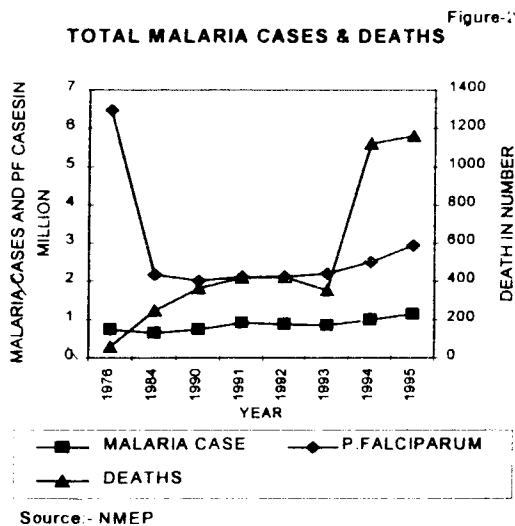
3.4.77 The regulations governing notification of diseases vary widely between States. There is an urgent need to develop a uniform regulation for notification of diseases in all States. The diseases that are to be covered under the notification system should consider adequately the problems of new, emerging and re-emerging infections so that appropriate response could be generated to tackle the situation.

Hospital Infection Control and Waste Management

3.4.78 Increasing incidence of hospital-acquired infections and accidental infection in health care providers and waste disposers, renders it imperative that efforts are made to improve infection control and waste management through utilisation of appropriate, affordable technology at all levels of health care. During the Ninth Plan period, infection control and waste management in all health care institutions will receive due attention and adequate funding.

National Malaria Eradication Programme (NMEP)

3.4.79 In the early fifties, malaria was not only a major cause of morbidity and mortality in the country but also one of the constraints for ongoing developmental efforts. Illness due to malaria was a major cause of absenteeism in agricultural and industrial labour and in irrigation and construction workers in the fifties. The National Malaria Control Programme, the first of the Health Sector CSS, aimed at reduction of the morbidity and mortality due to malaria, was launched in 1953. It is noteworthy that even though there was no well established health infrastructure in rural areas, the number of cases came down from 70 million in 1950 to 0.1 million by 1965. However, subsequently, there was a resurgence of



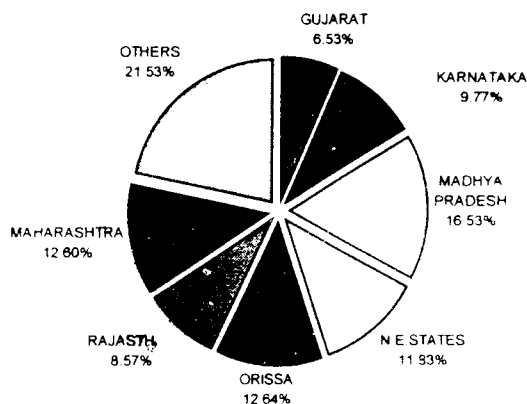
malaria. In 1976 over 6.7 million cases were reported. From 1977, the NMEP started implementing a Modified Plan of Operations for control of malaria. After the initial success the number of cases have remained at over 2 million (Fig-2).

3.4.80 Initially, malaria in India was mainly a rural disease. Subsequently, due to major ecological changes five more eco-types have been recognised viz., forest and forest fringe malaria; rural malaria; urban malaria; industrial malaria; border malaria and migration malaria.

3.4.81 The North Eastern (NE) States have high incidence of *P.falciparum* malaria. High morbidity, mortality due to malaria and emerging problem of drug resistance are reported. A major initiative during the Eighth Plan (1994) was to provide 100% Central Assistance for NMEP in NE States so that financial constraints do not come in the way of effective implementation of the NMEP. The performance of NMEP during the Eighth Plan period is indicated in Table-3.4.6. There has been an increase in the number of cases of malaria reported during the Eighth Plan period. The proportion of Pf infection has increased to 40 per cent. Many of the fever patients are not screened, diagnosed and effectively treated primarily because of lack of male multipurpose worker and laboratory technicians. Not all the diagnosed cases are reported to the programme authorities. Residual insecticide spraying is often not done at appropriate time. Community involvement in spray operations and the bioenvironmental measures for control of mosquito breeding are poor. Some of the vectors of malaria have developed resistance to one, two or three of the currently used insecticides.

3.4.82 There is an urgent need to intensify the malaria control activities during the Ninth Plan period especially in the States which had been reporting large number of malaria cases (Fig-3). The NMEP has, therefore, drawn up a programme for intensive and effective implementation of the Modified Plan of Operation (MPO) in malariogenic areas in the country during the Ninth Plan. Financial assistance has been procured from the World Bank for augmenting domestic funds available for implementation of the programme.

Figure-3
PERCENTAGE DISTRIBUTION OF MALARIA CASES DURING 1995



Source:- NMEP

3.4.83 The criteria for selecting the areas for intensive implementation of MPO during the Ninth Plan are:

Modified Plan of operation for NMEP during the Ninth Plan

Intensification of control activities in areas with:

- API of > 2 in the last three years
- Pf rate of > 30%
- Reported deaths due to malaria
- > 25% of the population is tribal

Components of the Modified Plan of Operation

- Early diagnosis and prompt treatment
- Selective vector control & personal protection
- Prediction, early detection & effective response to outbreaks
- IEC

Targets for 2002

- ABER of over 10%
- API < 0.5%
- 25% reduction in morbidity and mortality due to malaria

(i) annual parasite incidence of more than 2 for the last 3 years;

(ii) Pf. rate of more than 30%; deaths due to malaria reported

(iii) tribals form more than 25% of the population.

3.4.84 The areas identified on the basis of these criteria are the 7 North Eastern States and 100 districts spread over the States of Andhra Pradesh, Bihar, Gujarat, Madhya

Pradesh, Maharashtra, Orissa and Rajasthan.

3.4.85 The ongoing programme with 100 percent Central assistance in the seven North-Eastern States will be continued during the Ninth Plan. Additional inputs will be provided to the 100 hardcore and tribal districts identified on the basis of the above criteria. Enhanced malaria control programme will also be implemented in 19 cities/ towns which have rising slide-positivity rate and in areas where there have been focal outbreaks of malaria in the previous year.

The main components of MPO that will be strengthened in these areas are:

1. early diagnosis and prompt treatment, through strengthening of active and passive surveillance and laboratory diagnosis;
2. selective vector control by integrating various vector control approaches and, promotion of personal protection methods;
3. prediction, early detection and effective response to malaria outbreaks;
4. intensified information, education and communication campaign.

3.4.86 In spite of the reported increase in drug resistance, Chloroquin will remain the first line drug for presumptive treatment and Primaquine will be given for radical treatment. Sulpha pyrimethamine drug combination will remain as the second line of treatment especially for Pf cases in areas where drug resistance is reported and selective use of quinine will continue for treatment of severe and complicated malaria.

3.4.87 The village will be the unit for residual insecticide spray operations. DDT will continue to be the insecticide of choice in areas where vector is sensitive because of its efficacy and cost effectiveness. In areas where DDT is ineffective, Malathion may be used. Synthetic pyrethroids will be used only in areas where triple insecticide resistance is reported.

Personal protection through use of insecticide impregnated bed nets will be advocated. In urban areas stringent measures to prevent stagnation of water, ensure covering of overhead tanks and drains and enforcing periodic cleaning will be attempted.

3.4.88 With effective implementation of the Programme, it is expected that by the end of the Ninth Plan the following targets will be achieved in malariogenic areas: 1. ABER of over 10%; 2. API less than 0.5% and 3. 25% reduction in morbidity and mortality due to malaria.

Kala-azar

3.4.89 Available data indicates that Kala-azar is endemic in 36 districts in Bihar and 10 districts in West Bengal (population 75 million). Periodic outbreaks of Kala-azar with increase in morbidity and mortality continue to occur in these States. Over 90% of the reported cases and over 95% of the reported deaths are from Bihar. Over two third of the cases in Bihar are reported from 7 districts.

3.4.90 The Government of India is implementing a CSS for control of Kala-azar in Bihar and West Bengal. Following reported increase in the number of cases and deaths due to Kala azar in 1989-91, an intensive programme for containment of Kala-azar was launched in 1992.

3.4.91 The strategy for control of infection includes interruption of transmission through insecticidal spraying with DDT and early diagnosis and treatment of Kala-azar cases. The Government of India is providing insecticides and anti Kala-azar drugs. The State Governments meet the expenses involved in the diagnosis and treatment and insecticide spraying operations.

3.4.92 Effective implementation of the programme resulted in a decline in both Kala-azar cases and deaths during 1993-95. However, there were delays and inadequacy of the insecticidal spray operations during 1995-96 and the decline could not be maintained (Table-3.4.7).

3.4.93 During the Ninth Plan, the focus will be on ensuring effective implementation of the programme so as to prevent outbreaks and eventually to control infection. DDT will continue to be the mainstay for insecticide spray as the vector (*Phlebotomus argentipes*) is still susceptible to DDT.

Other Vector-borne Diseases

Filariasis

3.4.94 Filariasis is endemic in Southern, Eastern, Western and Central Indian States. It is estimated that about 428 million (113 urban, 315 rural) people are living in areas where filariasis is endemic. Reports from 13 States and UTs covering about 48 million population indicate that annually 6 million persons suffer from acute lymphangitis due to filariasis. Chemotherapy and vector control measures have succeeded in reducing microfilaria rate and disease rate in 94% of towns where control programmes have been in operation for more than 5 years.

3.4.95 During the Ninth Plan, the strategy for filariasis control would include:

- (1) single dose DEC mass therapy once a year in identified 13 districts and selective DEC treatment in filariasis endemic areas;
- (2) continuation of vector control measures;
- (3) detection and treatment of microfilaria carriers, treatment of acute and chronic filariasis;
- (4) IEC for ensuring community awareness and participation in vector control as well as personal protection measures.

Dengue

3.4.96 Dengue outbreaks have been reported from urban areas from all States. All the four types of dengue virus exist in India. The vector *Aedes Aegypti* breeds in peridomestic fresh water collections and is found in both urban and rural areas. Analysis of available data from 54 dengue outbreaks between 1954 and 1995 indicate that:

- (1) dengue outbreaks occur both in urban and rural areas; and
- (2) over the years there has been an increase in reported cases of dengue, dengue haemorrhagic fever and dengue shock syndrome.

3.4.97 Diagnostic tests for dengue virus are not readily available in most parts of the country. At present, there is no mechanism for monitoring and surveillance for dengue. During the Ninth Plan efforts will be made to:

- (1) establish an organised system of surveillance and monitoring;
- (2) strengthen facilities for early diagnosis and prompt treatment;
- (3) intensify IEC efforts to ensure that all households implement peridomestic measures to reduce breeding of *Aedes*.

Japanese Encephalitis

3.4.98 Japanese Encephalitis (JE) has been reported in the country since mid fifties. With increasing development of irrigation projects and changing pattern of water resource management there has been a progressive increase in number of States reporting cases of JE in India. Twelve States/ UTs have reported outbreaks of JE in the last decade and 378 million population is exposed to risk of JE. The NMEP has been implementing the recommendations of the Expert Committee on JE control. However, implementation of the strategies for improving clinical management, vector control, disease surveillance and health education has been sub-optimal in most States. During the Ninth Plan efforts will be made to intensify all these activities.

3.4.99 Efforts to reduce morbidity and mortality due to vector-borne diseases by appropriate vector control measures aimed at reduction of disease transmission and strengthening of

facilities for early diagnosis and treatment of cases in primary and secondary care settings will be continued in the Ninth Plan. Information, education and communication (IEC) activities to ensure community awareness and cooperation, in programmes for prevention, early detection and appropriate treatment of vector borne diseases will be intensified.

National Tuberculosis Control Programme (NTCP)

3.4.100 Tuberculosis is a major health problem in India. The aim of the fight against tuberculosis is at individual level to cure disease, to preserve and quickly restore work capacity, to allow the person to be within the family and community and in this way to maintain their socio-economic status and at the community level, to reduce the risk of tuberculosis infection through case finding and their appropriate management and care. Studies carried out by the Indian Council of Medical Research (ICMR) in the fifties and sixties showed that:

1. unlike the situation in developed countries, BCG did not protect against adult TB and BCG given at/ soon after birth provided some protection against TB in infancy and early childhood.
2. domiciliary treatment with anti TB drugs was safe and effective.

3.4.101 A National Tuberculosis Control Programme was initiated in 1962 as a CSS. The programme was aimed at early case detection in symptomatic patients reporting to the health system through sputum microscopy and X-ray and effective domiciliary treatment with standard chemotherapy. BCG vaccination at birth was incorporated into the immunisation programme. The Short Course Chemotherapy (SCC) which shortened the duration of treatment to nine months was begun in selected districts in 1983. Over the years, 293 districts were included for SCC.

3.4.102 During the last three decades, because of low case detection, case holding and cure rates, the Programme has not succeeded in bringing down the disease burden, in spite of availability of effective chemotherapy. Estimates based on available limited data from small-scale epidemiological studies indicate that the prevalence of active disease continues to be 1.4 per cent. It is estimated that there are about 14 million cases of active tuberculosis. Of these 3.5 million are highly infectious sputum positive tuberculosis cases. With the HIV-TB co-infection the incidence of tuber-culosis may increase significantly from the current 1.8 per thousand.

3.4.103 The performance under the NTCP during the Eighth Plan period is given in Table-3.4.8. About 1.5 million TB cases are detected and reported by the programme annually. Of these 25% are sputum positive. It is estimated that about 1.5 million cases are detected and treated by the private sector. Both under-diagnosis (missing sputum positive cases) and over-diagnosis (by X-Ray) occur. Under programme conditions completion of therapy is only 30 per cent. Long duration of treatment schedule (especially conventional therapy), irregular supply of drugs, poor follow-up of patients under treatment, lack of counseling regarding adverse consequences of incomplete therapy are some of the major factors responsible for the low treatment completion rates.

3.4.104 A major review of NTCP was undertaken during the Eighth Plan (1992) to identify inadequacies in the ongoing programmes and suggest remedial measures. A Revised Na-

tional Tuberculosis Control Programme (RNTCP) was drawn up with the following aims: (1) to improve cure/ completion of therapy rates to 85% by providing drugs for short course chemotherapy (SCC) and strengthening monitoring and supervision of patients under treatment; and (2) to improve case detection to 70% by providing critical personnel and improving their skills through training.

3.4.105 The RNTCP has been pilot tested in 17 project sites (population of 13.85 million) in different parts of the country during the last three years. The cure rates achieved ranged between 60 and 80%. Encouraged by the results achieved in the pilot projects, it was decided to extend the strategy in a phased manner during the Ninth Plan period. Assistance from the World Bank has augmented the resources available for the Programme during the Ninth Plan period when:

Revised National Tuberculosis Control Programme (RNTCP)

- RNTCP will be implemented in 102 districts
- NTCP will be strengthened in 203 SCC districts
- Strengthening of standard regime in remaining non SCC districts
- Strengthening of Central institutions, State TB Cells & State TB training Institutions

Targets upto 2002

- Enhance case detection to at least 70% of estimated incidence.
- Achieve at least 85% cure rate among smear positive cases in 102 RNTCP districts and 60% cure rate in SCC districts.
- Reduce proportion of smear negative detected to 50% or less of the total cases.
- Ensure no. of TB suspects tested for smear positives is not less than 2.5% of OPD in PHIs and no. of smear tested is at least 3 per suspected patient.

(a) RNTCP will be implemented in 102 districts;

(b) NTCP will be strengthened in 203 Short Course Chemotherapy (SCC) districts as a transitional step to adopt the RNTCP;

(c) standard regime will be strengthened in the remaining non SCC districts, and

(d) the Central Institutions, State TB Cells, & State TB Training Institutions throughout the country will be strengthened.

The targets for the Ninth Plan are:

- i. to enhance case detection to at least 70% of the estimated incidence.
- ii. to achieve at least 85% cure rate amongst smear positive patients of Tuberculosis in 102 districts implementing RNTCP and 60% cure rates in 203 SCC districts;
- iii. to reduce the proportion of smear negatives detected under the programme to 50% or less of the total cases.
- iv. to improve the aggregate smear positivity rate at least to 50%.
- v. to ensure that the number of TB suspects tested for smear examination is not less than 2.5% of the general OPD attendance of the PHIs and number of smears examined is at least 3 per suspected patient.

3.4.106 It is expected that with the implementation of this Programme over the next 5 years (a) the total number of patients cured will increase to 32.55 lakh (compared to estimated 22.89 lakh who will be cured if NTCP in its original form is continued) and (b) 1.8 lakh deaths will be prevented.

National Leprosy Eradication Programme (NLEP):

3.4.107 Leprosy has been a major public health problem in India. In 1984 it was estimated that there were nearly four million cases of leprosy in the country, 15% of which were children. Recognising that leprosy was a major cause of disability and the infected persons face social ostracism, several non-governmental organisations and social service/voluntary agencies had taken up treatment and rehabilitation of leprosy patients right from the pre-Independence period. However, the outreach of these services was very limited. With the availability of Multi Drug Therapy (MDT) it became possible to cure leprosy cases within a relatively short period (6-24 months) of treatment. The National Leprosy Eradication Programme was launched as a 100% Centrally funded CSS in 1983 with the goal of arresting disease transmission and bringing down the prevalence of leprosy to 1/10000 by 2000 AD.

The strategy adopted was:

- i. early detection of leprosy cases through active surveillance by trained health workers;
- ii. regular treatment of cases with MDT administered by leprosy workers in endemic district and Mobile Leprosy Treatment Units & Primary Health Care Workers in moderate to low endemic areas/ districts;
- iii. intensified health education and public awareness campaigns to remove social stigma attached to the disease.
- iv. appropriate medical rehabilitation and leprosy ulcer care services.

3.4.107 The programme was initially taken up in endemic districts and was extended to all districts in the country from 1994 with World Bank assistance. The estimated number of persons requiring treatment for leprosy has declined from four million cases in 1984 to 0.54 million cases in March 1996. More than 6.98 million leprosy patients have been cured by MDT and the proportion of registered patients taking MDT treatment has increased from 10% in 1985 to 96% in 1997. The prevalence rate of leprosy has declined from 57.3 per ten thousand population in 1981 to 5.8 per ten thousand population in 1995. However, the number of new leprosy cases detected each year has remained about 0.45 million. The performance during the Eighth Plan is shown in Table-3.4.9.

3.4.108 The performance during the Eighth Plan has been satisfactory with respect to new case detection and treatment completion but less than optimal with respect to the reduction in total cases mainly due to treatment of backlog of cases. The incidence of the disease has not shown a marked decline. Earlier 50% of cases were in Andhra Pradesh and Tamil Nadu. Now over 50% of the cases requiring treatment are in UP, MP, Bihar and West Bengal. The laboratory support for diagnosis and assessing the success of treatment is sub-optimal. Available information on recurrence, relapse rates and reactions to drug therapy is

inadequate. Even though leprosy infection has been cured, the deformities and disabilities associated with leprosy continue to require treatment and these have not been looked after.

3.4.109 During the Ninth Plan the strategy will be:

1. strengthening laboratory services in PHC/CHC, establishing surveillance system for monitoring time trends in prevalence of the disease throughout the country

Strategies for NLEP during the Ninth Plan

- Intensifying case detection and MDT coverage in high prevalence States and areas difficult to access
- Strengthening laboratory services in PHC/CHC, establishing surveillance system for monitoring time trends
- Preparing for & initiating horizontal integration of leprosy programme into primary health care system
- Providing greater emphasis on disability prevention and treatment
- Implementation of Modified Leprosy Elimination campaign
- Ensuring rehabilitation of cured patients.
- Repeal of discriminatory provision under marriage act where leprosy is ground for divorce

Target for Ninth Plan:

- Reduce prevalence of leprosy to 1/10000.

2. accelerating the pace of activities, intensifying case detection and MDT coverage in high prevalence States and areas that are difficult to access;

3. maintaining activities in the previously highly endemic areas;

4. preparing for and initiating horizontal integration of the leprosy programme into the primary health care system.

5. greater emphasis on disability prevention and management through (a) transfer of knowledge and technology to affected persons, families, community;(b) strengthening local treatment facilities for

ulcers/leprosy related deformities; (c) supply of aids and appliances to prevent further impairment; (d) developing trained manpower resources and improving facilities for corrective surgery for deformities

6. implementation of Modified Leprosy Elimination campaign and bringing mass public awareness, training of general health care staff and detection of hidden cases

7. ensuring rehabilitation of cured patients.

8. repeal of discriminatory provision under marriage act where leprosy is one of the grounds of divorce.

The target for the Ninth Plan will be to reduce prevalence of leprosy to 1/10000 by 2002 A.D.

National AIDS Control Programme

3.4.110 Sexually transmitted diseases (STD) have been a global problem since time immemorial. Fear of STD and pregnancy had been the major deterrents against promiscuous multi-partner sex and hence, STD levels remained relatively low in general population. With the ready availability of antibiotics for treatment of STD and contraceptives for prevention of pregnancy, sexual mores in most countries underwent a change during the last three decades. Increasing multi partner sex and consequent increase in STD were reported from many countries. Increase in STD rates did not result in rising morbidity or mortality rates because of availability of effective treatment. With the advent of HIV infection the situation underwent a dramatic change because there is no effective drug for treatment or vaccine for protection against HIV infection.

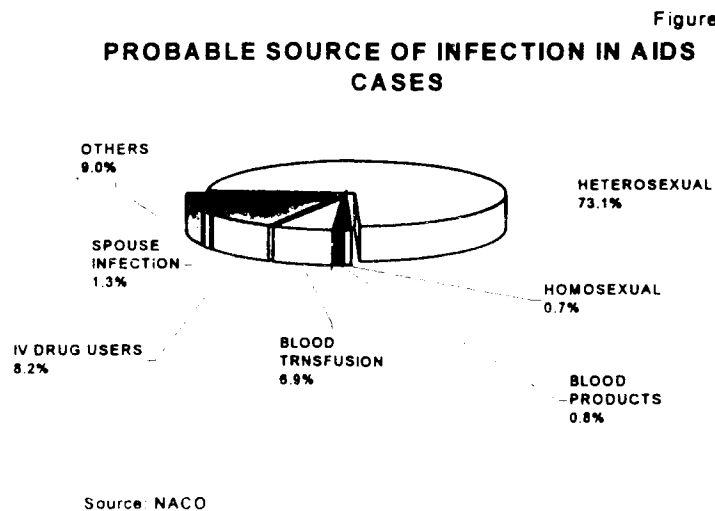
3.4.111 In India, a National STD Control Programme has been in operation since 1967. Its outreach and coverage have been sub-optimal. Available data from small-scale studies indicate that the annual incidence of STD may be about 5% (40 million new cases every year). This however, could be gross under-estimate or overestimate. There is no nationwide surveillance system for STD.

3.4.112 The ICMR initiated a National Serosurveillance for HIV infection in 1986 not only among the high-risk groups but also among general population to define the magnitude and major mode of transmission of HIV infection in the country. India was the first country in the world to initiate national serosurveillance in the silent phase of the HIV epidemic. The data from the serosurveillance showed that

- 1) heterosexual transmission was the major mode of transmission of HIV infection in the country,
- 2) in the North-Eastern States transmission through contaminated syringes/needles among IV drug users was the major mode of transmission
- 3) transmission through contaminated blood/blood products and vertical transmission from infected mother to her offspring occur in all States

3.4.113 Probable source of infection as reported by National AIDS Control Organisation till 1996 is shown in Fig-4.

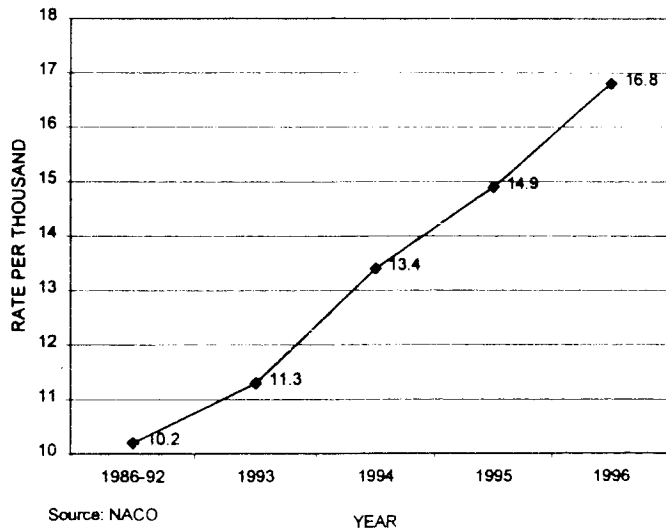
3.4.114 Available data indicate that HIV infection exists in all States both in urban and rural areas. The apparent differences between States/ districts/ cities might to a large extent be due to differences in the type and number of persons screened. Over the last ten years there has been a progressive rise in the prevalence of infection in all groups. However, the prevalence of infection in



the screened population still remains low (Fig-5). Utilising the available data on estimated size of high, intermediate, and low risk groups and available data on sero prevalence in these three groups, ICMR had estimated that the number of HIV infected persons in the country is between 2 and 3 million. More than 50% of them are women and children. Every year approximately 30,000 deliveries in India occur among seropositive women and between 6-8000 infants are perinatally infected with HIV. At present the number of AIDS patients in the country is small (Fig-6). However, over the next decade persons who got infected in the eighties will develop AIDS, resulting in a steep and progressive increase in the number of AIDS patients in India.

CUMULATIVE HIV SEROPOSITIVITY

Figure - 5



3.4.115 Realising the gravity of the HIV epidemic in the country, the Central Government initiated a National AIDS Control Programme in 1992 as a 100% Centrally funded CSS. Adequate funds initially from the national budget, augmented later through Externally Assisted Projects (EAP), were provided for the programme to combat and minimise the magnitude of HIV epidemic. The programme right from its inception has operated through existing health care system at

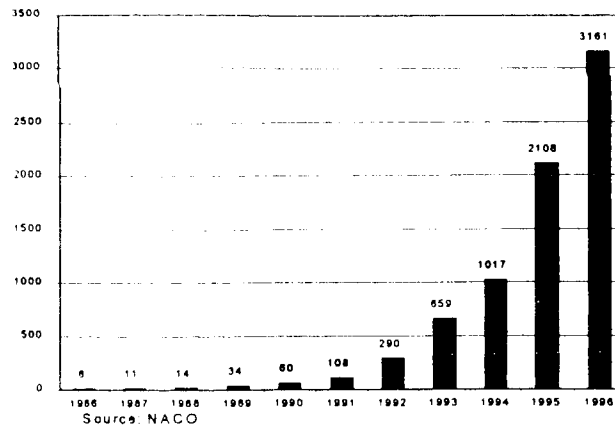
various levels.

The major components of the Programme include:

- 1) obtaining epidemiological data on HIV infection through Sentinel Sero Surveillance and AIDS surveillance;
- 2) strengthening STD Control including HIV/AIDS control;
- 3) improving facilities for clinical management of AIDS cases;
- 4) ensuring safety of blood/ blood products through establishment of comprehensive blood transfusion services. This will also facilitate screening for transfusion transmitted diseases;
- 5) improving awareness through IEC.

Figure - 6

Number of AIDS Cases in India



3.4.116 There have been delays in the implementation of the Programme in many States. The performance under STD control and blood banking components had been sub-optimal in all States. The IEC activities had improved awareness in some States; however, the effect, if any, on behavioural change appears to be marginal. Sentinel surveillance, which is an essential component for forecasting the future course of the epidemic in the country has not been carried out according to protocol in most States. Because of this, there is lack of epidemiological database for forecasting the epidemic in the country and evolving appropriate, affordable interventions. Utilisation of funds under the programme has also been sub optimal (Table-3.4.10).

3.4.117 During the Ninth Plan the focus will be on:

National AIDS Control Programme in the Ninth Plan

Priorities in the Ninth Plan:

- More effective implementation of the Programme to ensure safety of blood/ blood products
- Increasing the number of HIV testing network
- Augmenting STD, HIV/AIDS care facilities
- Improving hospital infection control and waste management to reduce accidental infection
- Improving HIV/AIDS awareness, counselling and care
- Strengthening Sentinel Surveillance.

1) more effective implementation of the programme for ensuring safety of blood/blood products;

2) increasing the number of HIV testing network;

3) augmenting STD, HIV/AIDS care facilities;

4) improving hospital infection control and waste management so as to reduce accidental HIV infection

5) enhancing efforts to improve HIV/AIDS awareness, counselling and care and

6) strengthening Sentinel Surveillance.

Control of Non-Communicable Diseases

3.4.118 Soon after Independence, the focus of the health sector programme of the Government was on control of communicable diseases. However, the programmes (either Central Sector or Centrally Sponsored) for control of some non-communicable diseases which were perceived as public health problems were also initiated. The National Goitre Control Programme initiated in 1962 is the oldest Central Sector Scheme for control of non-communicable diseases (NCD). The National Blindness Control Programme the first CSS was initiated in 1976. Subsequently, several Central Sector Schemes for control of non-communicable diseases, including the following were taken up:

1. National Cancer Control Programme
2. Programme against micro nutrient malnutrition
3. National Mental Health programme
4. Diabetes Control Programme
5. Cardiovascular Disease Control Programme
6. Prevention of Deafness and Hearing Impairment
7. Oral Health programme
8. Medical Rehabilitation

3.4.119 In addition some of the State Governments have initiated pilot projects for district based integrated non-communicable disease control in some districts.

National Blindness Control Programme

3.4.120 It is estimated that there are 12.5 million economically blind persons in India. Of these over 80% of blindness is due to cataract. It is estimated that every year about 2 million cases of blindness occur in the country. Most of cataract blind individuals are in their 60s. They may not have the means for cataract surgery. These patients may also have difficulty in

National Blindness Control Programme

Programme Priorities during Ninth Plan:

- To improve the quality of cataract surgery, clear the backlog of cataract cases
- To improve quality of care by skill upgradation of eye care personnel
- To improve service delivery through NGO and Public sector collaboration
- Increase coverage of eye care delivery among underprivileged population.

Targets for the period 1997-2002

- 17.5 million cataract operations
- 100,000 corneal implants

accessing services, unless services are available in the vicinity of their house. The National Blindness Control Programme was initiated in 1976 with the objective of providing comprehensive eye care services at primary, secondary and tertiary health care level and achieving substantial reduction in prevalence of eye disease in general and blindness in particular.

3.4.121 The long term objective is to reduce prevalence of blindness from 1.4% to 0.3% by 2000 AD through

(a) developing institutional capacity and strengthening of service delivery;

(b) development of human resources for eye care;

(c) promoting outreach activities and public awareness

3.4.122 The major thrust of the programme during the seventies was to provide ready access to cataract surgery free of charge to the blind persons so that they could regain their vision, enabling them to be independent socially and economically. There had been a gradual rise in cataract surgery from 5.5 lakh in 1981 to 11.34 lakh in 1984-85. However, subsequently there was a plateau in the performance to around 11-12 lakh per year. Surveys carried out in 1986-89 showed that the prevalence of blindness due to cataract and cataract backlog is high in Andhra Pradesh, Jammu and Kashmir, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh. Therefore, a major thrust was given during the Eighth Plan to strengthen the programme in these States and in J & K and Karnataka. Funds from domestic budget as well as EAP were provided for this. District Blindness Control Societies were formed to coordinate the activities of Government voluntary and private sectors and to remove any bottlenecks in the implementation of the Programme.

The major objectives of the Programme were :

- 1) to improve the quality of cataract surgery, to clear the backlog of cataract by performing 11 million operations during a 7-year period
- 2) to strengthen country's capacity to provide high volume, high quality, low cost eye care by upgrading knowledge and skills of eye care personnel and improve service delivery through non-governmental and public sector collaboration
- 3) to increase coverage of eye care delivery among the underprivileged population including women, urban slum dwellers and tribals.

3.4.123 The performance during the Eighth Plan is given in Table 3.4.11. There has been a substantial increase in the number of cataract operation from 1.6 million in 1992-93 to 2.7 million in 1995-96. However, the target of reduction in prevalence of blindness to 0.3% by

2000 AD is unlikely to be achieved. The quality of care especially in camp situations had been sub-optimal and needs improvement. Infections resulting in permanent blindness have occurred due to slip up in asepsis; these should be eliminated. The need to restore vision by operating on one eye in economically blind people has not been given conscious priority over operating on the cataract in the second eye. Upgradation of medical colleges and district hospitals as well as training of ophthalmologists for ECCE/IOL insertion is being carried both in tertiary care and district hospital setting. A comparative assessment of ECCE/IOL in terms of cost of care, complication rate, and logistics of implementation and follow up at tertiary hospital level as well as at district hospital level needs to be carried out.

3.4.124 During the Ninth Plan the Programme will be geared up to clear the backlog of cataracts requiring extraction and also address other causes of blindness such as glaucoma and corneal opacity. Correction of refractory errors especially in school children and treatment of ocular infection will also be taken up. Infrastructure and manpower development and IEC will receive due attention. Attempts will be made to ensure that all available funds are optimally utilised. The target set for the Ninth Plan period is 17.5 million cataract operations and 100,000 corneal transplants.

National Cancer Control Programme

3.4.125 India has one of the lowest cancer rates in the world. The estimated caseload is around 2 million. Every year about 7 lakh new cases are detected. Tobacco-related cancers (especially cancer of oral cavity, lung and cancer cervix) form more than 50% of the overall cancer burden in the country. Over the next two decades it is expected that there will be a substantial increase in the prevalence of cancers because of increasing longevity, greater exposure to environmental carcinogens due to industrialisation, use of fossil fuels, wide variety of chemical agents in industry, agriculture, and continued use of tobacco (both smoking and chewing). Thus, it is possible that the country may face the problem of increasing cancer incidence. There may also be a change in the type of cancer seen. Increasing tobacco smoking instead of tobacco chewing might lead to increase in incidence of lung cancer which is more difficult to detect and treat. Changing dietary patterns (high calorie, high fat intake) and lower parity may result in increasing incidence of breast cancer.

3.4.126 The Cancer Control Programme was initiated in 1975-76 as a 100% centrally funded Central Sector project. It was renamed as National Cancer Control Programme in 1985. The objective of the programme are

- (1) primary prevention of tobacco-related cancers
- (2) secondary prevention of cancer cervix
- (3) extension and strengthening of treatment facilities on a national scale.

3.4.127 During the last two Plan periods financial assistance has been provided for the establishment of 12 Regional Cancer Centres and oncology wings in 26 medical colleges. The District Cancer Control Programme for preventive health education, early detection and pain relief was undertaken in collaboration with Regional Cancer Centres in 32 districts. Assistance has been given to 33 voluntary organisations for undertaking health education and early detection. The estimated requirement of cobalt units in the country is 900 (1/1 million). Only 232 cobalt machines are currently available in the country.

The focus during the Ninth Plan will be on

- (1) intensification of IEC activities so that people seek care at the onset of symptoms
- (2) provision of diagnostic facilities in primary and secondary care level so that cancers are detected at early stages when curative therapy can be administered
- (3) filling up of the existing gaps in radiotherapy units in a phased manner so that all diagnosed cases do receive therapy without any delay as near to their residence as is feasible
- (4) IEC to reduce tobacco consumption and avoid life styles which could lead to increasing risk of cancers

National Diabetes Control Programme

3.4.128 The National Diabetes Control Programme was included as a pilot programme in the Seventh Five-Year Plan. The project was initiated in two districts in Tamil Nadu and one district in Jammu & Kashmir during the Seventh Plan. Several States had initiated district diabetes control programme as a part of the State Plan scheme during the Eighth Plan period. Experience gained in implementing the district diabetes control programme during Seventh and Eighth Plans have shown that integrated treatment of diabetes mellitus, hypertension and heart disease within primary and secondary care level is possible provided functional linkages between these and tertiary care centres are developed and utilised. During the Ninth Plan period these experiences will be utilised to develop integrated programme of non-communicable diseases prevention, detection and management programmes at primary and secondary care level in all districts.

National Mental Health Programme

3.4.129 It is estimated that 10 to 15% of the population suffer from mental health problem. Qualified professionals providing mental health care are few and the outreach of services in rural area is very low. The National Mental Health Programme was initiated by the Government of India in 1982 with the objective of improving mental health services at all levels of health care (primary, secondary and tertiary) for early recognition, adequate treatment and rehabilitation of patients with mental health problems within the community and in the hospitals. However, the Programme did not make much headway either in the Seventh or Eighth Plan. Mental Hospitals are in poor shape. The States have not provided sufficient funds for mentally ill requiring inpatient treatment. The Supreme Court has directed the Centre and the States to make necessary provision for these hospitals so that the inmates do get humane and appropriate care.

3.4.130 The Mental Health Act, 1987, which came into force with effect from April 1993, requires that each State/UT set up its own State level Mental Health Authority as a Statutory obligation. Majority of the States/UTs have complied with this and have formed a Mental Health Authority.

3.4.131 The Central Council of Health & Family Welfare reviewed the progress and resolved that the National Mental Health Programme should be accorded due priority and full-scale operational support (including social, political, professional, administrative and financial back up).

3.4.132 During the Eighth Plan, NIMHANS developed a district mental health care model in Bellary district with the following aims;

- (1) to provide sustainable basic mental health services to the community and to integrate these services with health services;
- (2) early detection and prompt treatment of patients;
- (3) to provide domiciliary mental health care and to reduce patient load in mental hospital;
- (4) community education to reduce the stigma attached to mental illness;
- (5) to treat and rehabilitate patients with mental problems within their family setting.

3.4.133 During the Ninth Plan period the experience gained in implementing mental health care both in Central and State Sector will be utilised to provide sustainable mental health services at primary and secondary care levels and to build up community support for domiciliary care. IEC on mental health especially prevention of stress-related disorders through promotion of healthy lifestyle and operational research studies for effective implementation of preventive, promotive and curative programmes in mental health through existing health infrastructure will receive due attention.

National Iodine Deficiency Disorder Control Programme.

3.4.134 Iodine deficiency disorders (IDD) have been recognised as a public health problem in India since mid-twenties. Initially, IDD was thought to be a problem in sub-Himalayan region. However, surveys carried out subsequently showed that IDD exists even in riverine and coastal areas. No State in India is completely free from IDD. It is estimated that 61 million population are suffering from endemic goitre and about 8.8 million people have mental/motor handicap due to iodine deficiency. Universal use of iodised salt is a simple inexpensive-method of preventing IDD.

3.4.135 The National Goitre Control Programme was initiated in 1962 as a 100% Centrally funded, Central sector programme with the aim of conducting goitre survey, and supplying good quality iodised salt to areas having high IDD, health education and resurvey after five years. The programme was renamed as the National Iodine Deficiency Disorder Control Programme in 1992. Implementation of the Programme during the initial three decades of operation was sub-optimal and IDD prevalence had remained essentially unaltered. Inadequate production of iodised salt, problems in transport, lack of awareness about the need to take iodised salt are responsible for the poor performance.

3.4.136 During the Eighth Plan period there had been a substantial improvement in the production, quality and transport of iodized salt. The annual production of iodised salt has risen from 5 lakh tonnes in 1985-86 to 40 lakh tonnes in 1996-97. By mid-1995, a ban on the sale of non-iodised edible salt has been implemented fully or partially in all States/Union Territories except Kerala, Goa and Pondicherry. Currently, it is estimated that about 80% of all edible salt is iodised and the use of iodised salt at household level has increased significantly. However, the target of Universal Iodisation of Salt is yet to be achieved.

3.4.137. During the Ninth Plan period the major thrust of the Programme will be on (a) production of adequate quantity of iodised salt of appropriate quality; (b) appropriate packaging at the site of production to prevent deterioration of quality of salt during transport and storage; (c) facilities for testing the quality of salt not only at production level but also at the retail outlets and household level so that consumers get and use good quality salt (d) IEC to ensure that people consume only good quality iodised salt and (e) survey of IDD and setting up of district level IDD monitoring laboratories for estimation of iodine content of salt and urinary iodine excretion.

3.4.138 Efforts to reduce price differentials between iodised and non-iodised salt and provide ready access to iodised salt through Targeted Public Distribution System will be considered.

Integrated Non-Communicable Disease Control Programme

3.4.139 Accelerated economic growth in the nineties does not necessarily imply improvement in health status. Increasing longevity, demographic transition resulting in rapidly rising numbers of aged population, urbanisation, increasing pollution, change from traditional diets, sedentary life style and increase in the stress of day-to-day living have led to an increase in lifestyle-related disorders and noncommunicable diseases. The ongoing change in disease burden is producing a major health transition; over the next two decades, non-communicable diseases are likely to contribute significantly to the total disease burden in the country. Cardio-and cerebro-vascular diseases, diabetes mellitus and malignancies are emerging as major public health problems in the country. It is essential that preventive, promotive, curative and rehabilitative services for NCD are made available throughout the country at primary, secondary and tertiary care levels so as to reduce the morbidity and mortality associated with NCD. However, vertical programmes to control individual non-communicable diseases would neither be feasible nor cost-effective.

3.4.140 Pilot projects for district-based integrated non-communicable disease control programmes carried out through the existing primary and secondary level facilities, using diabetes as a model, were initiated in the Eighth Plan. Therefore, during the Ninth Plan period an integrated non-communicable disease control programs at primary and secondary care level will be developed and implemented with emphasis on prevention of NCD, early diagnosis, management and building up of suitable referral system. Tertiary care centres will be strengthened so that treatment facilities for complications will improve. As the anticipated increase in prevalence of NCD over the next few decades is at least in parts due to changing lifestyles, it is imperative that health education for primary and secondary prevention as well as early diagnosis and prompt treatment of NCD receive the attention that it deserves. The increasingly literate population can then be expected to take a pro-active role and reduce morbidity and mortality due to NCD. Mobilising community action through well-structured IEC system including mass media will form an important intervention strategy for the control of NCD. Development of appropriate learning resource materials for education and training of manpower will be an essential activity.

Environment and Health

3.4.141 Environment can affect human health in many ways. Deficiency of iodine in soil, water and foodstuffs is the cause of iodine deficiency disorders. Excessive fluoride content in the water is the cause of fluorosis. Environmental degradation may affect air, land and water.

Pollutants may enter the food chain. All these may enter human body through various portals and affect the health status.

3.4.142 Rapidly growing population, urbanisation, changing agricultural, industrial and water resource management, increasing use of pesticides and fossil fuels have all resulted in a perceptible deterioration in the quality of environment and attendant adverse health consequences. Environmental pollution due to developmental activities are increasingly becoming the focus of concern. The interactive interdependence of health, environment and sustainable development was accepted as the fulcrum of action under Agenda 21 at the Earth Summit in Brazil in 1992. Environmental health in its broader perspective would have to address the detection, prevention and management of:

- i) existing deficiencies or excesses of certain elements in natural environment;
- ii) macro environmental contamination of air, land, water and food;
- iii) disaster management

3.4.143 Following the suspected plague outbreak in the country during 1994 the Planning Commission constituted a High Power Committee on Urban Solid Waste Management in India under the Chairmanship of Member (Health). This Committee undertook a comprehensive review of current situation of urban solid waste management, specially in cities with one million or more inhabitants and made recommendations for safe methods for collection, transportation of waste and suitable cost-effective, environmentally friendly methods for disposal of these wastes. Pilot projects exploring the dimensions of the problem and aimed at seeking realistic solutions were initiated during the Eighth Plan period. During the Ninth Plan period it is expected that many more cities will initiate programmes for the efficient methods of management of wastes generated and improve environmental sanitation.

3.4.144 So far, the major focus has been on communicable disease burden due to poor environmental sanitation in urban areas and due to improper disposal of human excreta, garbage and waste water in rural areas and methods to tackle these. These efforts will be intensified during the Ninth Plan. In addition, efforts to reduce pollution and related non-communicable disease burden will also be strengthened. Efforts will be made to document the extent of the problem of environmental pollution and its impact on health status of the population through linkages between existing environmental monitoring data and data on health status of population living in these areas. Prevention and management of health consequences of environmental deterioration will receive increasing attention.

3.4.145 The Expert Committee on Public Health System had noted that major developmental activities in any field such as agriculture, industries, urban and rural development may result in environment changes which could have adverse health implications and recommended that health impact assessment may become a part of environmental impact assessment of all large developmental projects. Efforts will be made to implement this recommendation during the Ninth Plan period. The feasibility of making appropriate provision for health care of people involved in developmental activities and prevention and management of health consequences of developmental activities on the population living in the vicinity of the project as a part of the project budget will be explored.

Occupational Health

3.4.146 A healthy work force is an essential pre-requisite for agricultural and industrial development. Efforts to provide health care to workers through schemes such as ESI, creation of health care facilities in industrial towns, arrange for health care services for workers and their families through existing public and private health care services have continued through the last five decades. However, both coverage and quality of care have remained sub-optimal. There is no attempt to link existing data from ongoing work environmental monitoring in the work place with health status of workers and initiate appropriate intervention as and when required. Workers in the agricultural and unorganised sectors have so far not been covered under any programme. Increasing use of mechanisation, induction of poorly trained workers who operate machines with which they are not familiar, use of insecticides, pesticides and chemicals by persons without appropriate knowledge of precautions to be taken are resulting in increasing health hazards to workers in these sectors. During the Ninth Plan continuous monitoring of safety of work environment and workers' health status, both in the organised and unorganised sectors of industry and in agriculture, health problems of vulnerable groups such as women and children with focus on prevention, early detection and prompt treatment of health problems will receive special attention. Documenting the magnitude and types of the occupational health problems, initiating appropriate preventive and remedial measures will be developed into a structured health programme and taken up where ever possible.

Accident and Trauma Services

3.4.147 Increasing mechanisation in agriculture and industry, induction of semi and relatively unskilled workers in various operations, rapid increase in vehicular traffic, have resulted in increase in morbidity, disability and mortality due to accident and trauma. Overcrowding, lack of awareness and implementation of essential safety precautions result in increasing number of accidents of all types. Consumption of poisonous substances accidentally or intentionally is also on the rise. Technological advances in the last twenty years have made it possible to substantially reduce mortality, morbidity and disability due to accidents, trauma and poisoning.

3.4.148 In view of increasing morbidity and mortality due to accidents, a model accident and trauma service was proposed to be initiated in Delhi with the objective of:

- (1) providing prompt services to injured person right from the site of accident;
- (2) preventing number of deaths and extensive disabilities
- (3) training medical and para-medical personnel in first aid resuscitation and treatment;
- (4) establishing zonal peripheral centres and apex centre with all essential facilities for trauma care and appropriate networking.

3.4.149 A modest beginning was made in procuring ambulances fitted with essential equipment and strengthening of tertiary care hospitals in Delhi. However, a comprehensive accident and trauma services for National Capital Territory of Delhi has not yet been established.

3.4.150 During the Ninth Plan period efforts will be made to improve the availability and utilisation of the emergency care services at all levels of health care. Adequate training to medical and paramedical staff in emergency management at each level of care, provision of transport facilities for transfer of patients and suitable strengthening of emergency and casualty services in tertiary care centres so that they could handle the workload will be initiated. Rehabilitation services for those who have residual disabilities also will be strengthened. Steps to improve public awareness about available services and where and how to access them will also be taken up so that the population can fully utilise available services.

Health Management Information System (HMIS)

3.4.151 HMIS is an essential management tool for effective functioning of the health system. Timely reporting and analysis of data from HMIS could also serve as an early warning of focal outbreak of diseases so that appropriate interventions can be initiated. The Central Bureau of Health Intelligence (CBHI) and the States' Bureau of Health Intelligence are nodal agencies for HMIS. During the Eighth Plan period an attempt was made to provide a major thrust for HMIS. The CBHI in consultation with the National Informatics Centre (NIC) and State Health Departments have developed HMIS version 2.0 for sending information through NICNET on essential health indices. This system is being used by 13 States/ UTs for sending district level information. The system is still not fully operational in most States. During the Ninth Plan efforts will be made to ensure that the entire country is covered and all the data pertaining to the Health and Family Welfare Programmes are collected, collated and reported from all the districts through NICNET. The data from HMIS will be utilised not only for improving the efficiency and effectiveness of the health care system but also for effective policy planning.

Comprehensive Review of Public Health System in India

3.4.152 An Expert group under the chairmanship of Member (Health) undertook a comprehensive review of major problems facing the public health system in the country in ensuring outreach of appropriate services at affordable cost and maintaining quality of services. The Committee recommended several policy and programme initiatives including administrative restructuring, health manpower planning, improving operational efficiency of existing health care services, improving disease surveillance, epidemic control strategy, epidemiological surveillance system and development of appropriate support services. The recommendations of the Committee form the base and basis for the formulation of strategies for revitalisation of the public health system in the country during the Ninth Plan period.

Production and Quality Control of Drugs

3.4.153 Provision of appropriate drugs of good quality at affordable cost is essential for the success of disease control programmes. Equally important is to restrict, and if possible, eliminate, the use of irrational drug formulation, detect and eliminate spurious drugs. The Central Government is responsible for the control over the quality of imported drugs, control over the manufacture and import of new drugs into the country, amendments to the Drugs and Cosmetics (D&A) Act and Rules, coordinate the activities with the State Drug Control Authorities for uniform implementation of D&A Act and Rules, laying down standards for drugs and updating Indian Pharmacopoeia, training of drugs analysts and drugs inspectors and licensing of whole human blood and blood products, large volume parenterals, sera and

vaccines. Provisions for strengthening Drug Control Organisations in the States and the Centre were made in the Eighth Plan. However, the implementation of the scheme has been patchy and tardy. This task will be taken up on a priority basis during the Ninth Plan.

3.4.154 India's need for essential drugs are still not fully met. Patent laws do not cover over 95% of the essential drugs. Bulk manufacture of the generic drug and dispensing them in inexpensive packages to bulk consumers like hospitals will substantially reduce the budget needed to meet the drug cost in public health system. The possibility of providing a dual pricing system for generic and brand drugs will be explored so that essential drugs under generic name are available at affordable cost. This approach can subsequently form the base and basis of "drug cooperatives" as community-managed institutions.

3.4.155 Supply of essential drugs, vaccines/devices holds the key to success in any disease control programme. Funds for drugs used for primary, secondary and tertiary care centres come partly from the State funds and partly from Central Plan funds (CSS). Procedures for procurement and distribution vary and bottlenecks in these at the national and State level have been a recurrent problem. Inefficient indenting procedures adversely affect drug procurement. Poor inventory management results in unsatisfactory drug procurement and distribution. Some States such as Tamil Nadu have attempted strengthening drug procurement and distribution through formation of a Medical Services Corporation. This Corporation has drawn up an essential drug list, improved purchase and storage of drugs and organised efficient drug distribution within the States and brought about effective inventory control. During the Ninth Plan efforts in improving procurement and inventory control and distribution for drugs at Central and State level will receive priority.

Prevention of Food Adulteration

3.4.156 The Prevention of Food and Drug Adulteration Act, 1954 is aimed at ensuring that consumers get pure and wholesome food of good quality and protecting them from the trade malpractice and frauds in sale of food products. The Act is implemented jointly by the Central and State Governments. During the Ninth Plan period, efforts will be made to augment food quality control both at the Central and State levels.

Bio-Medical and Health Services Research

3.4.157 The Indian Council for Medical Research is the nodal organisation for bio-medical research in India. Bio-medical and Health Systems Research is carried out by research institutions, universities, medical colleges and non-governmental organisations and are currently funded by several agencies including ICMR, DST, DBT, CSIR and concerned Ministries. Basic, clinical applied and operational research studies relevant to major health and population problems in the country have been the focus of research programmes during the last fifty years.

3.4.158 The major thrust areas of research include existing problems of communicable diseases, emerging problems of non communicable diseases, improvement of health and nutritional status of women and children and increasing contraceptive acceptance and continuation. Indigenous development of immuno-diagnostics, research studies on improved drug regimens to combat emerging drug resistance among several bacteria, alternative

strategies for vector control in view of the increasing insecticide resistance among vectors, testing innovative disease control strategies through increased community participation have been the major areas of research in communicable diseases.

3.4.159 The ICMR has recently completed a 10-year study on health consequences of Bhopal Gas Disaster providing data base for planning the infrastructure needed to meet the health care requirements of the population exposed to toxic gas over the next decade. Anti-tobacco community education, early detection and prevention of cervical cancer in women and oral cancers in both sexes, lifestyle modification to reduce the rising morbidity due to hypertension and cardiovascular diseases, documenting the health problems associated with lifestyle changes and increasing longevity of life are some of the major research areas in non-communicable diseases. Evaluation of ongoing Mid-day Meal programmes in schools, assessment of changes in dietary intake and nutritional status of urban and rural population in different States over the last two decades, investigating the health effects of food contaminants and adulterants are some of the research activities in nutrition research.

3.4.160 Keeping in view the magnitude of the problem of providing effective comprehensive health care to the population, the major research and developmental activities in the country during the Ninth Plan will be directed to applied, operational research for improving quality, coverage, efficiency and the cost-effectiveness of health services. Research studies to test the operational feasibility and economic viability of comprehensive health service schemes similar to National Health Service (NHS) of United Kingdom suitably modified to meet the Indian milieu will be taken up. Multi-disciplinary, multi-centre operational research studies will be carried out by teams with medical scientists, social scientists, health planners and decision-makers, public health experts, health economists, and health managers.

3.4.161 During the Ninth Plan period optimal coordination of the basic and applied research activities will be attempted by networking and if needed by multi-agency funding of important projects.

The major thrust areas for basic research will be:

1. immunodiagnostic tests for common infections;
2. development of newer drugs for treatment of common infections in view of the increasing resistance to antibiotics;
3. development of resistance modulating agents to combat the increasing bacterial resistance to antibiotics;
4. development, testing and quality control of newer drugs in the modern system of medicine and ISM&H;
5. newer drug delivery systems for better targeting of drugs and reduction in side effects;
6. development of therapeutic and prophylactic vaccines for infections utilising newer bio-technological tools so that they are thermostable, have long shelf life, free from side effects and are affordable;

7. development of newer vector control measures including testing of bio-pesticides like neem;

3.4.162 Adequate operational research studies do not precede initiation of major national programmes. There are many operational problems in these programmes, which are realised at the time of implementation, and time is lost in rectifying these. During the Ninth Plan, development and testing of alternative strategies for control of communicable and non-communicable diseases will be the focus of operational research. Funds will be made available from ongoing major disease control programmes for research aimed at improving programme implementation. Operational research for efficient implementation of ongoing health programmes and horizontal integration of the vertical programmes for health and family welfare at the primary health care level are some of the major research initiatives being contemplated during the Ninth Plan period. The mechanisms by which those in the research, service and teaching cadres can move into each other's areas and participate in programme development, testing and implementation will be worked out.

Review of the National Health Policy

3.4.163 The National Health Policy was formulated and adopted in 1983 providing comprehensive framework for planning, implementation and monitoring of health services. Successive plans have evolved and implemented intervention programmes to achieve the goals set in the National Health Policy. The status for various Health and Family Welfare indices prior to formulation of National Health Policy, goals set in the National Health Policy for 2000 AD, the Eighth Plan goals and achievements, and the goals set for the Ninth Five Year Plan are given in Table 3.4.12.

Review of National Health Policy is recommended in view of:

- Ongoing demographic transition
- Ongoing epidemiological transition
- Expansion of health care infrastructure
- Changes in health seeking behaviour
- Availability of newer technologies for management, rising expectations of the population, escalating cost of health care.

3.4.164 2000 AD is just two years away. The time is therefore, appropriate for review of achievements against the set goals in the National Health policy. During the last two decades there have been major changes in disease profile, health care infrastructure and health care seeking behaviour of the population. Several newer technologies for diagnosis and management of health problems have become available. These, in turn, have widened the gap between what is possible and what is feasible and affordable at the level of the individual and the country. Increasing expectations of the population, rising cost of diagnosis and treatment and diminishing resources have brought into fore the issue of how to meet the rising health care costs. The essential inter-linkages between health services delivery and health manpower development are still not fully understood and operationalised. Taking all these into consideration it is essential that the National Health Policy undergoes a re-appraisal and re-formulation so that it provides a reliable and relevant policy framework not only for improving health care, but also measuring and monitoring the health care delivery systems and health status of the population during the next two decades.

Outlay and Expenditure

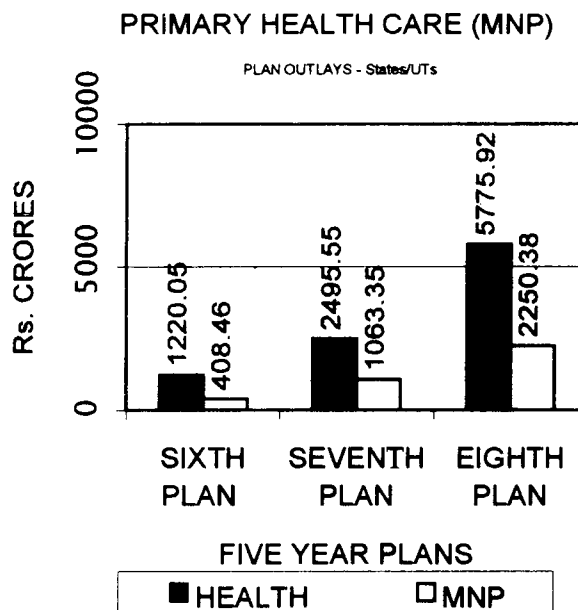
3.4.165 The outlay for health during the last Eight Plans is given in Table 3.4.13. Over the years there has been a substantial increase in the total Plan outlay. However, the outlay for health sector has remained less than 2% of overall Plan outlay.

3.4.166 Plan outlays for health sector and MNP (under the State sector) during the last three Plan periods are given in Fig 7.

Figure - 7

3.4.167 There has been a progressive increase in outlays for health sector and MNP, over this period. In addition to funds from MNP, Externally Assisted Project funds have also been utilised for improving primary health care infrastructure.

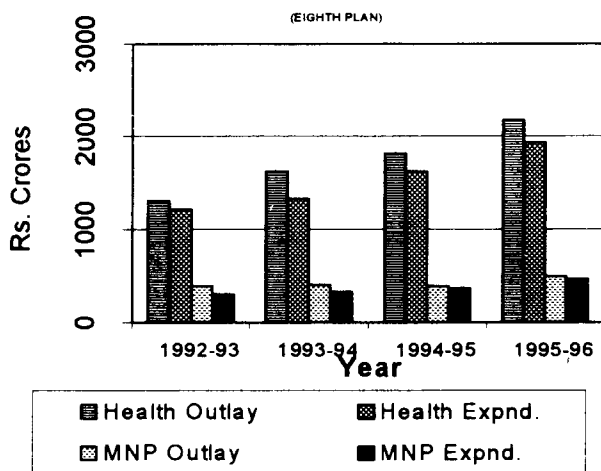
3.4.168 The outlay and expenditure in Health sector during the Eighth Plan period in States are given in Table 3.4.14. The outlays and utilisation of MNP funds during each of the last five years at aggregate national level is shown in Fig 8. Even though the utilisation of funds under Health sector and under MNP is satisfactory at the aggregate level, the utilisation is sub-optimal in some of the poorly performing States.



Source: Planning Commission

3.4.169 Outlays and utilisation of funds under central sector programmes are given in Table 3.4.15. Though over all utilisation of funds is satisfactory, utilisation of outlays provided for specific CSS such as AIDS control programme and blindness control programme was poor.

Figure - 8
HEALTH OUTLAY & EXPENDITURE



Source: Planning Commission

Ninth Plan outlays:

State sector

3.4.170 Restructuring of the health care infrastructure, redeployment and skill development of the manpower, development of referral network, improvement in the Health management information system, development of disease surveillance and response at district level are some of the critical steps that have to be taken up by the state Govt. in order to improve the functional status and efficiency of the existing health care

infrastructure and manpower in the states. The centrally sponsored disease control programmes and the family welfare programme provide funds for additional critical manpower and equipment; these have to be appropriately utilised to fill critical gaps. The ongoing and the proposed EAPs are additional sources for resources. Health is one of the priority sector for which funds are provided in the central budget under the head Additional Central Assistance (ACA) for basic minimum services. The States will also be able to utilise

these funds for meeting essential requirements for operationalising urban and rural health care.

Centre:

3.4.171 Health is one of the sectors identified under the Special Action Plan. In addition to the funds available from Domestic Budgetary Support, several centrally sponsored disease control programmes are receiving funds from EAPs. Taking all these factors into consideration, the Department of Health has been provided with an outlay of Rs. 5118.19 crores for the ninth plan period. The outlay for the annual plans will be adjusted depending upon the requirements of the department and the availability of funds including reimbursement from EAPs.

TABLE 3.4.1

<u>HEALTH CARE INFRASTRUCTURE</u>								
ITEMS	1951	1961	1971	1981	1991	1992	1993	1996
1.	2	3	4	5	6	7	8	9
1. Sub- Centres	0	0	28489	51406	130984	131378	131586	132730
2. Primary Health Centres	725	2565	5112	5740	20450	20719	21030	21854
3. Community Health Centre	0	0	0	217	2071	2193	2289	2424
4. Dispensaries	6515	9406	12128	16751	27431	27403	NA	28225 *
5. Hospitals	2694	3094	3862	6804	11174	13692	NA	15097*
6. Hospital Beds (all types)	117198	230000	348655	569495	810545	834650	NA	870161*

* As on 31.12.1995

SOURCE :-1.ECONOMIC SURVEY,1996-97

2.RURAL HEALTH STATISTICS BULLETIN,JUNE 1996

3.HEALTH INFORMATION,1995

TABLE 3.4.2:

RURAL PRIMARY HEALTH CARE INFRASTRUCTURE

Sl. No.	Category of Centre	Requirement for 1991	Functioning as on 30.06.96	GAP
	1	2	3	4 = (2) - (3)
1.	Sub-Centre	134108	132730	1378
2.	PHCs	22349	21854	495
3.	CHCs	5587	2424	3163

TABLE 3.4.3

MANPOWER REQUIREMENT IN RURAL PRIMARY HEALTH CARE INSTITUTIONS

Sl. No.	Category of manpower	Requirement for Census 1991	In Position as on 30.06.96	Number sanctioned 1995	Post needed 3-5
1.	2.	3.	4.	5.	6.
1.	Specialists (4/CHC)	22348	2751	4763	17585
2.	Doctors at PHCs (1/PHC)	22349	26930	32074	0
3.	Block Extension Educator/ Health Educator (1/PHC)	22349	5621	6287	16062
4.	Pharmacist (1/CHC+1/PHC)	27936	20022	21790	6146
5.	Lab. Technician (1/CHC+1/PHC)	27936	9711	12371	15565
6.	X-ray Technician/ Radiographer (1/CHC)	5587	1288	1596	3991
7.	Nurse Midwife (7/CHC+1/PHC)	61458	12683	16754	44704
8.	Health Assistant (M) (1/PHC)	22349	15745	18323	4026
9.	Health Assistant (FM) (1/PHC)	22349	18904	21658	691
10.	Health Worker (M) (1/SC)	134108	62229	71165	62943
11.	Health Worker (FM) (1/SC+1/PHC)	156457	133773	140751	15706
TOTAL		525226	309657	347532	187419

Source :- RHS Bulletin, June, 1996 (Ministry of Health & FW)

TABLE 3.4..4
Rural - Urban Differentials in India

Item	Rural	Urban	Combined
Population 1991 (crore)	63	22	85
Population 1991 (Per cent)	74	26	100
Villages (1981)/Urban centres(1991) Number	557137	3.609	
Crude birth rate 1993(rate per 000 population per annum)	30.4	23.7	28.7
Crude death rate 1993(rate per 000 population per annum)	10.6	5.8	9.3
Natural growth rate 1993(rate per 000 population per annum)	20.0	17.3	19.3
Infant mortality per 000 live births 1993	82	45	74
Neo-natal mortality rate 1990	57.4	30.9	52.5
Post-natal mortality rate 1990	28.9	19.5	27.2
Peri-natal mortality rate 1990	51.7	34.0	84.4
Age specific death rate 1988			
(Age group 0-4) Male	35.1	18.8	31.8
Female	39.1	18.7	34.9
Person	35.7	18.7	33.3
Number of hospitals :1993	4,310	9,382	13,692
Number of hospitals beds per lakh population 1993	19.4	217.9	70.4
Number of dispensaries (1993)	11080	16,323	27,403
Number of dispensary beds per lakh of persons 1993	2.1	5.6	3.0
Male literacy 1991(per cent)	58	81	64
Female literacy 1991(Per cent)	30	64	39
Combined literacy 1991(per cent)	45	73	52

Source:-1) Registrar General of India
2) Ministry of Health & Family Welfare

TABLE 3.4.5

HEALTH MANPOWER POSITION

CATEGORY	EXISTING NO	TRAINING INSTTs NO	ADMISSION CAPACITY
Medical Graduates	474270	160	15000
Dental Surgeons	19525	67	1300
Nurses			
A) General	512595	487	20400
B) ANMS /FHW	229304	494	12377
HEALTH WORKERS			
Lab. Technicians	23617	97	2193
Dental Mechanics	1903	18	50
Dental Hygienists	6800	17	65
Physiotherapists	6800	8	174
Occupational-Therapist	800	4	75
X-Ray Technicians	4872	33	410
Pharmacists	175000	290	16555
Ophthalmic Assistant	4390	7	134

SOURCE :- 1) WORKING GROUP REPORT ON MEDICAL EDUCATION - 1996
2) STEERING COMMITTEE REPORT ON DEVELOPMENT OF HUMAN
RESOURCES FOR HEALTH - 1996

TABLE 3.4.6

NATIONAL MALARIA ERADICATION PROGRAMME

Sl.NO	:	1992	1993	1994	1995	1996
1. BSE (IN MILLION	:	79.01	77.94	82.18	83.52	91.54
2. ABER	:	9.59	9.35	9.54	9.38	10.49
3. MALARIA CASES (IN MILLION):	:	2.13	2.21	2.51	2.93	3.04
4. A.P.I.	:	2.58	2.65	2.91	3.29	3.48
5. SPR	:	2.69	2.83	3.06	3.50	3.32
6. PF (IN MILLION	:	0.88	0.85	0.99	1.14	1.18
7. SFR	:	1.11	1.09	1.20	1.36	1.29
8. NO. OF DEATHS	:	422	354	1122	1161	1009

FINANCIAL STATEMENT

	8TH PLAN	1992-93	1993-94	1994-95	1995-96	1996-97
Outlay	42500.00	9700.00	11000.00	11000.00	13900.00	14500.00
Expenditure	59106.55	9800.14	11054.28	11000.00	12864.41	14387.72

(Rs. Lakhs)

Source :- Ministry of Health & Family Welfare

TABLE 3.4.7

CASES AND DEATHS DUE TO KALA-AZAR

Year	<u>All India</u>		(%) Increase(+) or Decrease(-) over last year's cases	
	Cases	Deaths	Cases	Deaths
-----	-----	-----	-----	-----
1991	61670	838		
1992	77102	1419	25.02	69.33
1993	45459	710	-41.04	-49.96
1994	25652	384	-43.57	-45.92
1995	22625	277	-11.80	-27.86
1996	27049	687	19.55	148.01

PLAN FUND PROVIDED BY NMEP
FOR KALA-AZAR CONTROL

Year	Total Fund provided	
-----	-----	-----
1992-93	2000.00	Lakhs
1993-94	1864.13	Lakhs
1994-95	577.20	Lakhs
1995-96	311.44	Lakhs
1996-97	350.00	Lakhs

===== SOURCE :- DEPTT. OF HEALTH =====

TABLE 3.4.8

NATIONAL T.B. CONTRAL PROGRAMME

(FIGURES IN 000)

SI.NO	1992-93		1993-94		1994-95		1995-96		1996-97
	TARGET	ACH.	TARGET	ACH.	TARGET	ACH.	TARGET	ACH.	TARGET
New Cas detection (% ACH)	1732	1539 (88.86)	1800	1358 (75.50)	1900	1249 (65.74)	1270	1389 (109.42)	1363
Sputum examination PHIs (% ACH)	3407	2752 (80.79)	3518	2326 (68.29)	3518	2241 (63.70)	3999	2402 (60.08)	4140

FINANCIAL SCENARIO

(Rs.in Lakhs)

8th plan		1992-93		1993-94		1994-95		1995-96		1996-97	
Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.
8500.00	19442.00	2900.00	2700.66	3742.00	1719.20	4600.00	3215.06	4600.00	4119.98	6500.00	1180.00

Source:- Deptt. of Health

LEPROSY ERADICATION PROGRAMME

TABLE 3.4.9

(Figures in '000s)

Sl.NO	1992-93		1993-94		1994-95		1995-96		1996-97	
	Target	Ach.	Target	Ach.	Target	Ach.	Target	Ach.	Target	Ach.
1. Case Detection	290	548	265	494	225	430	225	424	218	461
2. Case treatment	290	541	265	487	225	424	225	420	218	455
3. Case Discharge	573	1053	525	719	425	635	425	613	425	486

LEPROSY SITUATION AT SELECTED POINTS OF TIME
INTERVAL BETWEEN 31 MARCH, 1984 AND 31 DECEMBER, 1996

S.NO.	PARTICULARS	MARCH, 1984	MARCH, 1994	MARCH, 1995	MARCH, 1996	1.4.97
1.	Estimated Cases	3980000	1024000	952000	680000	680000
2.	Cases on Record	3105000	943000	740000	573000	550255
3.	M D T Coverage	< 10	62	83	97	97 %
4.	Deformity Rate (among new patients)	10.2 %	7%	6.4%	6.2%	3.96 %
5.	M.B.% (among new patients)	18 %	30%	29%	27%	24.46 %
6.	PR/10000		1981			57.0
			1995			5.84

ALLOCATION OF FUNDS & EXPENDITURE

(Rs. in CRORES.)

Sl.NO	8th Plan	1992-93	1993-94	1994-95	1995-96	1996-97
1. Allocation	140.00	35.00	35.00	94.00	80.00	74.00
2. Expenditure	303.28	33.38	50.94	89.10	64.53	65.33

SOURCE:- DEPTT.OF HEALTH

TABLE 3.4.10

UTILISATION OF EIGHTH PLAN FUNDS UNDER NATIONAL AIDS CONTROL PROGRAMME

		(Rs. IN LAKHS)					
	8th Plan Outlay	Total	1992-93	1993-94	1994-95	1995-96	1996-97
Outlay	28000.00	44655.00	7000.00	7300.00	8255.00	8000.00	14100.00
Expenditure	27538.00	27538.00	2971.00	3290.00	4400.00	5340.00	11537.00

Source: Ministry of Health & Family Welfare

* :- Expenditure figures for 1996-97 are based on the reimbursement claim for 100% expd. filed by various States/UTs

TABLE 3.4.11
NATIONAL BLINDNESS CONTROL PROGRAMME

(FIGURES IN 000)

Sl.NO	8th plan		1992-93		1993-94		1994-95		1995-96		1996-97	
	TARGET	ACH. (% ACH.)	TARGET	ACH. (% ACH.)	TARGET	ACH. (% ACH.)	TARGET	ACH. (% ACH.)	TARGET	ACH. (% ACH.)	TARGET	ACH. (% ACH.)
Cataract	9824	10872 (110.67)	2000	1604 (80.20)	2430	1913 (78.72)	2450	2165 (88.37)	2550	2470 (96.86)	2694	2720 (100.97)
Operations												

FINANCIAL SCENARIO

(Rs. lakhs)

8th plan Outlay	Exp.	1992-93		1993-94		1994-95		1995-96		1996-97	
		Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp.	Outlay	Exp. Anti.
10000.00	19297.00	2000.00	1994.00	2500.00	1970.00	4000.00	3724.00	7200.00	5751.00	7500.00	5858.00

Source:- Deptt. of Health

During 1994-97 an additionality of Rs.13200.00 Lakhs was provided under EAP for implementation of World Bank assisted project in the country.

Table 3.4.12

NATIONAL HEALTH POLICY
GOALS & ACHIEVEMENTS

Indicator	PRIOR TO NHP*	EIGHTH PLAN		NHP Goal For 2000*	9th Plan Goal
		Goal	Achievement (1996)		
1	2	3	4	5	6
IMR	125 (1978)	70	72	60	56-50
CDR	12.5 (1981)		9	9	9
MMR	4-5 (1976)		4.7 (1993)	Below 2	3
Life Expectancy					
a) Male	52.6 (1976-81)		59.0 (1989-93)	64	62 (1996-2001)
b) Female	51.6 (1976-81)		59.7 (1989-93)	64	63 (1996-2001)
Babies with weight below 2.5 Kg. (%)	30%		30%	10%	
CBR/1000	35	26	27.5	21	24/23
CPR %	23.6 (1982)	56	45.4	60	51-60
NRR	1.48 (1981)			1	
Growth Rate % (Annual)	2.24 (1971-81)		1.8	1.2	1.6/1.5
TFR	4.4 (1975)		3.5	2.3	2.9/2.6
Immunization					
BCG (Infants)		100	97 (1996-97)	100	
Polio (Infants)		100	90 (1996-97)	100	
DPT (children < 1 year)		100	89 (1996-97)	100	65\$
Measles		100		100	
DT (new school entrants)					
(5-6 years)		100	48 (1995-96)	100	
T.T. (for school children)					
a) 10 years		100	47 (1995-96)	100	
b) 16 years		100	41 (1995-96)	100	
Immunization by TT(%)					
(for Pregnant Women)	20	100	79	100	95
Pregnant mothers receiving ante-natal care (%)	40-50	100	76	100	90
Deliveries by trained by personnel (%)	30-35		13	100	45
Institutional deliveries %	-	-	-	-	35
Leprosy (% arrested cases among detected cases)	20			80	
Prevalance Per Thousand	57.3 (1981)**		5.8 (1995)		1/10,000
TB (% arrested cases among detected cases)			30 (1995)	90	85#
Blindness Prevalence (%)	1.4			0.3	0.3
Cataract Surgery (Yr.)	0.5 Million** (.1981)		2.7 Million (1995-96)		17.5 Million (in 5 yrs.)

* Source : National Health Policy

**Source : Ministry of Health & FW

\$ Fully immunized against 6 VPD by 1 year.

85% cure rate in RNTCP districts

TABLE 3.4.13

Pattern of Investment on Health, Family Welfare (Plan Outlays) during Different Plan periods in public sector - Centre, States and UTs

(Rs in Crores)

Sl. No.	Period	Total Plan Investment (All Dev. Heads)	Health (Centre & States)		Family Welfare	
			Outlay/Exp.	% of 3	Outlay/Exp.	% of 3
1	2	3	4	5	6	7
1.	First Plan (Actuals) (1951-56)	1960.00	65.20	3.33	0.10	0.01
2.	Second Plan (Actuals) (1956-61)	4672.00	140.80	3.01	5.00	0.11
3.	Third Plan (Actuals) (1961-66)	8576.50	225.90	2.63	24.90	0.29
4.	Annual Plans (Actuals) (1966-69)	6625.40	140.20	2.12	70.40	1.06
5.	Fourth Plan (Actuals) (1969-74)	15778.80	335.50	2.13	278.00	1.76
6.	Fifth Plan (Actuals) (1974-79)	39426.20	760.80	1.93	491.80	1.25
7.	(1979-80) (Actuals)	12176.50	223.10	1.83	118.50	0.97
8.	Sixth Plan (outlay) (1980-85)	97500.00	1821.00	1.87	1010.00	1.04
	Sixth Plan (Actuals)	109291.70	2025.20	1.85	1387.00	1.27
9.	Seventh Plan (Outlay) (1985-90)	180000.00	3392.90	1.88	3256.30	1.81
	Seventh Plan (Actuals)	218729.60	3688.60	1.69	3120.80	1.43
10.	1990-91 (Actual)	61518.10	960.90	1.56	784.90	1.28
11.	1991-92 (Actual)	65855.80	1042.20	1.58	856.60	1.30
12.	Eighth Plan Outlay (1992-97)	434100.00	7582.20	1.75	6500.00	1.50

SOURCE :- F.R. DIVISION, PLANNING COMMISSION

Table 3.4.14
OUTLAY FOR HEALTH IN THE STATES & UNION TERRITORIES

STATES	8th PLAN OUTLAY		1992-93				1993-94			
			OUTLAY		ACT. EXP.		OUTLAY		ACT. EXP.	
	HEALTH	MNP	HEALTH	MNP	HEALTH	MNP	HEALTH	MNP	HEALTH	MNP
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1 ANDHRA PRADESH	18332.00	5360.00	1400.00	700.00	2210.00	753.28	2759.40	800.00	2686.00	761.83
2 ARUNACHAL PRADESH	2802.00	1250.00	595.00	273.00	565.00	259.35	695.00	309.00	626.00	279.14
3 ASSAM	15949.00	8100.00	3700.00	1620.00	3866.00	1620.00	3920.00	1620.00	4253.00	1649.00
4 BIHAR	67687.00	33722.00	11431.00	5715.00	4619.00	2919.00	12014.00	6711.00	2370.00	1818.82
5 GOA	5900.00	1222.00	1150.00	232.00	1012.00	160.24	1232.00	232.00	1151.00	184.60
6 GUJARAT	24200.00	11787.00	4093.00	1650.00	4267.00	1492.12	4132.00	1650.00	4402.00	1748.17
7 HARYANA	17611.00	6768.00	2431.00	981.00	2061.00	833.47	2591.70	925.00	2224.00	811.47
8 HIMACHAL PRADESH	12100.00	4800.00	2200.00	932.00	2359.00	997.70	2460.00	975.00	2432.00	987.70
9 J & K	17990.00	7500.00	3201.00	1499.00	3242.00	1373.18	3602.00	1560.00	3627.00	1574.97
10 KARNATAKA	34200.00	13050.00	5646.00	2280.00	5030.00	2671.55	11242.00	3517.00	6990.00	3245.00
11 KERALA	12000.00	2297.00	2200.00	660.00	1491.00	219.74	2450.00	506.00	1738.00	461.00
12 MADHYA PRADESH	30087.00	15000.00	7578.00	3000.00	5348.00	1762.90	7644.00	2808.00	6261.00	2277.78
13 MAHARASHTRA	55326.00	28100.00	8367.00	6000.00	7185.00	3627.32	10604.00	4741.00	9379.00	4440.99
14 MANIPUR	2100.00	1015.00	415.00	210.00	423.00	135.44	545.00	60.00	441.00	166.49
15 MEGHALAYA	4000.00	1800.00	790.00	400.00	857.00	554.34	1079.00	483.00	759.00	483.00
16 MIZORAM	2550.00	1500.00	580.00	300.00	580.00	300.00	720.00	200.00	770.00	454.68
17 NAGALAND	5000.00	640.00	1140.00	120.00	506.00	70.00	1197.00	100.00	860.00	72.00
18 ORISSA	22323.00	7800.00	3020.00	1200.00	2297.00	681.38	3040.00	1207.00	2318.00	804.97
19 PUNJAB	25475.00	8000.00	6000.00	1335.00	2511.00	608.47	4600.00	601.00	2521.00	717.00
20 RAJASTHAN	39095.00	15000.00	4457.00	2040.00	4346.00	2040.49	5621.00	2400.00	4900.00	2173.00
21 SIKKIM	5220.00	1345.00	1340.00	345.00	629.00	106.10	1375.00	245.00	1351.00	111.55
22 TAMILNADU	26600.00	6500.00	6509.00	402.00	8035.00	1380.00	7158.00	2448.00	7259.00	2554.89
23 TRIPURA	5000.00	2000.00	850.00	424.00	703.00	348.00	880.00	450.00	810.00	450.00
24 UTTAR PRADESH	51757.00	26000.00	9058.00	4035.00	8547.00	4242.71	9833.00	3924.00	7778.00	3492.23
25 WEST BENGAL	28100.00	12178.00	4112.50	2245.00	779.00	400.00	2906.00	1292.00	2749.00	800.00
TOTAL STATES	531404.00	222734.00	92263.50	38598.00	73468.00	29556.78	104300.10	39764.00	80655.00	32520.28
UTs										
1 A & N ISLANDS	2251.00	945.00	314.00	216.00	436.23	252.18	574.35	240.00	557.07	263.77
2 CHANDIGARH	6682.00	75.00	825.00	27.00	600.81	46.75	1072.00	55.00	1130.41	55.00
3 D & N HAVELI	280.00	104.00	57.25	24.15	57.67	12.70	66.00	24.75	92.67	10.75
4 DAMAN & DIU	240.00	100.00	50.00	25.00	69.13	40.60	63.00	41.00	111.02	77.90
5 DELHI	35000.00	0.00	6500.00	0.00	6600.82	0.00	7209.00	0.00	6687.02	0.00
6 LAKSHADWEEP	362.00	180.00	70.90	35.00	76.29	24.96	81.94	35.55	90.93	43.66
7 PONDICHERY	2000.00	900.00	450.00	178.00	475.18	147.70	550.00	207.00	534.00	145.96
TOTAL UTs	46815.00	2304.00	8267.15	505.15	8316.13	524.89	9616.29	603.30	9203.12	597.04
GRAND TOTAL	578219.00	225038.00	100530.65	39103.15	81784.13	30081.67	113916.39	40367.30	89858.12	33117.32

*:- REVISED ESTIMATE

SOURCE :- 1) STATE PLAN DIVISION, PLANNING COMMISSION
2) ANNUAL PLAN DOCUMENT STATE GOVERNMENT

NA:- NOT AVAILABLE

Table 3.4.14 (cont.)

(Rs. In Lakhs)

STATES (1)	1994-95		ACT.EXP.		1995-96		R.E.	
	OUTLAY		HEALTH	MNP	OUTLAY		HEALTH	MNP
	HEALTH	MNP	HEALTH	MNP	HEALTH	MNP	HEALTH	MNP
(1)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1 ANDHRA PRADESH	3259.40	800.00	3224.00	750.00	4100.00	1029.00	2966.65	500.00
2 ARUNACHAL PRADESH	773.00	346.05	760.00	339.00	1069.00	448.00	1063.00	448.00
3 ASSAM	4520.00	1890.00	4872.00	1890.00	6550.00	2048.00	5095.60	2048.00
4 BIHAR	12014.00	2700.00	3814.00	996.00	12014.00	2700.00	4191.77	2400.00
5 GOA	1253.00	232.00	1018.00	189.00	1309.00	170.00	1282.00	170.00
6 GUJARAT	4841.00	1718.00	4470.00	1718.00	7100.00	2160.00	7100.00	2280.00
7 HARYANA	2547.00	900.00	2234.00	900.00	3020.00	1063.00	3030.00	1069.00
8 HIMACHAL PRADESH	2875.00	1257.00	3459.00	1344.00	3479.00	1400.00	4238.00	1400.00
9 J & K	3876.00	1662.00	4301.00	1662.00	4964.00	1946.00	5220.00	1946.00
10 KARNATAKA	10771.00	3438.00	9210.00	3438.00	11472.00	3638.00	8994.93	3168.95
11 KERALA	3100.00	506.00	2672.00	0.00	3900.00	0.00	3900.00	0.00
12 MADHYA PRADESH	8450.00	3350.00	7585.00	3921.13	7700.00	2919.00	8528.33	2919.00
13 MAHARASHTRA	10140.00	3566.00	8796.00	4884.00	13939.00	6698.97	13339.00	7034.00
14 MANIPUR	485.00	225.00	492.00	225.00	678.00	231.50	681.56	231.50
15 MEGHALAYA	1079.00	500.00	839.00	535.00	1331.00	946.00	1331.00	946.00
16 MIZORAM	720.00	328.00	680.00	273.80	787.00	400.00	896.50	400.00
17 NAGALAND	1053.00	175.00	465.00	95.00	2023.00	175.00	1950.00	311.00
18 ORISSA	3940.00	1489.47	3084.00	909.57	3769.00	1293.00	3769.00	1293.00
19 PUNJAB	4302.00	1000.00	3297.00	854.08	4600.00	1100.00	3841.00	819.00
20 RAJASTHAN	7191.00	2950.00	7766.00	3296.00	14153.00	8296.00	13230.00	7504.00
21 SIKKIM	1337.50	250.00	1165.00	101.00	1258.00	170.00	1297.00	184.80
22 TAMILNADU	8210.00	2679.00	9616.00	2679.00	9244.00	3014.00	9061.00	2831.00
23 TRIPURA	900.00	450.00	900.00	450.00	1200.00	460.00	900.00	345.00
24 UTTAR PRADESH	11095.00	4295.00	11791.00	3976.00	12998.00	5361.00	10261.00	5098.00
25 WEST BENGAL	3163.90	1107.00	1795.00	600.00	3330.00	995.00	3330.00	500.00
TOTAL STATES	111895.80	37813.52	98305.00	36025.58	135987.00	48661.47	121497.34	45846.25
U T s								
1 A & N ISLANDS	800.00	372.00	531.37	372.00	1025.00	330.00	1025.00	330.00
2 CHANDIGARH	1387.50	90.00	1915.08	90.00	2043.84	119.56	2043.84	119.56
3 D & N HAVELI	88.40	38.00	111.43	38.00	111.80	45.00	111.80	45.00
4 DAMAN & DIU	70.75	45.00	113.06	45.00	100.00	50.00	100.00	50.00
5 DELHI	9120.00	0.00	6765.65	0.00	10055.00	0.00	10055.00	0.00
6 LAKSHADWEEP	100.00	48.32	125.48	48.32	122.00	39.35	122.00	39.35
7 PONDICHERRY	686.00	211.00	657.86	175.00	1245.00	214.00	1245.00	214.00
TOTAL UTs	12252.65	804.32	10219.93	768.32	14702.64	797.91	14702.64	797.91
GRAND TOTAL (STATES & UTs)	124148.45	38617.84	108524.93	36793.90	150689.64	49459.38	136199.98	46644.16

TABLE 3.4.14 (Concid)

(Rs LAKHS)

STATES	1996-97			
	OUTLAY		R E	
	HEALTH	MNP/BMS	HEALTH	MNP/BMS
(1)	(20)	(21)	(22)	(23)
1 ANDHRA PRADESH	6111.65	800.00	5575.00	600.00
2 ARUNACHAL PRADESH	2659.00	948.00	2487.00	881.00
3 ASSAM	6394.00	3073.00	5779.00	2673.00
4 BIHAR	6612.00	NA	7382.00	NA
5 GOA	1447.50	170.00	1048.00	157.00
6 GUJARAT	9000.00	1000.00	9000.00	1000.00
7 HARYANA	3639.00	1501.12	3898.22	1761.12
8 HIMACHAL PRADESH	4480.00	1713.25	4764.00	1713.25
9 J & K	5767.42	3105.00	5510.35	3105.00
10 KARNATAKA	19137.00	NA	11041.00	NA
11 KERALA	6126.26	426.00	6126.00	426.00
12 MADHYA PRADESH	10709.00	NA	10816.07	5498.62
13 MAHARASHTRA	25265.00	9480.00	24237.00	9480.00
14 MANIPUR	622.47	269.00	633.00	269.00
15 MEGHALAYA	2331.00	1946.00	1731.00	1346.00
16 MIZORAM	2061.00	800.00	1877.00	780.00
17 NAGALAND	2485.00	1003.00	2449.00	1003.00
18 ORISSA	4659.55	2041.26	4439.55	1961.20
19 PUNJAB	9535.41	1575.00	5267.00	1575.00
20 RAJASTHAN	17636.00	10818.00	14979.00	9585.00
21 SIKKIM	1100.00	206.30	1100.00	206.30
22 TAMILNADU	13425.00	4295.00	12293.37	3163.37
23 TRIPURA	1200.00	549.00	1060.00	549.00
24 UTTAR PRADESH	18205.00	6784.00	13718.00	10066.00
25 WEST BENGAL	7487.00	1039.00	5182.00	1725.00
TOTAL STATES	188095.26	51828.68	160392.56	59523.86
U T s				
1 A & N ISLANDS	1370.00	455.00	1367.00	455.00
2 CHANDIGARH	2402.50	268.40	2402.50	268.40
3 D & N HAVELI	153.80	77.65	153.80	77.65
4 DAMAN & DIU	112.00	68.70	112.00	68.70
5 DELHI	14276.00	1450.00	12307.50	100.00
6 LAKSHADWEEP	175.18	87.15	175.18	87.15
7 PONDICHERRY	1345.31	181.67	1345.31	181.67
TOTAL UTs	19834.79	2588.57	17863.29	1238.57
GRAND TOTAL	207930.05	54417.25	178255.85	60762.43
(STATES & UTs)				

TABLE 3.4.15

OUTLAY FOR HEALTH IN THE CENTRAL SECTOR

(Rs. in Crores)

PROGRAMME/SCHEME	8th	1992-93		1993-94		1994-95		1995-96		1996-97	
	PLAN OUTLAY	OUTLAY	ACTUAL EXP	OUTLAY	ACTUAL EXP	OUTLAY	ACTUAL EXP	OUTLAY	ACT EXP	OUTLAY	REVISED ESTIMATE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
CENTRALLY SPONSORED SCHEMES											
1 MALARIA CONTROL (INCLUDING KALA AZAR, ELARIA & JE CONTROL)	125.00	65.00	98.03	110.00	110.54	110.00	110.00	139.00	128.00	145.00	145.00
2 LEPROSY CONTROL	140.00	24.00	33.99	35.00	50.94	94.00	89.10	80.00	64.53	74.00	74.00
3 T B CONTROL	85.00	13.50	27.01	35.00	17.19	40.00	32.15	50.00	41.20	65.00	52.07
4 CONTROL OF BLINDNESS	100.00	13.50	17.89	25.00	18.81	40.00	38.26	72.00	55.26	75.00	75.00
5 NATIONAL AIDS CONTROL PROGRAMME (INCLUDING STD AND BLOOD SAFETY MEASURES)	280.00	70.00	29.71	73.00	33.06	82.55	43.61	80.00	57.00	141.00	141.00
6 STRENGTHENING OF DRUG CONTROL & FOOD STANDARD ADMN. IN STATES & UNION TERRITORIES	20.00	1.00	1.84	2.00	1.50	2.00	2.32	3.50	2.44	3.50	2.64
PURELY CENTRAL SCHEMES											
7 OTHER SCHEME (INCLUDING CSS NEW SCHEMES)	36.75	7.25	7.26	15.01	12.33	15.00	8.06	19.90	10.69	25.10	44.85
8 CONTROL OF COMMUNICABLE DISEASES	14.75	3.82	4.71	7.56	7.60	7.60	16.14	10.45	10.10	13.20	12.34
9 CONTROL/CONTAINMENT OF NON-COMMUNICABLE DISEASES	85.00	11.90	24.91	26.18	20.29	19.10	21.25	17.15	21.56	24.50	23.31
10 HOSPITALS AND DISPENSARIES	94.00	15.95	34.19	31.70	30.34	26.00	36.74	34.55	26.71	38.28	27.02
11 MEDICAL EDUCATION, TRAINING & RESEARCH	391.50	58.65	101.86	96.60	110.39	101.25	114.43	120.26	123.31	159.63	170.51
A) EDUCATION	254.25	36.95	74.64	64.90	79.58	67.75	75.47	81.56	91.70	118.72	134.75
B) TRAINING	12.25	1.70	1.67	3.70	1.81	5.50	8.96	9.70	1.61	8.91	4.06
C) RESEARCH	125.00	20.00	25.55	28.00	29.00	28.00	30.00	29.00	30.00	32.00	31.70
12 NATIONAL INSTITUTE OF BIOLOGICALS, NOIDA (UP)	40.00	6.43	1.43	5.00	2.84	8.60	11.34	20.00	9.50	27.60	27.60
GRAND TOTAL (A+B)	1712.00	291.00	382.53	462.05	415.23	552.10	523.40	646.81	550.30	791.81	795.34
DEPTT OF ISM & H/ HEALTH	1800.00	302.00	396.11	483.30	431.33	578.00	540.68	670.00	572.30	815.00	818.53
DEPTT OF ISM & H	88.00	11.00	13.58	21.25	16.10	25.90	17.28	23.19	22.00	23.19	23.19

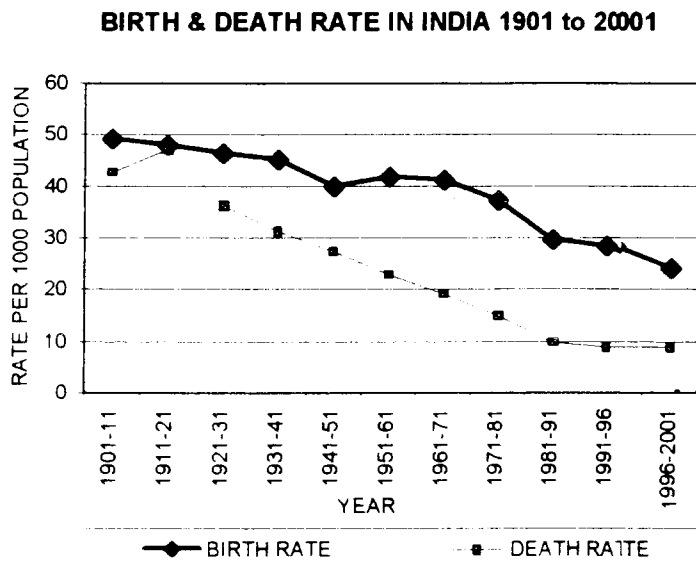
SOURCE - MINISTRY OF HEALTH & FAMILY WELFARE

3.5 FAMILY WELFARE

Introduction

3.5.1 Human development is the ultimate objective of all planning efforts. Planning takes into account the resources and pathways available for human development and human resources available for carrying out the developmental Plans. India, the second most populous

Figure-1



Source:- Registrar General India

country in the world, has no more than 2.5% of global land but is the home of 1/6th of the world's population. The prevailing high maternal, infant, childhood morbidity and mortality, low life expectancy and high fertility and associated high morbidity had been a source of concern for public health professionals right from the pre-independence period. The Bhore Committee Report (1946) which laid the foundation for health service planning in India, gave high priority to provision of maternal and child health services and improving their nutritional and health status. It is noteworthy that this report which emphasized the

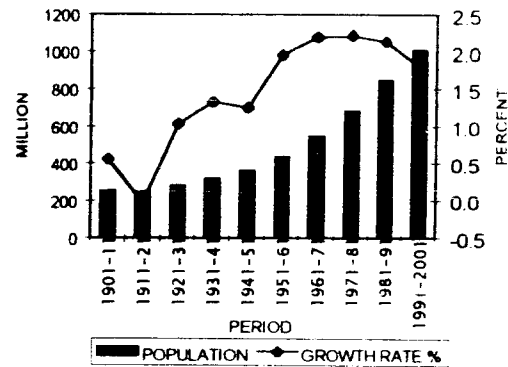
importance of providing integrated preventive, promotive and curative primary health care services preceded the Alma Ata declaration by over three decades. Under the Constitution of India elimination of poverty, ignorance and ill health are three important goals. Successive Five Year Plans have been providing the policy framework and funding for planned development of nationwide health care infrastructure, manpower, drugs, devices and other essential items for improving health status of mothers and their children

3.5.2 In 1951, the infant republic took stock of the existing situation in the country and initiated the first Five Year Development Plan. Living in a resource poor country with high population density, the Planners recognised in the census figures of 1951, the potential threat posed by population explosion and the need to take steps to avert it. It was recognised that population stabilisation is an essential prerequisite for sustainability of development process so that the benefits of economic development result in enhancement of the well being of the people and improvement in quality of life. India became the first country in the world to formulate a National Family Planning Programme in 1952, with the objective of "reducing birth rate to the extent necessary to stabilise the population at a level consistent with requirement of national economy". Thus, the key elements of health care to women and children and provision of contraceptive services have been the focus of India's health services right from the time of India's independence. Successive Five Year Plans have been providing the policy framework and funding for planned development of nationwide health care infrastructure and manpower. The Centrally Sponsored and 100% centrally funded Family Welfare Programme provides additional infrastructure, manpower and consumables

needed for improving health status of women and children and to meet all the felt needs for fertility regulation.

3.5.3 The technological advances and improved quality and coverage of health care resulted in a rapid fall in Crude Death Rate (CDR) from 25.1 in 1951 to 9.8 in 1991. In contrast, the reduction in Crude Birth Rate (CBR) has been less steep, declining from 40.8 in 1951 to 29.5 in 1991. As a result, the annual exponential population growth rate has been over 2% in the last three decades. During the Eighth Plan period the decline in CBR has been

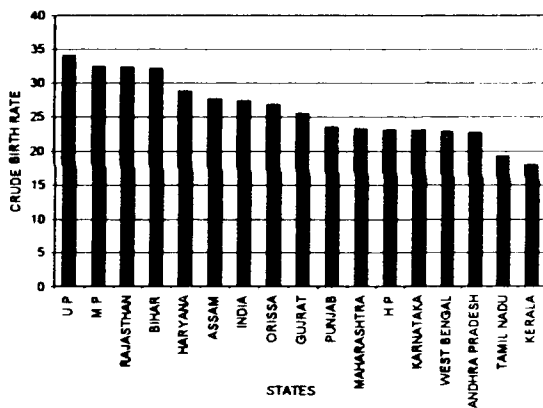
Figure-2
POPULATION OF INDIA



Source:- Registrar General India

steeper than that in the (CDR) and consequently, the annual population growth rate has been around 1.9% during 1991-95 (Figures 1 & 2). The rate of decline in population growth is likely to be further accelerated during the Ninth Plan period. Though the decline in CBR and CDR has occurred in all States, the rate of decline in CBR was slower in some States like U P. and Bihar (Table-3.5.1). There are substantial differences in CBR and IMR between States (Figure 3 and 4) and even within the same State there are substantial differences between districts. The efforts of the Family Welfare Programme during the Ninth Plan will be to minimise the existing disparities by

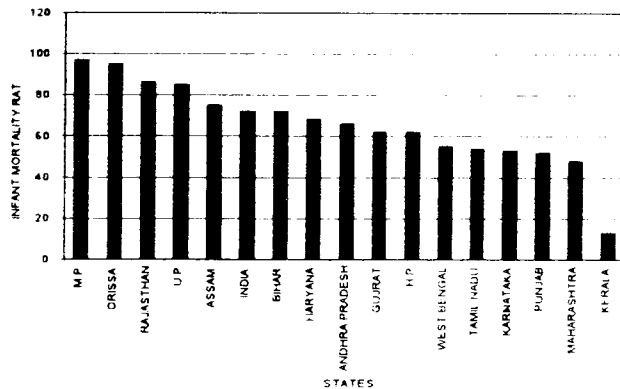
Figure-3
CRUDE BIRTH RATE (SRS 1996)



Source - Registrar General India

providing resources to fill the crucial gaps in infrastructure and manpower in primary health care in both urban and rural areas and improving the operational efficiency of health system. The emphasis on improving the access and quality of reproductive and child health services will enable the increasingly aware and literate families to attain their reproductive goals in harmony with the national goals.

Figure-4
INFANT MORTALITY RATE (SRS 1996)



Source - Registrar General India

Approach during the Ninth Plan

3.5.4 Reduction in the population growth rate has been recognised as one of the priority objectives during the Ninth Plan period. The current high population growth rate is due to (1) the large size of the population in the reproductive age-group (estimated contribution

60%); (2) higher fertility due to unmet need for contraception (estimated contribution 20%); and (3) high wanted fertility due to prevailing high IMR (estimated contribution about 20%).

3.5.5 While the population growth contributed by the large population in the reproductive age group will continue in the foreseeable future, the other two factors need effective and prompt remedial action.

The objectives during the Ninth Plan will be:

- To meet all the felt-needs for contraception
- To reduce the infant and maternal morbidity and mortality so that there is a reduction in the desired level of fertility

The strategies during the Ninth Plan will be:

- to assess the needs for reproductive and child health at PHC level and undertake area-specific micro planning
- to provide need-based, demand-driven high quality, integrated reproductive and child health care.

3.5.6 The enabling objectives during the Ninth Plan period, therefore, will be to reduce the population growth rate by

- a) meeting all the felt-needs for contraception; and
- b) reducing the infant and maternal morbidity and mortality so that there is a reduction in the desired level of fertility

The strategies during the Ninth Plan will be:

- a) To assess the needs for reproductive and child health at PHC level and undertake area-specific micro planning; and
- b) To provide need-based, demand-driven high quality, integrated reproductive and child health care.

The programmes will be directed towards:

- a) Bridging the gaps in essential infrastructure and manpower through a flexible approach and improving operational efficiency through investment in social, behavioural and operational research
- b) Providing additional assistance to poorly performing districts identified on the basis of the 1991 census to fill existing gaps in infrastructure and manpower
- c) Ensuring uninterrupted supply of essential drugs, vaccines and contraceptives, adequate in quantity and appropriate in quality.
- d) Promoting male participation in the Planned Parenthood movement and increasing the level of acceptance of vasectomy.

3.5.7 Efforts will be intensified to enhance the quality and coverage of family welfare services through:

- a) Increasing participation of general medical practitioners working in voluntary, private, joint sectors and the active cooperation of practitioners of ISM&H;
- b) Involvement of the Panchayati Raj Institutions for ensuring inter-sectoral coordination and community participation in planning, monitoring and management;
- c) Involvement of the industries, organised and unorganised sectors, agriculture workers and labour representatives

Evolution of India's Family Welfare Programme

The fifties

3.5.8 At the time of Independence the health care services in India were predominantly urban, hospital based and curative. General practitioners well versed in maternal child health and paediatricians & obstetricians provided health care to women and children who came to them. They did provide comprehensive, integrated, good quality services but technology available for detection and management of health problems was limited and out reach of services was poor. Majority of the population especially those belonging to the poorer segment and those residing in rural areas did not have access to health care. Consequently the morbidity and mortality rates in them were quite high. Many women died while seeking illegal induced abortion to get rid of unwanted pregnancy because they did not have access to contraceptive care for preventing pregnancies. Conceptions that were too early, too close, too many and too late resulted in high maternal and infant mortality rates. Antenatal, intrapartum, postnatal and contraceptive care were not readily available to women who required these services desperately.

3.5.9 Obstetricians, who were daily witnessing maternal morbidity and mortality associated with high parity, were ready and willing to persuade their patients who had completed their families, to undergo surgical sterilisation. The fact that the technique was simple, safe and effective and could be done soon after delivery under local anaesthesia, accounted for the popularity of postpartum tubal sterilisation. The safety, simplicity and efficacy of vasectomy was also well recognised. For a couple who had completed their family, sterilisation of one partner resulted in the reduction of maternal morbidity and mortality associated with high parity. To some extent this was responsible for the substantial drop in maternal mortality rates observed in the urban areas during the 1950s. However, these measures had no impact on the fertility rate or the population growth rate of the country because of poor outreach to rural population. Thus in fifties good quality integrated maternal and child health care, and family planning services were available to those who were aware, had access and could afford the services of the physicians. There were efforts to improve the coverage of the population and extend the services to rural areas as a part of the block development programme; resource and manpower constraints were responsible for the slow progress in this effort.

The sixties

3.5.10 The sixties witnessed a sea change with availability of safe effective vaccines for many communicable diseases, and effective contraceptives such as Lippe's loop for prevention of pregnancy; programmes for providing these to the population as well as programmes for improvement of nutritional status of vulnerable groups were initiated during this period. In order to reach the benefits of the technological innovations to the population, certain identified priority interventions were implemented by a well knit team of professionals who looked after the programme requirements and implementation at the periphery was done through the limited health care infrastructure available in rural areas. The Family Planning and the immunisation programme were among the earliest of such programmes; subsequently several other vertical programmes were added. In an attempt to improve the out reach, camp approach was taken up for providing care to pregnant women and children; these efforts however did not result in any marked improvement in health status of these vulnerable groups because the care was not available when needed and referral services were not available.

3.5.11 Rapid growth of the population in the previous 10 years, reported in the 1961 census, stimulated the Government to form a Department of Family Planning, with a modest budget. The health infrastructure was still predominantly urban based. During the 1960s, sterilisation remained the focus of the National Family Planning Programme. Efforts were made to popularise vasectomy and to provide vasectomy services to rural areas, using a camp approach. Tubectomy services, however, remained based predominantly in urban hospitals. Extension education approach to improve awareness and increase acceptance of F.P. methods were also included. Lippe's loop provided the first reliable birth spacing method for women in India. Following encouraging response in urban clinic attempts were made to provide this spacing method to the rural population through camp approach. However, without infrastructure to provide the follow up services the device fell into disrepute. It was obvious that without substantial inputs into infrastructure and manpower to provide the needed follow up services it will not be possible to achieve any substantial improvement in Maternal and Child Health indices or reduce birth rates.

Seventies

3.5.12 The seventies witnessed many initiatives to improve the health and nutritional status of women and children. The massive dose Vit.A programme aimed at prevention of nutritional blindness, the anaemia prophylaxis programme aimed at reducing anaemia and associated ill health and food supplementation to pregnant and lactating women and children below five years through ICDS were major initiatives to tackle under nutrition and its adverse consequences in women and children. With the improvement in primary health care infrastructure access to health care improved.

3.5.13 The census of 1971 showed that population explosion was no longer a potential threat but a major problem to be tackled. The government gave top priority to the Family Planning programme and provided substantial funds for several new initiatives. Sterilisation, IUD and condoms were made available through the Primary Health Centres. The hospital based Postpartum Programme provided contraceptive care to women coming for delivery. The MTP act enabled women with unwanted pregnancy to seek and obtain safe abortion services.

3.5.14 Increasing concern about rapidly growing population led to the Family Planning Programme being included as a priority sector programme during the Fifth Plan. The massive sterilisation drive of 1976 did result in eight million persons undergoing sterilisation, but this did not have any perceptible impact on the birth rate as the cases were not appropriately chosen. The very next year showed a steep fall in the acceptance. In 1979 the Programme was renamed as Family Welfare Programme; increasing integration of family planning services with those of MCH and Nutrition was attempted

Eighties

3.5.15 In 1983 India formulated the National Health Policy, which provided comprehensive frame work for planning, implementation and monitoring of Health care services. The National Health Policy:

1. Reviewed the progress achieved in the delivery of health services
2. Provided a situation analysis of the progress achieved in health, family welfare and nutrition programmes
3. Identified priority areas for intervention in the next two decades

4. Defined the policy, strategy and programme intervention in these priority areas
5. Set the goals to be achieved by 2000 AD

3.5.16 Subsequent Plans have attempted to evolve and implement intervention Programmes to achieve the goals set in the National Health Policy.

3.5.17 A major initiative was taken during the Seventh Plan to provide facilities/services nearer to the doorsteps of population. The primary health care infrastructure was expanded:

- i) It was envisaged to have one sub-centre for every 5000 population in plain areas and for 3000 population in hilly and tribal areas. At the end of Seventh Plan i.e. 31.3.90, 1.30 lakhs sub-centres were established in the country.
- ii) The Post Partum Programme was progressively extended to sub-district level hospitals. At the end of the Seventh Plan 1075 sub district level hospitals and 936 health Posts were sanctioned in the country, out of which the number functioning were 1012 and 870 respectively.
- iii) The Universal Immunization Programme, started in 30 Districts in 1985-86, was extended to cover 448 districts in the country by the end of the Seventh Plan.
- iv) Urban family welfare outposts and centres were established to provide improved access to family welfare services to the vulnerable slum population.

3.5.18 Focussed attempts were made to improve the immunisation coverage through Universal Immunisation Programme (UIP) mission mode project. Attempts were also made to improve antenatal coverage, improve the coverage under ORT and ARI Programme.

Eighth Plan Initiatives

3.5.19 Containing population growth was one of the six major objectives of the Eighth Plan. Recognizing the fact that reduction in infant and child mortality is an essential pre-requisite for acceptance of small family norm, Government of India has attempted to integrate MCH and Family Planning as part of Family Welfare services at all levels. NDC approved modified Gadgil Mukherjee Formula which for the first time gave equal weightage to performance in MCH Sector (IMR reduction) and FP Sector (CBR reduction) as a part basis for computing central assistance to non special category States. This initiative ensured that the inter linkages between Family Welfare Programme and Development was kept in focus in State Plans.

3.5.20 In order to give a new thrust and dynamism to the ongoing Family Welfare Programme the National Development Council set up a Sub-Committee on Population to consider the problem of population stabilisation and come up with recommendations to improve performance. The report of the sub-committee was considered and the recommendations were endorsed by the NDC in its meeting in September 1993. The NDC Committee on Population had recommended that Family Welfare Programme should take cognizance of the area specific socioeconomic, demographic and health care availability differentials and allow requisite flexibility in programme planning and implementation. For this purpose the NDC Committee recommended that there should be

The NDC Committee on Population has recommended that there should be:

- Decentralised area specific planning based on the need assessment
- Emphasis on improved access and quality of services to women and children
- Providing special assistance to poorly performing states/districts to minimise the inter and intra-state differences in performance

Creation of district level databases on quality and coverage and impact indicators for monitoring the programme

ICPD has advocated similar approach.

Concordance between National (NDC Committee) and International (ICPD) efforts has improved funding and accelerated the pace of implementation of the family welfare programme.

1. Decentralised area specific planning based on the need assessment

2. Emphasis on improved access and quality of services to women and children

3. Providing special assistance to poorly performing states/districts to minimise the inter and intra-state differences in performance

4. Creation of district level databases on quality and coverage and impact indicators for monitoring the programme.

3.5.21 The Department of Family Welfare started

implementing the recommendations of the NDC Committee on Population during the Eighth Plan period. Funds from Social Safety Net (SSN) Programme were earmarked for improving primary health care infrastructure in poorly performing districts identified on the basis of IMR and CBR of 1981 census estimates. Implementation of Child Survival and Safe Motherhood (CSSM) Programme was initiated in the very first year of the Eighth Plan in these districts. A project to revitalise the Family Welfare Programme in Uttar Pradesh was taken up with external assistance.

3.5.22 The Child Survival and Safe Motherhood Programme (CSSM) was initiated in 1992. Under the Programme efforts were made to provide integrated antenatal, intranatal and postnatal care to women; the child health care component included immunisation, diarrhoeal and acute respiratory infection prevention and management programmes. The pulse polio initiative aimed at eradication of polio by 2000 AD was initiated in 1996.

3.5.23 In response to the recommendations of the NDC that there should be decentralised area specific need assessment and microplanning to meet the local needs, the department abolished the centrally defined method specific targets for family planning in two states (Tamil Nadu and Kerala) and 18 districts in 1995-96. Encouraged by the response in these two states, Department of Family Welfare has abolished the method specific centrally defined targets throughout the country and changed over to PHC based community need assessment, planning and implementation of Family Welfare Programme. Efforts are underway to improve access and quality of care to women and children.

3.5.24 The International Conference on Population and Development (ICPD) was held in Cairo in 1994. Major recommendations of the ICPD include:

1. Holistic reproductive health care should be made available through primary health care system.

2. Efforts should be made by all the states to reduce infant mortality by one-third and maternal mortality by 50% by 2000 AD.
3. Need assessment and need fulfillment as key elements for improving reproductive health.

3.5.25 India is a signatory to the ICPD; the recommendations of the ICPD are essentially similar to the recommendations of the NDC Committee on Population. The concordance between the National and International efforts has enabled the programme to get all the necessary political, economic and administrative support and gain further momentum to enable the individual and the country to fulfill their felt needs in reproductive health.

Major Achievements of FW Programme are:

- Reduction in Crude Birth Rate (CBR) from 40.8 (1951 Census) to 27.4 in 1996 (SRS 96)
- Reduction in Infant Mortality Rate (IMR) from 146 in 1951 to 72 in 1996 (SRS),
- Increase in Couple Protection Rate (CPR) from 10.4% (1970-71) to 45.4% (31.3.1997).

Achievements of the Family Welfare Programme:

3.5.26 As a part of the Plan exercise the Planning Commission and the Department of Family Welfare have been laying down targets for health and family welfare activities and for demographic indicators. Over the years, there has been a progressive improvement in the achievement of most of these, because the targets set were realistic

and necessary inputs were provided for their achievement. The targets and achievements in the different Plan periods are given in Table 3.5.2.

3.5.27 The major achievements of the FW Programme are given in Table 3.5.3.

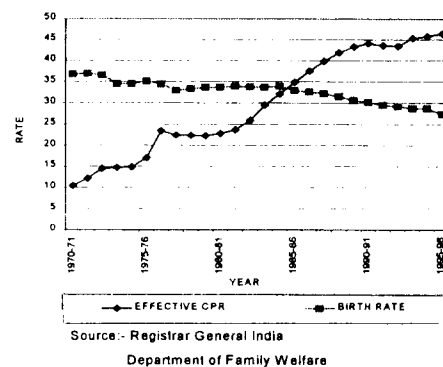
These include:

1. Reduction in Crude Birth Rate (CBR) from 40.8 (1951 Census) to 27.4 in 1996 (SRS 96)
2. Reduction in Infant Mortality Rate (IMR) from 146 in 1951 to 72 in 1996 (SRS),
3. Increase in Couple Protection Rate (CPR) from 10.4% (1970-71) to 45.4% (31.3.1997).

The National Family Health Survey 1992-93 showed that :

- There is universal awareness about contraception
- 40.6% of currently married women use contraceptives
- Wanted fertility is lower than the actual fertility
- There is a large unmet need for contraception:-
11.0% for birth spacing methods and
8.5% for terminal methods

Figure-5
COUPLE PROTECTION RATE & BIRTH RATE



The couple protection rate achieved and the birth rates since 1971 are summarised in Figure 5.

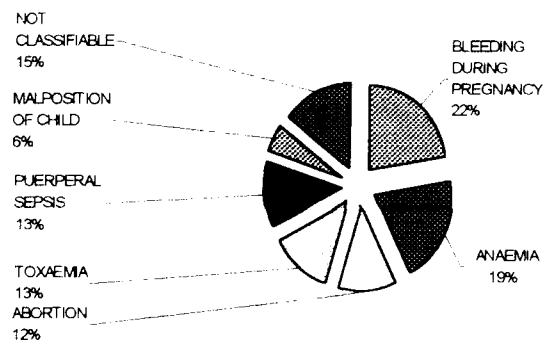
3.5.28 During the initial fifteen years (1971-85) there was a relatively steep increase in the couple protection rates. The reduction in the CBR was however not commensurate with

the increase in couple protection rates. In the last ten years, the rise in CPR is less steep, but the fall in CBR has been steeper than in the earlier years.

3.5.29 The relationship between couple protection rates and CBR is complex. There is a time lag of one to two years before the impact of contraceptive acceptance is visible by way of reduction in birth rate. The age and parity of the acceptors of contraception, and the continuation rates of temporary methods of contraception are some of the existing factors that determine birth rates. The trends in CPR and CBR over the last 25 years suggest that over the years there has been an improvement in the acceptance of appropriate contraception at appropriate time. During the Ninth Plan the FW Programme will focus its attention on need assessment, counselling, provision of appropriate contraceptive and good follow up services. Ensuring effective implementation of the FW programme will result in a substantial improvement in CPR and reduction in CBR.

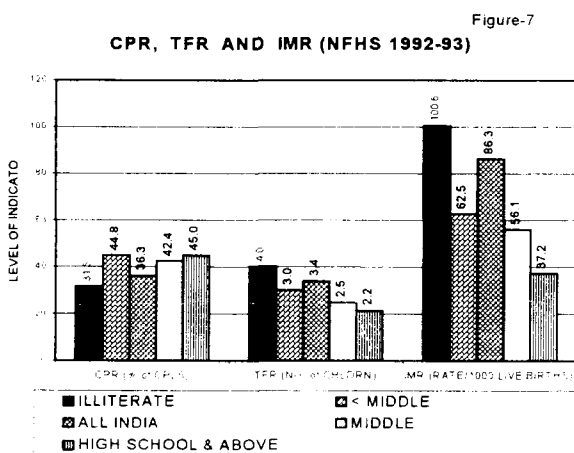
3.5.30 The National Family Health Survey indicated that in 1992-93: (a) 40.6% of currently married women used contraceptives; b) awareness about contraception was universal indicating that the IEC efforts in this direction had succeeded in reaching the population; c) in all States the wanted fertility was lower than the actual fertility; d) there was an unmet need for contraception (11.0% for birth spacing and 8.5% for terminal methods) (Table 3.5.4). Other studies have estimated that about one sixth of all pregnant women seek abortion because they do not want continuation of pregnancy. Illegal induced abortion continues to be a major cause of maternal morbidity and mortality (Figure 6).

Figure-6
CAUSES OF MATERNAL DEATHS (1992-93)



Source:- National Family Health Survey 1992-93

3.5.31 During the Ninth Plan period the Family Welfare Programme will be geared up to meet the unmet demand for contraception with the twin objectives of reducing maternal morbidity and mortality and achieving rapid decline in birth rates. Data from the National Family Health Survey indicate that apart from place of residence education influences IMR, TFR & CPR (Figure 7).



Source - National Family Health Survey 1992-93

3.5.32 The increased awareness of educated urban population and access to FW services are likely to be the major factors responsible for this.

Inter-State/ intra-State differences in Fertility and Mortality

3.5.33 In spite of the uniform national norms set under the 100% Centrally Funded and Centrally Sponsored Scheme (CSS), there are substantial differences in the performance between States as

assessed by IMR and CBR (Table 3.5.1) At one end of the spectrum is Kerala with mortality and fertility rates nearly similar to those in some of the developed countries.

At the other end, there are the four large northern States (Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan) with high Infant Mortality Rate and Fertility Rates. During the Ninth Plan special efforts will be made to achieve rapid reduction in IMR and meet all the felt needs for contraception in these four States.

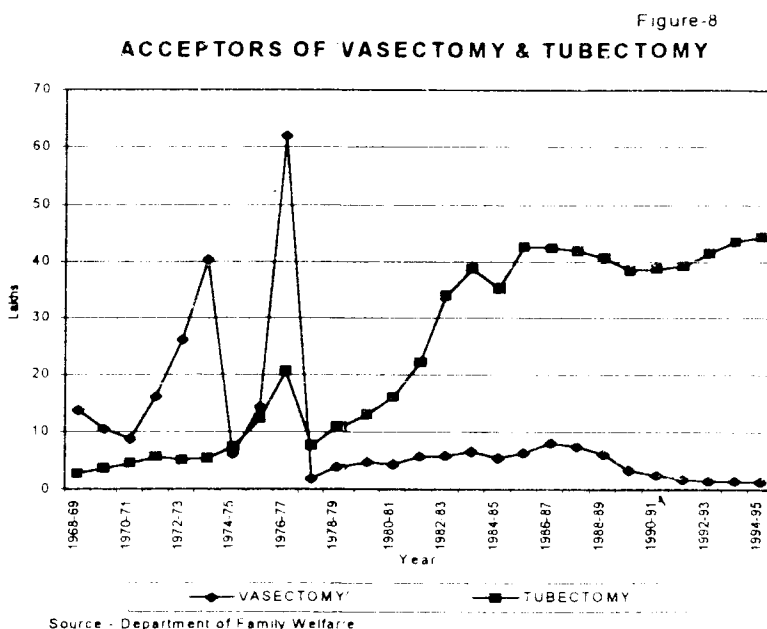
3.5.34 As the availability and utilisation of family welfare services is the critical determinant of performance in Family Welfare Programme, achievements in terms of reduction in IMR and CBR go hand in hand in most States. However, there are exceptions; both Punjab and Tamil Nadu have good primary health care infrastructure; IMR in both the States are identical and the age at marriage in these States is similar; TFR in Tamil Nadu is 2.1 and in Punjab it is 2.9 (Table 3.5.1). In Bihar, IMR is 72 and TFR is 4.6 but Assam with IMR of 75 has a TFR of 3.8. During the Ninth Plan, efforts will be made to identify the factors responsible for poor achievements in terms of IMR and TFR and area specific remedial measures will be planned and implemented in the States.

3.5.36 District wise data on CBR and IMR computed on the basis of Census 1991 show that there are marked differences in these indices not only between States but also between districts in the same State. Census 1991 has confirmed that even in Kerala there are districts where IMR (Idikki) and CBR (Mallapuram) are higher than national levels. There are districts in UP with IMR (Almora) and CBR (Kanpur -Urban) lower than national levels. The Family Welfare Programme, therefore, has been re-oriented to (a) remove or minimise the inter and intra-state differences, (b) undertake realistic PHC based decentralised area-specific microplanning tailored to meet the local needs and (c) involve Panchayati Raj institutions in programme development and monitoring at local level to ensure effective implementation of the programme and effective community participation.

3.5.37 States like Kerala and Tamil Nadu have achieved low CBR and IMR at relatively low cost (Table 3.5.5). On the other hand, States like Haryana and Punjab have not achieved any substantial reduction in CBR in spite of higher expenditure per eligible couple. In States like Bihar and Uttar Pradesh the expenditure is low and performance is poor. In between these extreme categories are States like Orissa and Andhra Pradesh with average or below average expenditure and average or below average performance in MCH or family planning. In some States like Orissa and West Bengal the performance in family planning is better than the performance in MCH or vice versa. During the Ninth Plan, the recommendation of the NDC Committee on Population, that factors responsible for observed differences in utilisation of funds as well as impact of the programme should be studied and existing lacunae rectified not only at the State but also at the district level will be implemented.

3.5.38 It is noteworthy that States like Kerala and Tamil Nadu (where sterilisation is the most commonly utilised method of contraception) have been able to achieve Total Fertility Rate (TFR) of 2.1 even before CPR of 60 has been achieved and that the cost of family welfare programme per eligible couple in these States is relatively low. Given the fact that most couples in India complete their family by the time they are in their mid-20s and marriage is a socially stable institution, sterilisation is the most logical, safe and cost effective contraception to protect these young couples against unwanted pregnancies.

3.5.39 Over the last two decades there has been a steep fall in number of vasectomies (Figure 8). At the moment, over 97% of all sterilisations are tubectomies. If, over the next decade, attempts are made to repopularise vasectomy so that this safe, simple procedure forms at least 50% of all sterilisations there will be a further substantial reduction both in the morbidity/ mortality and in the cost of permanent methods of contraceptive care.



3.5.40 In States like Punjab where nearly half of the acceptors of contraception are using temporary methods such as IUD and Condoms (CC), the cost for family welfare programme per eligible couple is high. In addition, in spite of the relatively high couple protection rate (CPR), the birth rate continues to remain relatively high. This is most probably because of the low continuation rate of IUD and low use effectiveness and continuation rates for conventional contraception. In these States emphasis during the Ninth Plan will be on providing adequate counseling, offering appropriate contraceptive choices through balanced presentation of advantages and disadvantages of various contraceptive methods so that the couple can make a choice of contraceptives; these initiatives will improve continued use of contraceptives and reduction in unwanted births. Adequate follow up care and counselling will also be provided.

3.5.41 Kerala, the first State to achieve TFR of 2.1 did so in spite of relatively low per capita income, whereas in spite of having substantially higher per capita income Punjab and Haryana are yet to achieve TFR of 2.1. Obviously, in Indian context, economic development and increase in per capita income are not essential prerequisites for achieving reduction in fertility. Tamil Nadu was the next State to achieve TFR of 2.1. It did so in spite of higher IMR and lower female literacy rate than Kerala, Maharashtra, which has similar IMR, is yet to reach a substantial decline in TFR. This shows that in some States the decline in IMR is not also a critical determinant of decline in fertility. Andhra Pradesh is likely to achieve TFR of 2.1 by the end of the Ninth Plan. The State has shown a steep decline in fertility in spite of relatively lower age at marriage, low literacy and poorer outreach of primary health care infrastructure. Haryana and Punjab, which have comparatively higher age at marriage, higher literacy rate and better outreach of primary health care infrastructure, have not succeeded in achieving a similar decline in fertility rates.

3.5.42 Both Kerala (in 1989) and Tamil Nadu (in 1993) achieved TFR of 2.1 long before the CPR of 60 was reached. In both these States sterilisation was the major mode of contraception, suggesting that under conditions prevailing in these States the low utilization of spacing methods was not a hindrance for the achievement of replacement level fertility.

Andhra Pradesh is on the threshold of achieving replacement level of fertility. UT of Goa and Pondicherry have been having less than replacement level fertility for over a decade.

3.5.43 Kerala's achievement TFR 2.1 inspite of low per capita income, disproves the theory that economic development is an essential prerequisite for reduction in fertility. High status of women, female literacy, age at marriage and low infant mortality were thought to be the factors behind the rapid fall in fertility in Kerala. Tamil Nadu, the next state to achieve TFR of 2.1 did so inspite of relatively high IMR, low literacy and low per capita income. Andhra Pradesh is experiencing a rapid decline in fertility inspite of low literacy, low age at marriage, high IMR and low per capita income. Studies to find out the basis of this rapid demographic transition are underway.

3.5.44 The experience of these three States have clearly shown that in the Indian context it is possible to achieve replacement level of fertility inspite of adverse socio-economic and demographic indices. It is noteworthy that analysis of districtwise data clearly shows that in every State there are districts with excellent performance in MCH and FP. It is in this context that the Ninth Plan document visualises district based de-centralised planning wherein each State can replicate in all other districts the success that some districts had achieved. The NFHS has unequivocally shown that there is substantial unmet need for contraception in all States; the focus will therefore be on ensuring that these needs are fully met through mechanisms that are appropriate in the local context.

3.5.45 Health professionals believe that availability and access to family welfare services is one of the critical determinant of decline in fertility. In the North-eastern States of Tripura, Manipur, Mizoram there is substantial difficulty in accessing primary health care facilities, but these States have achieved not only low fertility rates but low infant mortality, suggesting thereby that a literate population with awareness can successfully overcome the deficiency in access to and availability of primary health care infrastructure. In spite of constraints of infrastructure, manpower and financial resources, high illiteracy and marked diversity between States, the Family Welfare Programme has, during the last five decades succeeded in achieving substantial reduction in infant mortality and fertility rates within the framework of the democratic set-up. In this process the Family Welfare Programme has shown that factors such as economic status, educational status, access to health services which were thought to be essential prerequisites for achieving sustained decline in birth rates are not necessarily so for reduction in birth rate in the Indian context. The experience of different States, while implementing family welfare programme clearly shows that the programmes can succeed despite limitations in several States. The need for identifying the local problems and also methods by which these could be overcome from within the resources available is, therefore, of paramount importance in rapidly bringing down infant mortality and high fertility. The Ninth Plan's emphasis on area-specific assessment of the need and micro-planning is expected to provide the policy direction for achieving this goal.

Performance during the Eighth Plan

3.5.46 During the Eighth Plan the Crude Birth Rate (CBR) and Infant Mortality Rate (IMR) declined to 27.4 and 72 against the targets of 26 and 70

Eighth Plan Targets and Achievements		
Indicator	Targets	Achievements
CBR	26	27.4 (SRS 1996)
IMR	70	72 (SRS 1996)
CPR	56%	45.4% (March 1997)

respectively. The Couple Protection Rate (CPR) increased to 45.4% against the target of 56% during this period. The target for IMR is achievable; target for CBR may be difficult to achieve; the target for CPR has not been achieved.

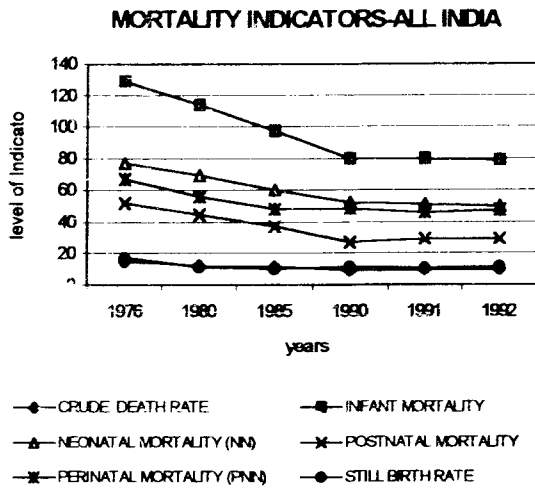
3.5.47 The performance of the Family Welfare Programme in terms of achievements of targets in contraception, immunisation, anaemia and Vit A prophylaxis programmes during the Eighth Plan, is given in Table 3.5.6. Between 1992 and 1996 the number of sterilisation has remained unaltered. There has been an increase in IUD and OC use till 1995-96 and CC use till 1994-95. Whenever such a massive shift is attempted, the system requires a major preparatory effort, including sensitisation of health care providers through intensive training and even then it may take some time to adapt to the change. Comparison of the performance between 1995-96 and 1996-97, (after the abolition of method-specific targets) indicate that at the national level there has been a reduction in the acceptance of different methods of contraception. The fall in condom use during 1995-96 and 1996-97 might, at least in part, be attributable to reduction in wastage. Comparison of the performance between 1995-96 and 1996-97 shows that there are substantial differences in performance between States. Tamil Nadu, Karnataka, Rajasthan have shown an improvement in acceptance of sterilisation as well as IUD. It is a matter of concern that poorly performing States like Bihar and UP have shown a further decline upto 50% in performance. Efforts to gear up the system and minimise the time lag in adopting to the decentralised planning and implementation are under way.

3.5.48 The coverage under the anaemia and Vit A prophylaxis programme has shown substantial improvement but is still way below the target of 100 per cent. Adequate supply of these drugs and continued intake at appropriate time will be attempted during the Ninth Plan.

3.5.49 During the Eighth Plan, the coverage under the immunisation programme was maintained. However the target of 100% coverage by 1997 is unlikely to be achieved for all the six Vaccine Preventable Diseases (VPD). There has been a substantial improvement in the quality of the programme but even now there are slippages in the programme resulting in occasional morbidity and rare mortality. These will be eliminated during the Ninth Plan period. The Pulse Polio initiative to eradicate polio by 2000 AD and special school health check up programme were taken up during the Eighth Plan period. Pulse Polio programme will be continued until the elimination of Polio is achieved. During the Eighth Plan there has been a progressive fall in the reported cases of diphtheria, measles, polio, tetanus and pertussis. However, under-reporting and under/ over-diagnosis continue to occur. VPD surveillance, especially for poliomyelitis, will be strengthened throughout the country during the Ninth Plan.

3.5.50 Even though the targets set for IMR and CDR are likely to be achieved, it is noteworthy that maternal, perinatal, neonatal (Figures 6 and 9) mortality rates continue to remain high. This is because the components of antenatal, intrapartum and neonatal care programmes are not aimed at universal screening of risk factors for identification and appropriate referral of the 'at risk' individuals. Improvement in the contents and quality of antenatal and paediatric care at primary health care level will receive focussed attention during the Ninth Plan.

Figure-9



Source:- Registrar General India

3.5.51 To sum up the basic premises of the Family Welfare Programme from inception has been that:

- Basic premises of the Family Welfare Programme are:**
- Acceptance of FW services is voluntary,
 - FW programme will provide :
 - ⇒ Integrated Maternal and Child Health (MCH) & FP services
 - ⇒ Effective IEC to improve awareness
 - ⇒ Ensure easy and convenient access to FW service free of cost

1) the programme will provide

Lessons learnt during implementation of FW programme:

Governmental network provides most of the MCH and contraceptive care

Adequate financial inputs and health infrastructure are essential prerequisites for the success of the programme

Providing efficient and effective integrated MCH and contraceptive care helps in building up rapport with the families

IEC activities are powerful tools for achieving the small family norm:

The population is conservative but responsible, responsive and mature: their response is slow but rational and sustained.

integrated Maternal and Child health (MCH) services and contraceptive care;

2) acceptance of family welfare is voluntary,

3) the Government's role is to create a favourable environment for the people to adopt small family norm, by improving awareness through information and education and ensuring easy and

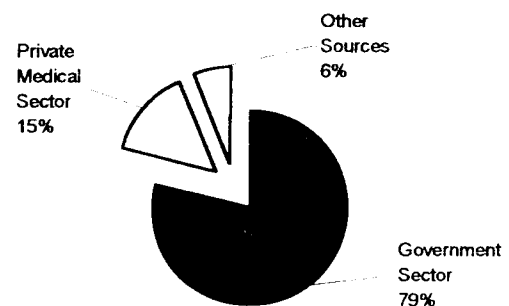
convenient access to family welfare services free of cost.

3.5.52 The Family Welfare Programme has made considerable progress during the last few decades, more so during the last decade.

3.5.53 The major lessons learnt during this period are:

- a) In spite of obvious constrains and inadequacies, the governmental network can, and does, provides most of the MCH and contraceptive care (Figure 10);
- b) Adequate financial inputs and health infrastructure are essential prerequisites for the

Figure-10
SOURCES OF FAMILY PLANNING SERVICES



Source:- National Family Health Survey 1992-93

success of the programme; substantial

improvement in achievement of MCH and FP targets occurred when funds were provided (Table 3.5.7 and Table 3.5.2);

- c) Providing integrated MCH and contraceptive care ensures not only efficient and effective delivery of services but also helps in building up rapport with the families and the community so essential to sustain the FW programme;
- d) Counselling and education are powerful tools to overcome the barriers of poverty, ignorance, illiteracy and conservative social mores for achieving the small family norm;
- e) The population is conservative but is responsible, responsive and mature, its response to rapidly changing birth and death rates and availability of services might be initially slow but it is rational and once developed, is sustainable.

3.5.54 The task ahead of the country during the next decade is to bring about a convergence of all these favourable factors so that the twin goals of small healthy family and sustainable population growth are achieved within a decade.

Population Projection for 1996 –2016 – implications to the FW Programme

3.5.55 Population projections for the period 1996-2016 have been worked out by the Technical Committee on Population Projections under the Chairmanship of Registrar General of India. The age and sex wise distribution of the population for the period 1971-1991 based on census data and the projected population for the period from 2001 upto 2016 is shown in Figure 11. There will be massive increase of population in the 15-59 age group (from 500 million to 800 million) in just twenty years (Figure 12). The RCH care has to provide the needed services for this rapidly growing clientele. Along with the demographic transition, there is concurrent ongoing socioeconomic, educational, information technology transition. The population in this age group will therefore have greater awareness and expectation regarding both the access to a wide spectrum of health care related services and the quality of these services. The Family Welfare Programme has to provide the wider spectrum of health care needs of this population – including maternal and child health care, contraceptive care, management of gynaecological problems, STD/RTI/HIV management and control, quality of services need also be improved. Increasing number of the population beyond 60 years would necessitate provisions for management of some of the major health problems in this age group including management of cancers.

Figure - 11

CHANGES IN POPULATION PYRAMID - 1971 TO 2016

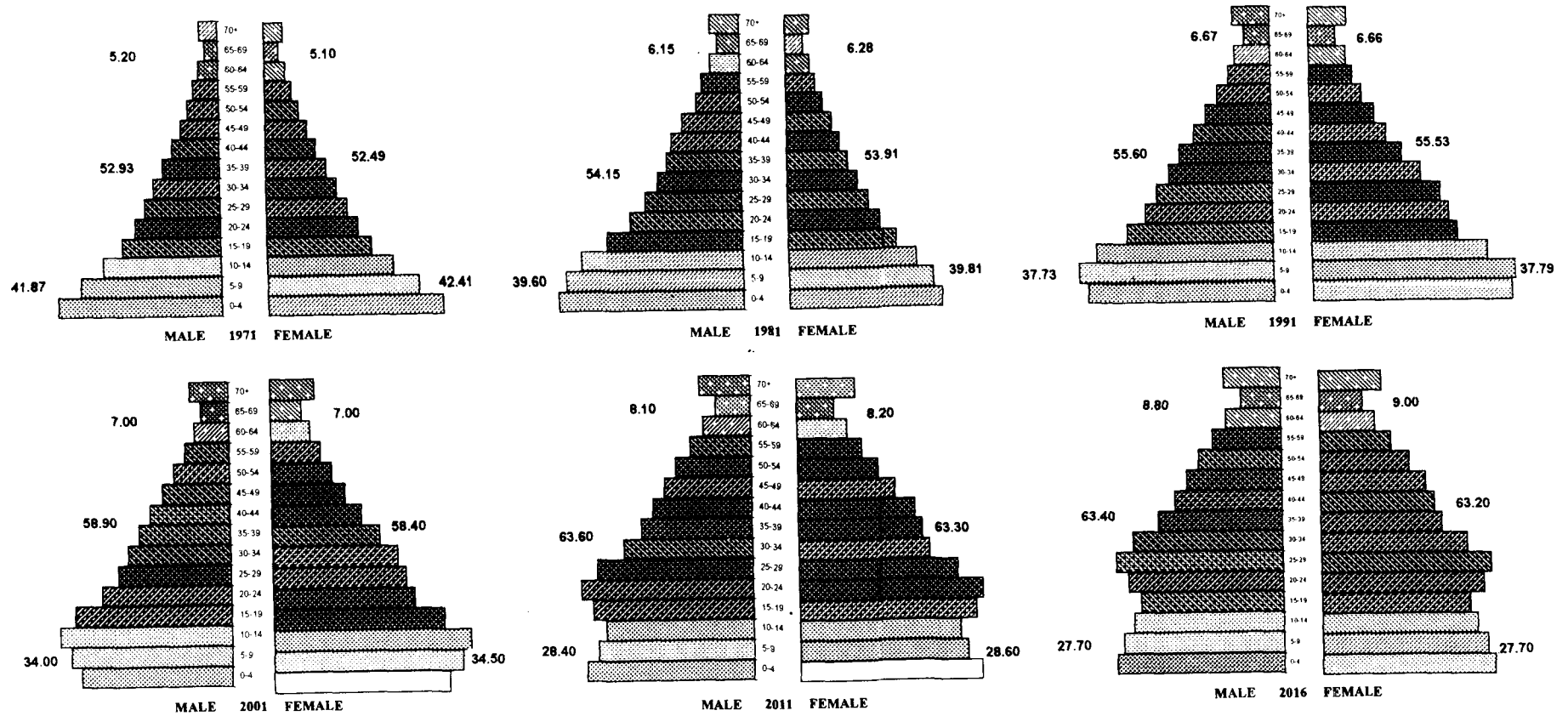
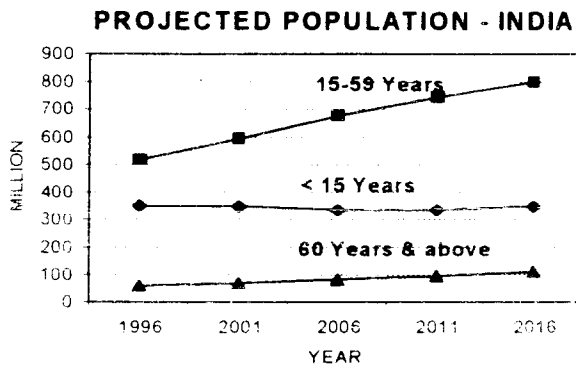


Figure-12



Source :- Registrar General India

3.5.56 The number of births will not alter substantially over the next two decades; this respite from increasing numbers should be utilised to provide improved access to high quality of services so that there is reduction in the current high IMR and MMR. This in turn might lead to a fall in the current high desired level of fertility. If the birth rate continues to decline at the present rate, replacement level of fertility will not be achieved till 2026. In view of the serious implications of this, efforts should be made to meet all the felt needs for contraception and achieve a more rapid decline in birth rates.

Family Welfare Programme during the Ninth Plan:

3.5.57 During the Ninth Plan period attempts will be made to improve quality and coverage of health care to women, children and adolescents, so that their felt needs for health care are fully met. In addition efforts will be made to improve the participation of men in the planned parenthood movement. Prevention and control of Sexually Transmitted Disease (STD) / Reproductive Tract Infection (RTI) including emerging problem of HIV/AIDS will also receive due attention.

Components of RCH Programme:

- Effective maternal and child health care
- Increased access to contraceptive care
- Safe management of unwanted pregnancies
- Nutritional services to vulnerable groups
- Prevention and treatment of RTI/ STD
- Reproductive health services for adolescents
- Prevention and treatment of gynecological problems
- Screening and treatment of cancers, especially that of uterine cervix and breast

Components of the Reproductive and Child Health Care

3.5.58 Comprehensive reproductive and child health care will promote the following:

- 1) Effective maternal and child health care to ensure safe motherhood and child survival;
- 2) Increased access to contraceptive care to prevent unwanted pregnancies;
- 3) Legal abortion facilities for safe management of unwanted pregnancies;
- 4) Effective nutritional services to vulnerable groups.
- 5) Prevention and treatment of RTI/ STD.
- 6) Reproductive health services for adolescents.
- 7) Prevention and treatment of gynecological problems including infertility, menstrual disorders and prolapse uterus;
- 8) Screening and treatment of cancers, especially that of uterine cervix and breast

3.5.59 While providing the package of services, efforts will be made to improve the quality of services, make services more responsive to users' needs, ensure that health workers and health care providers have the necessary skills and supplies they need and there is a strong and effective referral system to manage all the risk cases.

Simultaneously the IEC efforts will be directed to:

- (1) Ensure responsible reproductive /sexual behavior;
- (2) Improve awareness about reproductive health needs;
- (3) Promote community participation and optimal utilisation of available services.

3.5.60 Comprehensive RCH services will be made available at all the tertiary and secondary care institutions throughout the country.

Essential Reproductive Health Services

3.5.61 Though it is desirable that the entire package of services indicated above is made available to all those who need it, it will not be possible to immediately implement such a comprehensive package on a nationwide basis. Hence it is envisaged that improvement in quality and coverage of services over and above the existing level will be attempted in all states in an incremental manner so that maternal and child health indices improve.

3.5.62 After consultation with experts a package of essential reproductive health services for nationwide implementation at various levels of health care has been identified. Essential components recommended for nationwide implementation include:

- Prevention and management of unwanted pregnancy,
- Services to promote safe motherhood,
- Services to promote child survival,
- Prevention and treatment of RTI/STD

3.5.63 Most of the services are already included in the Family Welfare Programme. However, there are wide variations in the quality and coverage of services not only between states but also between districts in the same state. The focus is therefore on the improvement in the quality and coverage of the services. A project preparation workshop held in Sept. 1995 discussed the issues and problems in implementation of essential RCH package and recommended reproductive and child health services that should be made available at community, sub-centre, PHC and FRU/ District Hospital.

Maternal Care

3.5.64 The major areas of focus of the Safe Motherhood Programme during the Eighth Plan were:

1. Improving maternal care through early registration of pregnant women,
2. Administration of two doses of Tetanus Toxoid (TT) during pregnancy;
3. Providing pregnant women with Iron and Folic Acid (IFA) tablets;

4. Training of Dais for safe delivery especially in districts with high proportion of home deliveries;
5. Provision of Disposable Delivery Kits to those who plan deliveries at home;
6. Improving facilities for antenatal care and safe delivery at sub-centres and PHC; Setting up First Referral Units (FRU) for providing emergency obstetric care and improving referral linkages.

3.5.65 Over the years, there has been a substantial increase in the proportion of pregnant women getting registered (Table 3.5.6). The data reported by Department of Family Welfare indicate that over 70% of pregnant women receive two doses of Tetanus Toxoid (TT) and 100 tablets of Iron and Folic Acid (IFA) during the course of pregnancy. However, maternal morbidity and mortality rates (Figure 6) continue to remain high. To achieve a reduction in these, it is essential to improve the quality of antenatal and intrapartum care. During the Ninth Plan period efforts will be made to ensure that all pregnant women are screened for common problems such as anaemia, infections obstetric problems and the identified 'high risk' pregnant women are referred to PHC/CHC for appropriate management.

3.5.66 Analysis of service data on ANC registration and deliveries reported for the year 1995-96 from 350 districts indicate that there is an increase in the number of hospital deliveries and deliveries attended by trained personnel (Table 3.5.8). In States like Kerala over 90% of deliveries are in institutions and perinatal mortality rates are very low (Table 3.5.9). However, in States like UP, majority of deliveries is at home and are conducted by untrained persons. Consequently, maternal and perinatal mortality rates continue to be high. During the Ninth Plan efforts will be made to promote institutional deliveries both in urban and rural areas. In States where majority of deliveries still occur at home, efforts will be made to train Traditional Birth Attendants (TBAs) through Intensive Dais Training Programme and to increase availability and access to Disposable Delivery Kits.

3.5.67 Women with problems like Anaemia, malpresentations, suspected Cephalopelvic Disproportion (CPD), Hypertensive Diseases of Pregnancy (HDP) and Gestational Diabetes Mellitus (GDM) should not deliver at home. Screening all women during pregnancy to detect those with such problems and referring them at appropriate time to pre-designated institutions for management and safe delivery will substantially reduce maternal and perinatal morbidity and mortality. The mechanism for screening, as well as referral, will be streamlined during the Ninth Plan period and easy - to - follow protocol will be developed and made available to all health care providers. In "low risk cases", if home delivery is anticipated, provision will be made for aseptic delivery by trained persons. Unpredictable complications can arise even during apparently normal labour; rapid transportation of these women to hospital for emergency obstetric care is essential to reduce morbidity and mortality during delivery. Local Panchayats, NGOs and women's organisations will play an important role in this respect. In the postpartum period early detection and management of infection, support for breast feeding and nutrition counseling will receive due attention.

National Anaemia Prophylaxis programme

3.5.68 India has the dubious distinction of being one of the countries with the highest prevalence of anaemia in the general population. Prevalence of anaemia among pregnant women ranges between 50 -90%. This is mainly due to low intake and poor bio-availability of iron from the diets consumed in India. Poor intake of folic acid and coexisting folate deficiency also contribute to the problem. Anaemia present from childhood through adolescence antedates pregnancy and it gets aggravated during pregnancy and perpetuated by blood loss during labour. Anaemia continues to be responsible for a substantial proportion of the perinatal and maternal morbidity and maternal mortality.

Multi-pronged Strategy for Prevention & Management of Anaemia in pregnancy include:

- Double fortification of salt with iron and iodine
- Hemoglobin estimation of all pregnant women for detection of anaemia
- Oral iron folate prophylactic therapy for all non-anaemic pregnant women
- Iron folate oral medication at maximum tolerated dose for all pregnant women with Hb 8-11 g/dl
- Intra-muscular (IM) iron for all pregnant women with Hb 5-<8 g/dl
- Hospital admission and intensive personalised care for women with Hb < 5 g/dl
- Promoting utilisation of available facilities for antenatal and intrapartum care.

3.5.69 Realising the magnitude of the problem, obstetricians made screening and effective management of anaemia an essential component of antenatal care. The National Anaemia Prophylaxis Programme of iron and folic acid distribution to all pregnant women was initiated in 1972. The implementation and impact of these programmes are being reviewed. Available data from hospital records and information from community-based surveys on prevalence of anaemia in urban and rural population, suggest that the prevalence and the adverse consequences of anaemia in pregnancy have remained essentially unaltered over the past three decades.

3.5.70 Pregnant women with haemoglobin (Hb) less than 8 g/dl show functional decompensation and constitute a high-

risk group. The first task is to ensure screening of all pregnant women to identify this high-risk group. A single Hb estimation done around 20th week of pregnancy is sufficient to detect the high-risk anaemic pregnant women. It is essential to evolve a programme for screening all pregnant women for anaemia by Hb estimation utilising the ANM and Lab technicians in the Primary Health Centres so that anaemia in pregnancy could be detected and effectively treated. Unlike the situation elsewhere in the world, oral iron therapy is not effective in correction of the moderate or severe anaemia in Indian pregnant women, because of the poor bio-availability of iron in the Indian diet. Therefore pregnant women with Hb between 5-8 g/dl should be administered appropriate doses of parenteral iron and oral folic acid.

3.5.71 During the Ninth Plan a beginning will be made to use a multi-pronged strategy for prevention and management of anaemia in pregnancy. The programme components aimed at the control of anaemia in pregnancy will include: a) fortification of common foods with iron to increase dietary intake of iron and improve hemoglobin status of the entire population including girls and women prior to pregnancy, b) screening of all pregnant women using a reliable method of hemoglobin estimation for detection of anaemia, c) oral iron folate prophylactic therapy for all non-anaemic pregnant women (Hb > 11 g/dl), d)

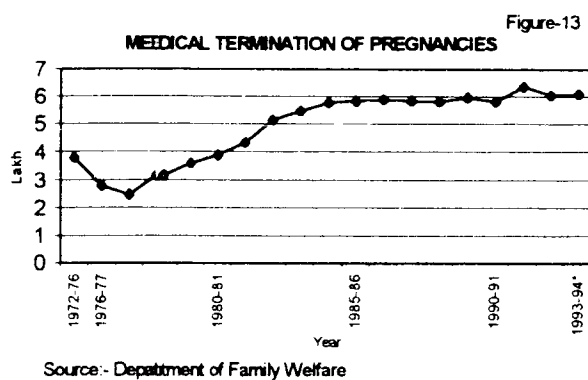
iron folate oral medication at the maximum tolerable dose throughout pregnancy for women with Hb between 8 and 11 g/dl, e) parenteral iron therapy for women with Hb between 5 and 8 g/dl if they do not have any obstetric or systemic complication, f) hospital admission and intensive personalised care for women with Hb < 5 g/dl, g) screening and effective management of obstetric and systemic problems in all anemic pregnant women and h) improvement in health care delivery system and health education to the community to promote utilisation of available facilities for antenatal and intrapartum care.

Prevention of Unwanted Pregnancy

3.5.72 According to the data available with the Department of Family Welfare as of 31.3.97 45.4% of couples in reproductive age use contraceptives (Table 3.5.1). The data from National Family Health Survey has shown that awareness regarding contraception is nearly universal. But there is an unmet need for contraception (8.5% for terminal methods; 11.0 % for spacing methods) (Table 3.5.4). The Family Welfare Programme will gear itself to meet the 'unmet' need during the Ninth Plan period. Vasectomy is safer than tubectomy and efforts will be made to increase acceptance of vasectomy, so that there is substantial reduction in the morbidity associated with terminal methods of contraception. Quality of contraceptive care will be improved. Couples will be provided with balanced information on all available methods of contraception and the advantage and disadvantage of each of these methods so that they choose the method best suited to their needs. Such a balanced presentation and counseling will in the long run not only improve acceptance of contraceptive care, but also improve continuation rates of temporary methods of contraception. The quality of services will be improved through appropriate training of service providers at all levels. During the Ninth Plan efforts will be made to increase involvement of ISM & H practitioners in Family Welfare Programmes. The ISM&H practitioners may provide counseling for couples about contraceptive care and to act as depot holders for OC/ condom. Social marketing will be increasingly utilised to improve access to condoms and oral pills. In addition to the usual channels, the Targeted Public Distribution System (TPDS) outlets may also be used to improve access to condom.

MTP Services

3.5.73 Over two decades have elapsed after the enactment of legislation for Medical Termination of Pregnancy (MTP) act. Over the last two decades the Government of India has taken steps to provide trained manpower and equipment at secondary and primary health care level for safe legal abortion services. The number of MTPs reported to Department of Family Welfare over the last 25 years is shown in Figure 13



3.5.74 It is obvious that after the initial rise, the reported number of MTPs has remained below 0.6 million for the last 15 years. In spite of efforts to improve the availability of, and access to, induced abortions services in the primary health care set up, safe abortion services are not available to majority of rural population in India. Even today majority of the estimated 6 million induced abortions are not carried out in settings recognised for legal abortion and about 10% maternal deaths in India are due to septic abortion.

3.5.75 Efforts to improve access to family planning services to reduce the number of unwanted pregnancies and cater to the request for induced abortion will continue to receive intensified attention during the Ninth Plan. In addition, efforts will be made to improve access to safe abortion services by training physicians in MTP and recognising and strengthening institutions which are capable of providing safe abortion services for the first trimester. IEC efforts through appropriate channels of communications to improve awareness among women about availability of safe abortion services at affordable cost through appropriate channels of communication will be intensified. Provision for first trimester abortion will be coupled with appropriate contraceptive care so that these women do not incur the risk of yet another unwanted pregnancy and induced abortion.

RTI AND STD

3.5.76 Sexually Transmitted Diseases (STD) and Reproductive Tract Infections (RTI) continue to be a major public health problem in India. HIV is the most recent addition to the already long list of RTI/STD. So far, there had been no major initiative for detection and management of STD/RTI in women. Sexually transmitted infections in women are usually asymptomatic or present with nonspecific symptoms. Even if there are symptoms, women do not go to STD clinics. They seek care in the antenatal, gynecological and family planning clinics. During the Ninth Plan, attempts will be made to provide for screening for syphilis, gonorrhoea and HIV infection at PHC/CHC level wherever possible. Utilising the microscope and laboratory technician available at PHCs, vaginal/cervical smears in women with symptoms of RTI will be screened for identifying organisms responsible and appropriate treatment provided.

Infertility

3.5.77 It is estimated that between 5 to 10% of couples are infertile. While provision of contraceptive advice and care to all couples in reproductive age group is important, it is equally essential that couples who do not have children have access to essential clinical examination, investigation, management and counseling. The focus at the CHC level will be to identify infertile couples and undertake clinical examination to detect the obvious causes of infertility, carry out preliminary investigations such as sperm count, diagnostic curettage and tubal patency testing. Depending upon the findings, the couples may then be referred to centres with appropriate facilities for diagnosis and management. By carrying out simple diagnostic procedures available at the primary health care institutions it is possible to reduce the number of couples requiring referral. Initial screening at primary health care level and subsequent referral is a cost-effective method for management of infertility both for the health care system and those requiring such services.

Gynaecological Disorders

3.5.78 Women suffer from a variety of common gynaecological problems including menstrual dysfunctions at peri-menarchal and peri-menopausal age. Facilities for diagnosis of these are at the moment available at district hospitals or tertiary care centres. During the Ninth Plan period the CHCs, with a gynaecologist, will start providing requisite diagnostic and curative services. Yet another major problem in women is prolapse uterus of varying degrees. The PHCs and CHCs will refer women requiring surgery to district hospitals or tertiary care centres.

3.5.79 Cancer Cervix is one of the most common malignancies in India and accounts for over a third of all malignancies in women. Cancer Cervix can readily be diagnosed at the PHCs and CHCs. Early diagnosis of Stage I and Stage II and referral to places where

radiotherapy is available will result in rapid decline in mortality due to Cancer Cervix in the country in the near future.

Maternal Nutrition

3.5.80 The importance of maternal nutrition in determining obstetric outcome has long been recognised. Continued low dietary intake and heavy manual work during pregnancy adversely affect maternal nutrition, course and outcome of pregnancy. The association between low maternal weight, poor pregnancy weight gain and low birth weight has been documented. There is a need to clearly identify pregnant women with moderate and severe undernutrition by weight and energetic measures should be taken to improve energy balance and weight gain during pregnancy through improved dietary intake, if possible through optimal utilisation of existing food supplementation programmes such as ICDS and through reduction in physical work.

Adolescent Health

3.5.81 The adolescent and youth population in the country is increasing. There are at the moment no specific health or nutrition programmes to address the problem of this important group. In the past teen age pregnancy and its attendant problem were the main focus of attention. Over the years there is a significant rise in age at marriage. Efforts to educate the girl, her parents and the community to delay marriage will continue to receive attention during the Ninth Plan. There is an urgent need to mount programmes for early detection and effective management of nutritional (under-nutrition, anemia) and health (infections, menstrual disorders) problem in adolescent girls. Health and nutrition education to this group is essential.

3.5.82 Adolescent pregnancies are still common in India. Adolescent girls are at high risk of anaemia, HDP and infections. They will receive appropriate care throughout pregnancy and institutional delivery to ensure safety of both the mother and the baby. A scheme "Planned Families by 2000 AD" is being implemented in Andaman and Nicobar islands with the objective of improving literacy, postponing age at marriage and promoting small family norm through financial incentives to the girls in appropriate age groups. If found effective the scheme may be replicated in other areas.

Child Health

3.5.83 Comprehensive, child health services including preventive, promotive and curative services are being provided to those who seek care in secondary and tertiary health care institutions. At primary health care level the spectrum of services available is narrower; focus is mainly on essential newborn care, essential child care including ARI and ORT programmes, immunisation, Vit A and anaemia prophylaxis programmes. Effective utilisation of available services for prevention and detection of undernutrition in under five population will be the aim of ICDS programme during the Ninth Plan period. Efforts will be focussed on improving quality of screening of children for early detection of health and nutrition problems and improving the referral services so that persons requiring care in secondary and tertiary level institutions receive them without delay.

National Prophylaxis Programme against Nutritional Blindness

3.5.84 In the fifties paediatricians in major hospitals in most of the States reported that Vit A deficiency was a public health problem. Vitamin A deficiency in childhood is mainly

Major Child Health Care Programmes:

National Prophylaxis Programme against Nutritional Blindness

- Improve the coverage of all doses of massive dose Vitamin A administration
- Health education to improve consumption of foods rich in B-carotene & improve their availability at affordable cost

Child Survival Programme

Sustaining and strengthening the ongoing programmes of universal immunisation, ORT, massive dose Vitamin A, Iron Folic Acid supplementation

Expanding the coverage of Acute Respiratory Infections (ARI) Control Programme and care of the newborn

due to inadequate dietary intake of Vit A. Increased requirement of the Vit. A due to repeated infection aggravated the magnitude and severity of the deficiency. The association between measles, severe PEM and keratomalacia and high fatality in such cases was reported by many paediatricians. Prevalence of night blindness and Bitot's spot in pre-school children ranged between 5% and 10% in most States. Blindness due to Vitamin A deficiency is one of the major causes of blindness in children below 5 years. In view of the serious nature of the problem of blindness due to

Vitamin A deficiency it was felt that urgent remedial measures in the form of specific nutrient supplementation covering the entire population of susceptible children should be undertaken. In 1970 the National Prophylaxis Programme Against Nutritional Blindness was initiated as a Centrally Sponsored Scheme (CSS). Under this CSS, all children between ages of one and five years were to be administered 200,000 IU of Vitamin A orally once in six months.

3.5.85 During the last twenty five years this programme had been implemented in all the States and Union Territories. The major bottleneck during the seventies was lack of infrastructure at the peripheral level to ensure timely administration of the massive dose. In the eighties there was considerable improvement in the infrastructure. The lack of adequate doses of Vit A came in the way of improved coverage. Poor orientation of the functionaries who were providing the services to the population, lack of supervision and lack of intersectoral coordination between the health functionaries and the ICDS functionaries persisted throughout the period and has been one of the factors responsible for the continued poor coverage. It is a matter of serious concern that coverage was low in high risk group of children from poorer communities in rural areas and urban slums in poorly performing districts.

3.5.86 In an attempt to improve the coverage especially in the vulnerable 6 months to 23 months age-group, Government of India took a decision to link up Vitamin A administration to the ongoing immunisation programme during the Eighth Plan period. Under the revised regimen a dose of 100,000 IU of Vit.A is to be given to all infants at 9 months along with measles vaccine and a second dose of 200,000 IU is to be administered at 18 months of age along with booster dose of DPT and OPV. Subsequently, the children are to receive three doses of 200,000 IU of Vitamin A every 6 months until 36 months of age. The reported coverage figures under the modified regimen indicate that there has been some improvement in coverage with the first dose (50 -75%). However, the coverage for subsequent doses is low. However, in spite of these shortcomings, there has been a substantial reduction in the prevalence of blindness due to Vitamin A deficiency from

0.3% in 1971-74 to 0.04% in 1986-89. Repeat surveys carried out by National Nutrition Monitoring Bureau indicated that the incidence of Bitot's spots came down from 1.8% in 1975-79 to 0.7% in 1988-89.

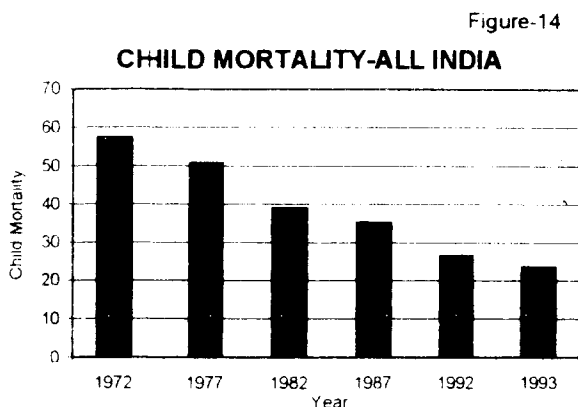
3.5.87 During the Ninth Plan, every effort will be made to improve the coverage of all doses of massive dose Vit. A administration. In addition, health education to improve consumption of foods rich in B-carotene will be continued and backed up by efforts to improve their availability at affordable cost. The target for the Ninth Plan is to control Vitamin A deficiency so that the incidence of blindness due to Vit. A deficiency becomes less than 1/10,000 not only at the national level but also in every State.

Child Survival Programme

3.5.88 During the Eighth Plan period, the Child Survival programme was aimed at reduction of infant and child morbidity and mortality through:

- (1) Sustaining and strengthening the ongoing programmes of universal immunisation, ORT, massive dose Vitamin A, Iron Folic Acid supplementation and
- (2) Expanding the coverage of Acute Respiratory Infections (ARI) Control Programme and care of the newborn.

3.5.89 These initiatives have resulted in a progressive decline in child mortality rates (Figure 14), IMR (Table 3.5.3), reduction in vaccine preventable diseases, mortality due to ARI and diarrhoeal disease. However, there are several lacunae both in the quality of care and coverage. The implementation of neonatal component is poor.



Source: - Registrar General India

3.5.90 The fact that perinatal and neonatal mortality have not shown any substantial decline over the last two decades is a cause for concern. Improvement in the quality of antenatal, intranatal and neonatal care is urgently needed. Initiatives for detection and management of low birth weight babies, detection and management of birth asphyxia and essential newborn care have to be added in a phased manner to the existing package of services. The Child Health initiative during the Ninth Plan seeks to improve neonatal care through an "essential newborn care package" so that reduction in neonatal mortality rate could be achieved. Improvement in the quality of services and coverage of ongoing Child health programmes will receive adequate attention. Child health care services will continue to include efforts for protection and promotion of breast feeding, advice for appropriately timed introduction of supplements to breastfed infants, improving utilisation of nutritional supplementation programmes under the ICDS, massive dose Vitamin A prophylaxis programme and anaemia prophylaxis programme.

3.5.91 The elimination of polio and neonatal tetanus and reduction in morbidity due to measles are possible and should be achieved within the Ninth Plan period. Efforts to improve

ARI and Diarrhoeal Disease Control Programmes and effective management of infections will be the focus of child health services at primary health care level. These will result in a substantial reduction in IMR by 2002 AD. Linkages between primary, secondary and tertiary care institutions will enable rapid identification and effective management of complications of infectious diseases and non-communicable disease and reduce both death and disabilities.

3.5.92 There has been a substantial improvement in immunisation coverage over the last decade. The pulse polio campaign has shown that it is possible to effectively mobilise the service providers and the recipients and carry out a massive campaign successfully. Integrating these programmes into the Child Health programme over the next few years is essential for ensuring sustainability of these initiatives.

Male Participation in Planned Parenthood Movement

3.5.93 Men play an important role in determining education and employment status, age at marriage, family formation pattern, access to and utilisation of health and family welfare services for women and children. Their active co-operation is essential for the success of STD/RTI prevention and control. In condom users, consistent and correct use are essential pre-requisites for STD as well as pregnancy prevention. Vasectomy, which is safer and simpler than tubectomy, was widely accepted in the sixties. However, after 1977 there had been a steep and continuous decline in vasectomies (Figure 8). There is a need to find out and address the needs and conveniences of men seeking vasectomy and provide ready access to vasectomy services both in urban and rural areas. In institutions with adequate trained expert surgeons, 'No-scalpel' vasectomy might provide a useful technique for popularisation of vasectomy among some segments of the population. During the Ninth Plan period due attention will be given to enhance men's participation in the Planned Parenthood movement.

Phasing of Reproductive Health Services

3.5.94 There are wide variations in the availability and utilisation of MCH and FP services between different States. During the Ninth Plan, district-specific approach aimed at achieving appropriate increment in the provision of services will be taken up so that there is improvement in maternal and child health status and acceptance of family planning methods in all districts and the gap between districts in terms of performance will diminish.

3.4.95 On the basis of their performance in the Family Welfare programme, as assessed by readily available data such as CBR, total fertility rate, IMR, female literacy, percentage registered for ANC, percentage of hospital deliveries, percentage of deliveries by trained personnel, the States/ districts may be classified into three groups - good, intermediate and poorly performing. Differential incremental additions to existing package of services will be provided in these three groups. In poorly performing States/ districts the major intervention will be to ensure hygienic, aseptic home-based deliveries by trained personnel, strengthening of sub-centres for providing immunisation and MCH services, improving services available at PHCs, strengthening selected PHCs, CHCs, District Hospitals and improving referral systems. In States/ districts in which majority of deliveries are already occurring in hospitals, attempts will be made towards ensuring 100% antenatal care and institutional deliveries. In addition, comprehensive reproductive health care services including prevention and management of RTI & STD and management of gynaecological problems will be made available in selected PHCs as well as CHCs. In States where already majority of women deliver in institutions, improvement in

availability of MTP services in all PHCs/ CHCs, comprehensive reproductive and child health services and strengthening referral services will receive attention. In all States orientation training of all health workers in PHC-based planning and RCH care delivery will be carried out, so that they develop appropriate skills and learn to optimally utilise available facilities to provide adequate and appropriate health care to women and children in their area.

Reorganisation of Family Welfare Infrastructure

3.5.96 In the early 70s when the Family Welfare Programme was initiated, the infrastructure for providing MCH and Family Planning Services was non-existent at primary health care level, and sub-optimal in secondary and tertiary care levels. In order to quickly improve the situation, the Department of Family Welfare created and funded Postpartum Centres (A, B, and C types and subdistrict), urban Family Welfare Centres/ health post and provided additional staff to the then existing PHCs. In addition, the ANMs in the Sub-Centres, created after the initiation of the FW Programme, were also funded by the Department. The Department of Family Welfare also created State and district level infrastructure for carrying out the programmes and training institutions for pre/in-service training of personnel. All these activities are being funded through Plan funds of the Department of Family Welfare.

3.5.97 Over the last three decades family welfare services are being provided as an integral part of obstetric & gynaecological services by secondary and tertiary care institutions. So type A and B postpartum centres may be taken over by the State and merged with the Department of Obstetrics and Gynaecology in the respective hospitals during the Ninth Plan. The staff whose salaries are met from the head "Rural Family Welfare Centre" are functioning as Primary Health Centre officers in most States. The sub-district postpartum centre staff may be posted in FRUs. Over the next Plan period, these two categories of staff will become a part of State primary health care infrastructure.

3.5.98 It is imperative that the ANMs, who are crucial for increasing the outreach of the Programme, should be available and fully funded by the FW Programme. During the Ninth Plan, efforts will be made not only to fill the existing gaps in the manpower but also to provide additional ANMs on the basis of work load, difficulties in delivery of services and distances to be covered. This would ensure that the States do employ the required number of ANMs and achieve an improved outreach and better implementation of the Programme.

Strategies for Increasing Efficiency

3.5.99 A vast infrastructure for delivery of health and family welfare services has been created over the last three decades utilising uniform norms for the entire country. Though there has been a substantial improvement in the health and demographic indices the performance in some respects has been sub-optimal. There are marked differences in performance between the States, the States with poor demographic indices continue to remain poor performers in spite of special efforts to provide additional funding for manpower and infrastructure. Factors responsible for the sub-optimal performance include

1. absence of proper medical hierarchy with well defined functions;
2. lack of first line supervision and mechanism to bring about accountability;
3. absence of referral system and lack of functional FRUs.

3.5.100 During the Ninth Plan, efforts will be made to improve efficiency by undertaking task analysis, assigning appropriate duties/ tasks to designated functionaries and training

them to act as a multi-professional team. In such a command chain, the last link will be provided by the village-based workers who will act as a liaison person between the people and health functionaries and ensure utilisation of available facilities. The Panchayati Raj Institutions will participate in the planning and assist in the implementation and monitoring of the programme. The ANM will administer vaccines, screen infants, children and pregnant women, identify and refer the "at risk" persons to appropriate institution. The medical officer at PHC will undertake PHC-based planning and monitoring of the Health and Family Welfare programmes and provide curative services, organise and supervise preventive and promotive health and family welfare-related activities and develop a viable, functional referral systems. The specialists in CHC will provide appropriate emergency care and care for referred patients, participate in the development of the PHC based RCH programmes, monitor the activities and initiate midcourse corrections. If this pattern of functioning is followed, the community, the link worker and the health functionaries will be performing the tasks that they are best suited to do and the implementation of the programme will improve because of effective functioning.

Intersectoral Coordination

3.5.101 Effective implementation of Family Welfare Programme involves a great deal of inter-sectoral coordination. The related sectors have to take steps to enhance the status of women, particularly women's literacy and employment, to raise age at marriage, their general development, generating more income in rural areas.

3.5.102 Concerned departments like Department of Women and Child Development, Human Resources Development, Agriculture, Rural Development, Urban Development, Labour, Railways, Industry need to :

- a) involve their extension workers in propagating reproductive and child health care;
- b) include population stabilisation and RCH care in their curricula;
- c) use their own funds for improving awareness and access to family welfare services

3.5.103 The village-level functionaries - namely Anganwadi workers, Mahila Swasth Sangh (MSS), Traditional Birth Attendant (TBA), Krishi Vigyan Kendra (KVK) Volunteers, School teachers need to work together and achieve optimal utilisation of available services.

3.5.104 The opinion leaders at the national, State and local levels will participate in community education regarding the Family Welfare Programme so that community awareness and involvement vital to the success of this programme is improved. Simultaneously, the Ninth Plan will launch an intensive drive to promote health education so that India builds a sound foundation for a successful health programme. IEC on basic principles of hygiene, sanitation, nutrition, and prevention of illnesses and diseases will be promoted through not only the educational institutions and the adult education programme but also through the ICDS programme, the counselling offered by the health workers at all levels and the mass media

Involvement of Non-Governmental Organisations (NGOs) and Voluntary Organisation for Promotion of Family Welfare

3.5.105 The Ministry of Health & Family Welfare has initiated several programmes involving NGOs in efforts to improve Family Welfare Programme. These include

Revamping of Mini Family Welfare Centre in areas where the couple protection rates are below 35 percent;

Involvement of ISM & H practitioners;

Area-specific IEC activities through NGOs;

Establishment of Standing Committees for Voluntary Action (SCOVAs) to fund NGO projects promptly;

Identification of Government/ NGO organisations for training of NGOs in project formulation, programme management and monitoring.

These activities will be continued and intensified during the Ninth Plan period.

Private Sector Participation in RCH

3.5.106 It is estimated that the private sector accounts for more than three quarters of all health care expenditure in India. Private sector provides MCH and family planning services also but to a lesser extent. It is increasingly recognised that the private sector represents an untapped potential for increasing the coverage and improving the quality of reproductive and child health services in the country. The challenge is to find ways and means to optimally utilise their potential. The major limitations in the private sector include the following.

- a) the focus has till now been mainly on curative services;
- b) the quality of services is often variable;
- c) as the users have to pay for the services the poorer sections of population cannot afford these services.

3.5.107 Some of the initiatives could be through collaboration between public and private sector in providing health care to the poorer segments of population who cannot afford to pay for health services. While organising the involvement of private medical practitioners in RCH care, it is essential to provide orientation training to all and ensure utilisation of their services in a cost-effective and sustainable basis.

3.5.108 Private/ voluntary organisations providing health care to women are relatively small in number but they could play an effective role in the delivery of reproductive and child health care services at affordable cost, especially in certain specific locations such as urban slums. Giving the private sector and voluntary organisations appropriate incentives to broaden the range of activities and improve the quality of reproductive and child health-related services they offer are other avenues that require exploration. Continued collaboration, training and technical assistance by governmental agencies to private medical practitioners and private/ voluntary organisations may help in strengthening reproductive and child health services in remote or under-served areas.

3.5.109 The NDC Committee on Population had recommended that managerial capability of the corporate bodies need to be harnessed for improving the social marketing of contraceptives, streamlining of health services and improving material and manpower management. The problem-solving approach of the corporate sector can be of use in improving the operational efficiency of the health care infrastructure. The corporate sector could participate in the delivery of primary health and family welfare care in the vicinity of their factories. They could provide tertiary care in collaboration with the

Government sector institutions. During the Ninth Plan, the participation of the organised and unorganised sectors of industry, trade/labour unions and agriculturists in family welfare programme will be further strengthened.

Research and Development

3.5.110 The ICMR is the nodal research agency for funding basic, clinical and operational

Research and Development
Basic and Clinical Research
Development and testing of new contraceptives including contraceptives which are considered to be effective in Indian Systems of Medicine
Research on methods for male fertility regulation
Clinical trials on newer non-surgical methods of MTP
Post-marketing surveillance of Centchroman.
Operational Research
<input type="checkbox"/> Studies on the ongoing demographic transition and its consequences
<input type="checkbox"/> Studies on continuation rates and use effectiveness of contraceptives
<input type="checkbox"/> Research on operationalising integrated delivery of RCH services, nutrition, education, women & child development, rural development and family welfare services at village level

research in contraception and MCH. In addition to ICMR, CSIR, DBT and DST are some of the major agencies funding research pertaining to Family Welfare Programme. The National Committee for Research in Human Reproduction assists the Department of Family Welfare in drawing up priority areas of research and ensuring that there is no unnecessary duplication of research activities. Some of the major institutions carrying out research in this area include the Institute for Research in Reproduction, Bombay, National Institute of Nutrition, Hyderabad, National Institute of Health & Family Welfare, New Delhi, Central Drug Research Institute, Lucknow and the

Central Council for Research in Ayurveda and Siddha, Delhi. A network of 18 Population Research Centres conduct studies on different aspects of the Family Welfare Programme and undertake demographic surveys.

3.5.111 Basic research efforts for the development of newer technology for contraceptive drugs and devices currently under way are unlikely to lead to availability of newer methods for use in the programme during the next decade. These efforts are needed to cater to the requirements of the population in the decades to follow. For improving the contraceptive coverage for men and women, efforts need to be directed towards improving the quality of care and assist men and women to choose appropriate contraceptives from those currently available. Therefore, the emphasis must be on operational research for improving the performance of Family Welfare Programme and socio-behavioural research to improve community participation for increased acceptance of family welfare services. It is important that an appropriate institutional mechanism is created and supported to test and ensure the quality control in products utilised in the programme.

Basic and Clinical Research

3.5.112 Basic and clinical research studies in the priority areas identified earlier will be continued during the Ninth Plan period. These include development & testing of:

- a) Drug delivery systems for the delivery of contraceptive steroids;
- b) Vas-occlusive methods;
- c) Spermicides based on plant products such as neem oil and saponins and
- d) Vaginal contraceptives including those using plant based substances.
- e) Testing contraceptives, which are considered to be effective in Indian Systems of Medicine and/or used among tribals.
- f) Research on methods for male fertility regulation including long-acting androgens.
- g) Clinical trials on newer non-surgical methods of MTP.
- h) Post-marketing surveillance for Centchroman.

Operational Research

3.5.113 During the last year of the Eighth Plan the Department of Family Welfare has changed over to decentralised PHC based area-specific micro planning and implementation of Reproductive and Child Health Care. Due to problems inherent in such a massive shift, there had been a discernible decline in performance in terms of contraceptive acceptance in most of the States. In order to rapidly reverse this trend it is imperative that all service providers, in the Government, voluntary and private sector are trained so that they understand and implement the programme and the population understands and appropriately utilises the available facilities. In order to rapidly translate the written guidelines to actual implementation and remove operational obstacles it is imperative that operational research studies on a massive scale are taken up in different settings in the States.

3.5.114 Studies on the ongoing demographic transition and its consequences will be encouraged. Studies on continuation rates and use effectiveness of contraceptives under the programme conditions will be undertaken so that these could be used for computing effective couple protection rates.

3.5.115 The term 'operational research' has been used to cover a wide variety of formal research studies of varying scale carried out by research workers belonging to different disciplines. In addition to strengthening these types of formal research studies, it might become necessary to encourage the local population, health service providers and others who want to try innovative methods to tackle the local problems. Research is also required in operationalising integrated delivery of RCH services, nutrition, education, women and child development, rural development and family welfare services at the village level, utilising the available infrastructure under various programmes.

Monitoring of Family Welfare Services

3.5.116 Monitoring and evaluation form an essential component of FW Programme. Indicators used for monitoring and evaluation include process indicators and impact indicators. Process indicators are used to monitor the progress of implementation of the programme through monthly progress reports as compared to the annual targets/ Expected Level of Achievements (ELAs). The existing service statistics do provide an inbuilt rapid

and ready method for assessment of performance in Family Welfare Programme in terms of process indicators eg., Table 3.5.8 for ANC and Table 3.5.6 for immunisation and FP acceptance. These data are used for mid-course corrections in the States that are not achieving the expected level of performance. However, these indicators do not provide any information on the quality of care or appropriateness of the services. In the Ninth Plan period, the programme will also monitor a set of 'quality of care' indicators. During the Ninth Plan, efforts will be made to collate and analyse service data collected at the district level and respond rapidly to the evolving situations. Available data from census, demographic and health surveys undertaken in the district by various agencies including the Population Research Centres will be analysed and utilised at the local level for area-specific micro planning. Efforts will be made to incorporate the district-level information from other sectors and optimally utilise the local resources including human resources in the implementation of the Family Welfare Programme, through inter-sectoral coordination. Efforts will also be made to generate district-level data on all the related sectors and utilise them for programme planning, monitoring and evaluation.

3.5.117 The Department of Family Welfare has constituted regional evaluation teams which carry out regular verifications and validate the acceptance of various contraceptives. During the Ninth Plan period these evaluation teams will be used to obtain vital data on failure rates, continuation rates and complications associated with different family planning methods.

3.5.118 The Office of the Registrar General of India (RGI) works out the annual estimates of crude birth rate, crude death rate and infant mortality rate through their scheme of Sample Registration System. The system provides an independent evaluation of the impact of the Family Welfare Programme in the country. The vital indices and decennial growth rate estimated by the Office of the Registrar General of India on the basis of the census also provides indirect evaluation of impact of the Family Welfare programme.

3.5.119 Available information with RGI's office indicates that as of mid-nineties over 90% of all births and deaths are registered in states like Kerala, Tamil Nadu, Delhi, Punjab and Gujarat. In these States these data will be used at district-level both for PHC-based planning of RCH care as well as evaluation of the RCH care annually. In districts where vital registration is over 70%, efforts will be stepped up to ensure that over 90% of births and deaths are reported so that independent data base is available for planning as well as impact evaluation of PHC-based RCH care. The Department of Family Welfare, in collaboration with RGI, has set a target of 100% registration of births and deaths by the end of the Ninth Plan. Steps to collect, collate and report these data at PHC/District level on a yearly basis have also been initiated.

Expected Levels of Achievement (ELA) for the Ninth Plan

3.5.120 The performance under the Family Welfare Programme will depend upon

- 1) Programme initiatives during the Ninth Plan;
- 2) Financial resources available;
- 3) Capability and effectiveness of the infrastructure and manpower to carry out the programme;
- 4) Literacy and economic status of the families particularly of the women;
- 5) Policy support by opinion leaders and the society.

3.5.121 During the Ninth Plan, the FW Programme will attempt to meet the unmet need for family planning and provide MCH services so that there is a substantial reduction in IMR and under 'five' mortality rate. In view of the marked differences in the availability and utilisation of family welfare services and IMR CBR and CPR between States, a differential approach to the implementation of Family Welfare Programme is necessary. Consequently, during the Ninth Plan period the ELA in terms of process and impact indicators will be State specific.

3.5.122 Any projection of expected levels of achievement for process and impact indicators at the end of the Ninth Plan has to take into consideration the pace of improvement in these indicators during the Eighth Plan and the additional policy and programme measures envisaged to accelerate the pace of achievement during the Ninth Plan. The State-specific projections have been worked out at two different levels of achievement, one on the basis of the assumption that the trend observed with regard to these parameters in the last 15 years will continue during the Ninth Plan period and the second on the assumption that the additional policy and programme initiatives provided during the Ninth Plan period will result in the acceleration of the pace and result in more substantial improvement during the Ninth Plan period. The expected levels of achievement under both these assumptions have been computed State wise and are given in Table 3.5.10 and 11.

3.5.123 The expected levels of achievement by the terminal year of Ninth Plan (2002) are given below:

Indicator	If current trend continues	If acceleration envisaged in Approach Paper to the Ninth Five Year Plan is achieved
C B R	24/1000	23/1000
I M R	56/1000	50/1000
T F R	2.9	2.6
C P R	51%	60%
NNMR	35/1000	
M M R	3/1000	

National Population Policy

3.5.124 Population and sustainable development are key issues that have determined the improvement in quality of life over the last five decades. There have been massive changes in demographic and health indices of the population. India is currently in the midst of demographic transition. The next two decades will witness an unprecedented increase in the number of persons in 15-59 age group and there is a need to meet health and contraceptive needs of this population. The number of births may remain unaltered but there is an urgent need to reduce maternal and infant mortality so that there is a reduction in the desired level of fertility.

3.5.125 There has been a paradigm shift in Family Welfare Programme; centrally defined method specific targets have been replaced by community based need assessment and decentralised planning and implementation of the programme to fulfil these needs. The

ongoing educational, info-technology and socio-economic transition have raised awareness and expectations of the population. Taking all these into account it is imperative that a National Population Policy is drawn up so that it provides reliable and relevant policy framework not only for improving Family Welfare Services but also for measuring and monitoring the delivery of family welfare services and demographic impact in the new millennium.

Funding for Family Welfare Programme

3.5.126 The National Family Welfare Programme is a 100% Centrally funded scheme. Even after twenty five years of initiation of Family Welfare Programme, the Department meets the cost of maintenance of infrastructure, manpower, consumables and other costs for provision of family welfare services from central Plan funds. The outlays and expenditure for Family Welfare Programme during different Plan periods are shown in Table 3.5.7. Allocations for Family Welfare ranged between 1.1 to 1.8% of total Plan outlays. Eighth Plan outlays and expenditure is shown in Table 3.5.12. Right from the first year of the Eighth Plan, the expenditure of the Department has been higher than the outlay provided for each year of the plan. In addition the Department has to reimburse the states for expenditure incurred as arrears.

3.5.127 More than 75% of the expenditure on the programme is committed expenditure being incurred towards staff salaries and maintenance of infrastructure. There are problems in continued plan funding of non-plan activities under the Family Welfare Programme, but keeping in view the importance of achieving sustainable population growth rate, the National Family Welfare Programme will continue to be centrally sponsored programme and all expenditure will continue to be made from the plan outlay of the Department of Family Welfare during the Ninth Plan.

3.5.128 It is imperative that the ANMs, who are crucial for the outreach of the Programme should be available and her salary fully met Family Welfare Programme. During the Ninth Plan efforts will be made not only to fill the existing gaps in the manpower but also to provide additional ANMs on the basis of workload, difficulties in delivery of services and distances to be covered. The Department of Family Welfare provides funds for the maintenance of 97,757 sub-centres out of 1,36,339 functioning sub-centres. Planning Commission had repeatedly emphasised the need for financing all the functioning sub-centres so that the ANMs who are crucial peripheral workers for implementation of the Family Welfare Programme are in position at all the sub-centres.

3.5.129 The Department of Family Welfare bears the costs of maintenance of rural family welfare subcentres, post-partum centres, urban family welfare services and training activities according to certain norms which were fixed long back. There is a wide gap between the actual funds required to maintain the above services and the funds being provided according to the norms. Thus, it results in the accumulation of arrears payable to the states. The delay in the payment of arrears to the states affects provision of family welfare services in the states whose financial position is not very good. This is especially true for the states like Bihar, U P etc which are weak in terms of demographic indicators. Thus, there is an urgent need to review the norms for providing funds to the states for implementation of the Family Welfare Programmes. The Department of Family Welfare has already constituted a committee to review these norms. During the Ninth Five Year Plan adequate financing should be made to the states so that the programme activities are implemented without generation of any arrears.

3.5.130 The Department of Family Welfare has initiated multi-agency externally funded project "Reproductive & Child Health Care" from the year 1996-97. The project will promote

effective maternal care to ensure safe motherhood, increased access to contraceptive care, prevention and treatment of RTI/STD, reproductive health care services for adolescents etc. The total cost of the project which is to be implemented during the Ninth Plan period is Rs. 5112 crores out of which Rs.3600 crores is expected to be the external assistance and the balance amount is to be provided by the Government of India for sustaining the on-going maternal and child health care activities and for counter part funding for the RCH Project. It is, therefore, imperative that sufficient funds are provided to the Department of Family Welfare so that the department is able to absorb to external funding under the project during the Ninth Plan period.

3.5.131 During the Eighth Plan period the Central departments like Railways, Post and Telecommunications, have internalised the expenditure on family welfare services to their employees. Family welfare services are part of the welfare services like health care, pension, gratuity etc. extended to the employees by their respective departments. All departments, both of Central and State Governments, public sector undertakings and autonomous bodies etc., should be persuaded during the Ninth Plan to internalise the family welfare expenditure within their respective budgets. The modalities for such a shift have to be worked out by the concerned State and Central Departments, the Finance Ministry and the Planning Commission.

3.5.132 In view of the importance of IEC campaign in improving utilisation of available services for RCH care, Doordarshan and Akashvani will be persuaded to provide specific time slots on a larger scale either free or on concessional rates for IEC efforts.

3.5.133 Over the last 40 years there has been considerable escalation in the cost of drugs. Supply of adequate quantities of drugs, vaccines and contraceptives is an essential prerequisite for ensuring adequate coverage. In the Eighth Plan period there has been adequate supply of vaccine for pregnant women and vaccines to be given to infants. Contraceptive supplies have by and large been adequate. However, there have been a substantial shortfall in the supply of IFA and Vitamin A for achieving 100% coverage of the target groups. It is imperative that the drugs, vaccines and contraceptives to completely cover all the target groups on the basis of the projected population is provided (Table 3.5.13). Adequate funding for purchase of these needs to be made available so that coverage will improve. It is essential that the supply of these items are continued and provided free of charge to all segments of population because even among the population above the poverty line, there is often considerable reluctance to meet the expenses for women and children especially for preventive programmes. The services and supplies under Family Welfare Programme should continue to be provided free of cost so that inability to pay for preventive and promotive services does not become a barrier to the acceptance of Family Welfare Programme and the achievement of the desired family size. Taking all the above factors into consideration, the Department of Family Welfare has been provided with an outlay of Rs. 15120.20 crores for the Ninth Plan period. The outlay for Annual Plans will be adjusted depending upon the requirements of the department and availability of funds including reimbursement from EAPs.

TABLE - 3.51
DEMOGRAPHIC INDICATORS

Sl. No.	State/UT	Population (in 000) 1991 Census	Annual Exponential Growth Rate(%)		Literacy Rate % Female (7 yrs & above)		Sex Ratio 1991	C.B.R. 1996	C.D.R. 1996	Natural Increase (CBR-CDR)		T.F.R. 1994	Mean age at effective marriage (female) 1994	Singulate Mean age of marriage (female) 1981	CPR(%) 31.3.97 (Prov.)
			1981-91	1971-81	1991	1981				1996	1996				
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	INDIA	846303	2.14	2.22	39.30	29.80	927	27.4	8.9	18.5	72	3.5	19.4	18.33	45.4
I.	MAJOR STATES														
	1 Andhra Pr.	66508	2.17	2.10	32.72	24.16	972	22.7	8.3	14.4	66	2.7	17.8	17.26	46.9
	2 Assam	22414	2.17	2.12	43.03	NA	923	27.7	9.5	18.2	75	3.8	19.4	NA	19.1
	3 Bihar	86374	2.11	2.17	22.89	16.51	911	32.1	10.2	21.9	72	4.6	18.6	16.55	21.1
	4 Gujarat	41310	1.92	2.46	48.64	38.46	934	25.5	7.6	17.9	62	3.1	20.4	19.52	57.4
	5 Haryana	16464	2.42	2.55	40.47	26.8	865	28.8	8.1	20.7	68	3.7	19.2	17.84	53.9
	6 Karnataka	44977	1.92	2.39	44.34	33.16	960	23.0	7.6	15.4	53	2.8	19.4	19.21	55.6
	7 Kerala	29098	1.34	1.77	86.17	75.65	1036	17.8	6.2	11.6	13	1.7	22.3	21.82	46.7
	8 Madhya Pr.	66181	2.38	2.27	28.85	18.99	931	32.4	11.1	21.3	97	4.2	18.8	16.56	47.4
	9 Maharashtra	78937	2.29	2.21	52.32	41.01	934	23.2	7.4	15.8	48	2.9	19.1	18.77	51.0
	10 Orissa	31660	1.83	1.85	34.68	25.14	971	26.8	10.7	16.1	95	3.3	19.5	19.08	39.5
	11 Punjab	20282	1.89	2.16	58.41	39.64	882	23.5	7.5	16	52	2.9	20.3	21.07	76.9
	12 Rajasthan	44006	2.50	2.87	20.44	13.99	910	32.3	9.1	23.2	86	4.5	18.4	16.10	32.6
	13 Tamil Nadu	55859	1.43	1.63	51.33	40.43	974	19.2	7.9	11.3	54	2.1	20.2	20.25	51.7
	14 Uttar Pr.	139112	2.27	2.29	25.31	17.18	879	34.0	10.2	23.8	85	5.1	19.5	16.71	37.2
	15 West Bengal	68078	2.21	2.10	46.56	36.07	917	22.8	7.8	15	55	3.0	19.5	19.23	34.2
II.	SMALLER STATES														
	1 Arunachal Pr.	865	3.14	3.04	29.69	14.01	859	21.9	5.6	16.3	61	**	NA	NA	12.1
	2 Delhi	9421	4.15	4.29	66.99	62.57	827	21.2	5.4	15.8	39	**	NA	NA	33.9
	3 Goa	1170	1.49	2.37	67.89	55.17	967	14.1	5.8	8.3	13	**	NA	NA	32.9
	4 Himachal Pr.	5171	1.89	2.15	52.13	37.72	976	23.0	8.0	15	62	2.9	20.4	NA	55.3
	5 J&K	7719	2.54	2.58	NA	19.55	NA	NA	NA	NA	NA	NA	NA	NA	17.6
	6 Manipur	1837	2.57	2.83	47.60	34.61	958	19.4	5.7	13.7	27	**	NA	NA	23.7
	7 Meghalaya	1775	2.84	2.80	44.85	37.15	955	38.4	8.9	21.5	45	**	NA	NA	4.0
	8 Mizoram	698	3.34	3.99	78.60	68.60	921	NA	NA	NA	NA	NA	NA	NA	44.2
	9 Nagaland	1209	4.45	4.09	54.75	40.28	886	NA	NA	NA	6	**	NA	NA	8.1
	10 Sikkim	406	2.51	4.14	46.69	27.35	878	28.0	6.5	13.5	47	**	NA	NA	23.7
	11 Tripura	2757	2.95	2.79	49.65	38.01	945	18.3	6.5	11.8	45	**	NA	NA	26.3
III.	UNION TERRITORIES														
	1 A&N Islands	281	3.97	4.98	65.46	53.15	818	17.30	2.6	14.7	32	**	NA	NA	40.9
	2 Chandigarh	642	3.52	5.67	72.34	69.31	798	16.9	4.1	12.8	44	**	NA	NA	38.3
	3 D&N Haveli	138	2.89	3.38	26.98	20.38	952	28.9	9.2	19.7	78	**	NA	NA	35.6
	4 Daman & Diu	102	2.52	2.32	59.40	46.51	969	21.0	9.0	12	36	**	NA	NA	36.8
	5 Lakshadweep	52	2.51	2.37	72.89	55.32	943	23.8	6.3	17.5	36	**	NA	NA	9.6
	6 Pondicherry	808	2.90	2.58	65.63	53.03	979	18.0	6.8	11.2	25	**	NA	NA	65.7

Sex ratio - Females per 1000 males
Col. 2 to 7 - 1991 census:
#: Excludes J&K and Mizoram
NA : Not Available

Col. 8 to 13 - SRS Estimates:
S: Excludes Assam
*: Three years moving average(1993-95)

Col. 14 - 1981 Census:
**: for 1993

Col.15-Deptt. of FW

TABLE- 3.5.2

TARGETS AND ACHIEVEMENTS

YEAR	GOAL IN IN TERMS OF CBR*	YEAR BY WHICH GOAL WAS TO BE ACHIEVED	ACTUAL ACHIEVEMENT
1962	25	1973	34.6
1966	25	AS EXPEDITIOUSLY	
1968	23	1978-79	33.3
1969	32	1974-75	34.5
FOURTH PLAN	25	1979-81	33.8
FIFTH PLAN	25	1984	33.8
POPULATION POLICY (JAN. 1978)	25	1983-84	33.7
NATIONAL HEALTH POLICY	31	1985	32.9
	27	1990	29.9
	21	2000	
SEVENTH PLAN	29.1	1990	29.9
EIGHTH PLAN	26.0	1997	27.4
			(1996)

* CRUDE BIRTH RATE

SOURCE: PLANNING COMMISSION DEPTT. OF FAMILY WELFARE

TABLE- 3.5.3

ACHIEVEMENT UNDER FAMILY WELFARE PROGRAMME

PARAMETER	1951 @	1961 @	1971 @	1981 @@	1991 @@	1996 @@
CRUDE BIRTH RATE (PER 1000 POPL.)	40.8	39.3	37.1	37.2	29.5	27.4
DEATH RATE (PER 1000 POPL.)	25.1	18.9	17.0	19.0	9.8	8.9
NATURAL GROWTH RATE (PER 1000 POPL.)	15.7	20.5	20.1	18.2	19.7	18.5
TOTAL FERTILITY RATE	6.0	5.7	5.0	4.5	3.8	3.5
INFANT MORTALITY RATE (PER 1000 LIVE BIRTHS)	148	138	120	110	80	72
COUPLE PROTECTION RATE (%) @@@			10.4	22.8	43.5	45.4
CUMULATIVE NO.OF BIRTHS AVERTED (IN MILLION) @@@			0.04	44.19	155.63	210.00
LIFE EXPECTANCY (YEARS)						
MALE	37.2	44.2	50.9	55.4	58.1	59.0
FEMALE	36.2	42.7	50.2	55.7	58.6	59.7
COMBIN	36.7	43.5	50.5	55.4	58.3	59.4

(1981-85 (1987-91 (1989-93)

SOURCE: REGISTRAR GENERAL INDIA, DEPARTMENT OF FAMILY WELFARE

NOTE:- @ = Based on census average

@@ = SRS

@@@ = Deptt. Of FW

TABLE - 3.5.4

ESTIMATES OF UNMET DEMAND FOR FAMILY PLANNING METHODS

States	Total Fertility Rate	Total Wanted Fertility Rate	Currently married women aged (13-49) years (%)			
			Unmet need for FP		CURRENT USERS OF F	
			To space	To limit	To space	To limit
1	2	3	4	5	6	7
MAJOR STATES						
Andhra Pradesh	2.59	2.09	6.3	4.1	0.9	46.1
Assam	3.53	2.52	11.0	10.7	8.6	34.2
Bihar	4.00	3.18	14.4	10.6	1.9	21.1
Gujarat	2.99	2.33	7.6	5.5	2.6	46.7
Haryana	3.99	2.81	8.8	7.6	4.4	45.2
Karnataka	2.85	2.18	11.8	6.4	2.3	46.8
Kerala	2.00	1.82	7.2	4.5	6.6	56.6
Madhya Pradesh	3.90	3.21	13.1	7.4	2	34.6
Maharashtra	2.86	2.13	7.3	6.8	3.1	50.7
Orissa	2.92	2.32	12.7	9.7	1.5	34.7
Punjab	2.92	2.15	6.5	6.5	5.4	53.4
Rajasthan	3.63	2.78	10.8	9.0	1.6	30.2
Tamil Nadu	2.48	1.76	7.8	6.7	3.3	46.5
Uttar Pradesh	4.82	3.82	16.7	13.4	2	17.8
West Bengal	2.92	2.20	9.4	8.0	10.2	47.2
India	3.39	2.64	11.0	8.5	3.4	37.2

SOURCE: NATIONAL FAMILY HEALTH SURVEY 1992-93

TABLE - 3.5.5.

PLAN EXPENDITURE PER ELIGIBLE COUPLE UNDER FAMILY WELFARE PROGRAMME IN MAJOR STATES

CBR 1994	ELIGIBLE COUPLES ** (MARCH 1993)	EXPENDITURE ON F.W. 1992-93 (Rs. CRORES)	EXPENDITURE ON FW PER ELIGIBLE COUPLE (Rs.)	METHOD WISE COUPLE PROTECTION RATE (EFFECTIVE) (31st March 1993)					
				STERILISATION	IUD	CC	OP	TOTAL	
1	2	3	4	5	6	7	8	9	
MAJOR STATES									
Andhra Pradesh	23.8	12.80	82.40	64.38	36.4	4.2	3.3	1.4	45.3
Assam	30.8	3.50	21.01	60.03	22.9	1.5	0.5	0.3	25.2
Bihar	32.5	16.70	75.88	45.44	21.2	2.3	0.3	0.2	24.0
Gujarat	27.1	7.35	57.92	78.80	38.2	10.0	5.1	1.2	54.5
Haryana	30.8	2.83	27.53	97.28	33.2	10.8	7.5	1.1	52.7
Karnataka	25.0	7.73	47.19	61.05	39.6	5.8	1.7	1.1	48.2
Kerala	17.4	4.47	35.03	78.37	44.5	4.9	3.2	0.8	53.4
Madhya Pradesh	33.0	12.47	79.06	63.40	26.6	5.1	4.6	1.6	37.9
Maharashtra	25.1	14.22	94.98	66.79	40.9	6.6	3.9	1.8	53.2
Orissa	28.0	5.51	39.71	72.07	29.5	5.4	2.4	0.8	38.1
Punjab	25.0	3.15	37.74	119.81	37.9	23.1	8.1	1.9	70.9
Rajasthan	33.7	8.17	59.07	72.30	22.4	4.2	2.4	0.6	29.3
Tamil Nadu	19.2	9.91	72.21	72.87	44.9	8.4	1.2	1.0	54.5
Uttar Pradesh	35.4	25.44	171.04	67.23	19.2	9.4	3.6	0.9	33.2
West Bengal	25.2	11.65	66.60	57.17	28.6	2.6	1.6	1.5	34.3
India	28.7	151.72	1190.40	78.46	30.3	6.3	4.9	2.0	43.5

SOURCE: DEPTT OF FAMILY WELFARE

**- AS PROJECTED BY DEPTT. OF FAMILY WELFARE YEAR BOOK 1992-93

TABLE 3.5.6

Performance in Family Welfare Programme during Eighth Plan

(Millions)

	1992-93			1993-94			1994-95			1995-96			1996-97		
	Target	Achiev.	% Achiev.	Target	Achiev.	% Achiev.	Target	Achiev.	% Achiev.	Target	Achiev.	% Achiev.	Target	Achiev.	% increase/ decrease over 1995-96
Family Planning															
Sterilisation	5.28	4.29	81.2	5.18	4.50	86.8	5.33	4.58	86.0	5.03	4.42	79.20 *	:	3.82	-13.7
IUD	6.38	4.74	74.2	7.33	6.02	82.1	7.87	6.70	85.2	7.42	6.85	85.70 *	No	5.71	-16.6
CC users	15.47	15.00	91.1	19.35	17.28	89.3	21.78	17.71	81.3	o Target	17.28	-	Target	17.11	-1.0
OP Users	4.58	3.00	65.5	5.00	4.30	86.0	5.47	4.87	89.1	5.79	5.09	83.50 *	:	5.17	1.5
Immunization															
TT (PW)	27.01	21.45	79.4	27.56	22.75	82.6	27.53	23.07	83.8	27.53	22.12	80.30	28.10	22.12	78.7
DPT	24.29	22.00	90.6	24.79	23.09	93.2	24.77	23.40	94.5	24.86	22.63	91.00	25.39	22.60	89.0
Polio	24.29	22.12	91.0	24.79	23.21	93.6	24.77	23.58	95.2	24.86	22.78	91.60	25.39	22.96	90.4
BCG	24.29	23.46	96.6	24.79	24.09	97.2	24.77	24.70	99.8	24.86	24.13	97.10	25.39	24.57	96.8
Measles	24.29	20.86	85.9	24.79	21.95	88.5	24.77	21.60	87.2	24.86	20.55	82.60	25.39	20.76	81.8
Prophylaxis (Nutritional)															
# Nutritional Anaemia among pregnant women	27.01	16.48	61.00	27.56	22.00	79.90	27.53	21.32	77.50	27.53	22.17	80.50	28.11	19.58	73.1 \$\$
Blindness in infants															
# (Vit-A 1st Dose)	24.29	31.16	64.10 k	24.79	38.42	77.50 k	24.77	42.68	86.20 k	24.86 \$	16.49 \$	65.10	25.40 \$	14.66 \$	74.3 \$\$

note:- # = provisional

\$\$ = Calculated after excluding target for States/UTs for which achievement figs. not received

* = Calculated after excluding achievement for target free States/UTs.

k = Percentage achievement of target were worked out by taking half of the doses given to the 1st time initiated continued & completed dosed beneficiaries

\$ = Relates to 1st dose (Below 1Yr.+ above 1Yr.)

SOURCE: DEPTT. OF FAMILY WELFARE

TABLE 33.5.7

Pattern of investment on Health, Family Welfare (Plan Outlays) during Different
plan periods in public sector - Centre, States and UTs (Rs. Crores)

Period	Total Plan Investment (All Dev. Heads)	Health (Centre, & States)		Family Welfare	
		Outlay/Expd.	% of 2	Outlay/Expd.	% of 2
1	2	3	4	5	6
1. First Plan (1951-56)	1960.00	65.20	3.33	0.10	0.01
2. Second Plan (1956-61)	4672.00	140.80	3.01	2.20	0.05
3. Third Plan (1961-66)	8576.00	225.90	2.63	24.90	0.29
4. Annual Plans (1966-69)	6625.40	140.20	2.12	70.50	1.06
5. Fourth Plan (1969-74)	15778.80	335.50	2.13	284.40	1.80
6. Fifth Plan (1974-79)	39322.00	682.00	1.73	497.40	1.26
7. Annual Plan (1979-80)	11650.00	268.20	2.30	116.20	1.00
8. Sixth Plan (1980-85)	97500.00	1821.00	1.87	1010.00	1.04
9. Seventh Plan (1985-90)	180000.00	3392.90	1.88	3256.30	1.81
10. Annual Plans 1990-91 & 1991-92	137033.55	2253.86	1.64	1805.52	1.32
11. Eighth Plan (1992-97)	434100.00	7582.20	1.75	6500.00	1.50

SOURCE: PLANNING COMMISSION, DEPT OF FAMILY WELFARE

TABLE - 3.5.8
ANC Registration and Deliveries Reported - All India
 (Service data for the year 1995-96 from 350 districts)

State	Estimated Pregnancies (Proportionate)	ANC registration		Deliveries Reported					
		Numbers	As % of Estimated Preg.	Total	As % of Estimated Pregnancies	Institutional Deliveries As % of total	By untrained personnel As % of total	By trained personnel As % of total	Complicated cases As % of total
		3	4	5	6	7	8	9	10
A P	968201	874237	90.29	600164	61.99	23.99	56.65	19.76	1.74
Arunachal	12300	4505	36.63	1977	16.07	97.47	0.76	1.77	0.10
Assam	592038	406627	68.68	129995	21.96	39.07	37.22	23.72	1.05
Bihar	366965	126173	34.90	53668	14.60	15.36	64.49	20.15	0.49
Goa	Not Available								
Gujarat	314450	270909	88.70	214502	68.21	35.28	57.72	7.01	4.34
Haryana	279670	246100	87.93	179381	64.09	11.11	66.03	22.86	1.47
H P	92293	84481	91.54	60122	65.47	23.13	58.37	18.50	0.94
J & K	38098	10683	20.04	2710	7.11	99.70	23.76	16.46	1.25
Karnataka	1187675	1037968	87.39	711532	99.91	39.16	53.06	7.79	2.22
Kerala	343600	253116	73.67	224113	65.22	96.64	0.79	2.57	0.90
M P	1554800	1351658	86.93	1016417	67.30	22.74	56.60	20.66	0.82
Maharashtra	1607500	742430	46.19	1817457	113.06	69.92	22.27	7.00	0.58
Manipur	37630	59139	157.16	16436	43.68	67.04	26.30	5.87	1.01
Meghalya	16350	11627	64.45	6906	37.63	35.65	29.97	34.38	1.42
Mezoram	18802	13533	71.98	12872	68.46	39.56	38.74	21.70	1.17
Nagaland	15774	1284	8.14	506	3.21	71.74	19.96	8.30	0.00
Orissa	643907	333532	51.80	244730	38.01	20.76	57.92	21.32	0.67
Punjab	218068	170108	70.01	111905	51.35	19.95	69.32	10.73	2.46
Rajasthan	597972	320076	53.53	178186	29.80	32.51	50.84	16.65	1.08
Sikkim	1870	1135	60.70	1107	99.20	39.48	57.45	3.07	0.45
Tamil Nadu	110990	1150570	103.72	967609	87.23	74.99	19.54	5.47	5.28
Tripura	Not Available								
U P	2967461	2519292	84.90	2256005	76.03	12.29	80.18	7.53	0.15
W B	1596200	1019634	63.00	845804	52.92	41.62	28.74	29.59	1.09
A & Nicobar	7800	3572	45.79	2605	33.41	66.58	13.32	20.11	3.68
Chandhigar	3193	5306	166.19	2514	78.74	89.78	8.19	2.03	1.59
D & N Havel	Not Available								
Daman & diu	2900	693	23.90	1729	99.62	23.66	50.14	26.20	0.12
Delhi	253500	227447	89.72	110899	43.75	66.62	22.09	11.29	6.55
Lakshdweep	730	729	99.86	673	94.25	48.11	46.95	4.94	4.94
Pondicherry	5500	15666	204.04	11973	217.69	91.79	4.16	4.05	0.93
All India	14858784	11272430	75.86	9814962	66.05	39.87	47.53	12.58	1.42

SOURCE: DEPARTMENT OF FAMILY WELFARE (1995-96)

TABLE 3.5.9

**ESTIMATES OF INFANT MORTALITY AND CHILD MORTALITY
(NATIONAL FAMILY HEALTH SURVEY 1992-93)**

States	NEONATAL MORTALITY (NNMR)	PERINATAL MORTALITY (PNMR)	INFANT MORTALITY (IMR)	CHILD MORTALITY	UNDER FIVE MORTALITY
1	2	3	4	5	6
MAJOR STATES					
Andhra Pradesh	45.3	25.0	70.4	22.4	91.2
Assam	50.9	37.8	88.7	58.7	142.2
Bihar	54.8	34.4	89.2	42.0	127.5
Gujarat	42.3	26.4	68.7	37.9	104.0
Haryana	38.4	34.9	73.3	27.4	98.7
Karnataka	45.3	20.2	65.4	32.5	87.3
Kerala	15.5	8.2	23.8	8.4	32.0
Madhya Pradesh	53.2	32.0	85.2	49.3	130.3
Maharashtra	36.4	14.0	50.5	20.9	70.3
Orissa	64.7	47.4	112.1	21.3	131.0
Punjab	31.2	22.5	53.7	15.0	68.0
Rajasthan	37.2	35.4	72.6	32.3	102.6
Tamil Nadu	46.2	21.5	67.7	20.1	86.5
Uttar Pradesh	59.9	40.0	99.9	46.0	141.3
West Bengal	51.8	23.5	75.3	26.0	99.3
India	48.6	29.9	78.5	33.4	109.3

NATIONAL FAMILY HEALTH SURVEY 1992-93

TABLE-3.5.10

EXPECTED LEVEL OF ACHIEVEMENTS BY 2002

Sl No.	State/UT	Infant Mortality Rate*	Crude Birth Rate*	Neonatal Mortality Rate	TFR*	Contraceptive Prevalence Rate@
INDIA		56-50	24-23	35	2.9 - 2.6	51 - 60

NATIONAL MATERNAL MORTALITY RATE TARGET--300 PER 100,000 LIVE BIRTHS

I. MAJOR STATES (Population 1 crore or more)

1.	Andhra Pradesh	60 - 55	20 - 18	35	2.3 - 2.1	55 - 70
2.	Assam	60 - 55	25 - 22	35	2.7 - 2.5	30 - 40
3.	Bihar	50 - 44	27 - 25	35	4.0 - 3.0	30 - 45
4.	Gujarat	40 - 35	22 - 20	35	2.5 - 2.2	65 - 75
5.	Haryana	50 - 45	27 - 23	35	3.0 - 2.5	60 - 70
6.	Karnataka	60 - 50	21 - 20	35	2.4 - 2.1	60 - 70
7.	Kerala	10 - 9	16 - 15	9	1.7 - 1.6	60 - 70
8.	Madhya Pradesh	80 - 70	29 - 25	50	3.5 - 2.8	65 - 65
9.	Maharashtra	41 - 36	20 - 17	35	2.5 - 2.2	60 - 70
10.	Orissa	90 - 70	25 - 21	50	2.7 - 2.4	45 - 55
11.	Punjab	44 - 40	21 - 18	20	2.5 - 2.2	82 - 85
12.	Rajasthan	56 - 50	28 - 24	40	3.5 - 3.0	40 - 50
13.	Tamil Nadu	39 - 35	18 - 16	20	1.9 - 1.7	60 - 70
14.	Uttar Pradesh	75 - 60	30 - 26	40	3.8 - 3.4	50 - 55
15.	West Bengal	51 - 46	24 - 20	30	2.6 - 2.4	45 - 55

TABLE-3.5.10 (Concl.)

EXPECTED LEVEL OF ACHIEVEMENTS BY 2002

Sl No.	State/UT	Infant Mortality Rate*	Crude Birth Rate*	Neonatal Mortality Rate	TFR*	Contraceptive Prevalence Rate@
INDIA		56-50	24-23	35	2.9 - 2.6	51 - 60

NATIONAL MATERNAL MORTALITY RATE TARGET--300 PER 100,000 LIVE BIRTHS

II. SMALLER STATES/U.T.s

1.	Arunachal Pradesh	50 - 45	22 - 20		4.0 - 3.0	30 - 40
2.	Delhi	24 - 20	18 - 16		2.5 - 2.2	45 - 50
3.	Goa	10 - 9	14 - 12		1.6 - 1.5	45 - 55
4.	Himachal Pradesh	50 - 45	22 - 20	35	2.5 - 2.3	60 - 70
5.	Jammu & Kashmir	50 - 45	27 - 24		2.7 - 2.5	30 - 40
6.	Mani	24 - 20	18 - 16		2.4 - 2.1	30 - 40
7.	Meghalaya	40 - 35	25 - 23		2.8 - 2.5	30 - 40
8.	Mizoram	24 - 20	18 - 16		2.4 - 2.1	55 - 65
9.	Nagaland	8 - 5	16 - 15		2.6 - 2.4	30 - 35
10.	Sikkim	40 - 35	18 - 17		2.4 - 2.1	30 - 40
11.	Tripura	40 - 35	18 - 16		2.4 - 2.1	30 - 40
12.	A&N Islands	24 - 20	16 - 15		2.0 - 1.8	50 - 55
13.	Chandigarh	40 - 35	15 - 14		2.0 - 1.8	50 - 55
14.	D&N Haveli	55 - 50	26 - 25		2.5 - 2.0	45 - 50
15.	Daman & Diu	24 - 20	18 - 16		2.0 - 1.8	40 - 50
16.	Lakshadweep	24 - 20	22 - 20		2.2 - 2.0	30 - 35
17.	Pondicherry	18 - 16	18 - 16		1.9 - 1.7	70 - 80

Note: A minimum of 30% CPR is aimed at by all State/UTs

* Lower levels indicate expected achievements with additional RCH inputs

upper levels indicate expected achievements if current trend continues

@ Upper levels indicate expected achievements with additional RCH inputs

lower levels indicate expected achievements if current trend continues

SOURCE: DEPTT OF FAMILY WELFARE

TABLE 3.5.11

EXPECTED LEVELS OF ACHIEVEMENTS IN SOME PROCESS INDICATORS BY 2002

Sl. No.	India and Major States	Ante-natal Care (ANC %)	Institutional Deliveries %	Deliveries Attended by trained personnel	Fully Immunised(%)	
					Children	Pregnant Woman(TT)
	INDIA	90	35	45	65	95
1.	Andhra Pradesh	95	45-50	40-45	72-80	98
2.	Assam	75	25-30	38-45	60-65	75
3.	Bihar	75	17-25	38-45	56-60	75
4.	Gujarat	90	32-40	50-55	70-75	95
5.	Haryana	90	30-35	60-65	60-65	95
6.	Himachal Pradesh	90	27-35	50-55	60-65	95
7.	Karnataka	92	48-55	40-45	80-85	97
8.	Kerala	99	95-96	4-5	80-85	99
9.	Madhya Pradesh	75	20-25	40-45	70-75	85
10.	Maharashtra	92	45-50	40-45	80-85	97
11.	Orissa	85	17-25	42-50	70-75	90
12.	Punjab	95	20-25	60-70	75-80	97
13.	Rajasthan	75	18-25	40-45	60-65	75
14.	Tamil Nadu	99	65-70	25-30	70-75	99
15.	Uttar Pradesh	75	16-25	50-55	60-65	85
16.	West Bengal	90	38-45	35-45	60-65	95

SOURCE: DEPTT OF FAMILY WELFARE

TABLE 3.5.12

OUTLAY AND EXPENDITURE - DEPARTMENT OF FAMILY WELFARE

(Rs. in crore)

Scheme	8th Plan	1992-93	1993-94		1994-95		1995-96		1996-97		
	Outlay	Outlay	Expd.	Outlay	Expd.	Outlay	Expd.	Outlay	Expd.	Outlay	RE
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1 Services and Supplies	3086.00	462.87	557.68	516.87	672.97	516.30	743.29	565.55	742.88	575.90	575.90
2 Training	59.00	8.85	9.76	8.70	8.80	9.20	9.16	9.22	13.95	9.95	9.95
3 IEC	127.00	19.00	18.85	25.00	22.95	30.00	22.58	33.50	29.02	43.00	43.00
4 Research & Evaluation	89.00	13.38	14.19	12.98	14.24	16.55	18.20	16.52	15.71	19.50	19.50
5 MCH	1982.00	297.35	333.84	322.75	377.83	354.10	517.88	429.10	585.52	559.10	545.10
6 Organisation	71.00	10.70	15.07	10.95	15.80	11.30	14.29	11.61	15.25	12.60	12.60
7 VHG Scheme	140.00	21.00	21.00	21.00	13.93	10.00	13.32	10.00	14.75	10.00	10.00
8 Area Projects	400.00	60.00	73.66	70.00	149.08	250.00	148.81	250.00	172.42	195.00	190.00
9 SSN Scheme	34.00	-	45.00	40.00	31.01	45.00	34.32	45.00	0.00	1.00	0.00
10 USAID Project in UP	-	-	1.00	30.00	6.00	30.00	0.00	30.00	12.95	40.00	31.00
11 Arrears	500.00	100.00	100.00	210.00	210.00	150.00	150.00	141.00	141.00	20.00	62.00
12 New Initiatives	12.00	6.85	0.35	1.75	0.00	7.55	0.00	39.50	0.00	48.95	47.95
Total	6500.00	1000.00	1190.40	1270.00	1522.61	1430.00	1671.85	1581.00	1743.45	1535.00	1547.00

SOURCE: DEPTT OF FAMILY WELFARE

TABLE 3.5.13

YEAR WISE ESTIMATED REQUIREMENT OF VACCINES, VIT. 'A' AND IFA TABLETS

FIGURES IN MILLIONS

Year	PROJECTED POPULATION (*)	NO. OF BIRTHS (\$\$)	NO. OF PREGNANT WOMEN (#)	CHILDREN (0-4) YRS.	REQUIREMENT OF VACCINES (DOSES)				PROPHYLACTIC PROGRAMMES			
					BCG	POLIO	DPT	MEASLES	PIIP	TT PREGNANT WOMEN	VIT. A (DOSES)	NUTRITIONAL ANAEMIA AMONG WOMEN (IFA Tablets)
1	2	3	4	5	6	7	8	9	10	11	12	13
1996	934.22	25.60	28.16	119.55	29.44	99.83	88.31	34.56	286.91	56.31	153.59	5631.47
1997	949.88	26.03	28.63	116.13	29.93	101.50	89.79	35.14	278.70	57.26	156.16	5725.86
1998	965.61	26.46	29.10	113.32	30.43	103.18	91.28	35.72	271.98	58.21	158.75	5820.68
1999	981.32	26.89	29.58	111.13	30.92	104.86	92.76	36.30	266.70	59.15	161.33	5915.42
2000	996.94	27.32	30.05	109.73	31.41	106.53	94.24	36.88	263.34	60.10	163.90	6009.58
2001	1012.39	27.74	30.51	108.49	31.90	108.18	95.70	37.45	260.39	61.03	166.44	6102.66
TOTAL	(1997-2001)				154.59	524.27	463.78	181.48	1341.11	295.74	806.57	29574.21

* BASED ON THE REPORT OF THE TECHNICAL GROUP ON POPULATION PROJECTIONS

CONSTITUTED BY PLANNING COMMISSION (AUGUST 1996)

\$\$ BASED ON 1996 SRS BIRTH RATE

FETAL WASTEAGE ASSUMED -10%

CHILDREN (0-4) YEARS ARE AS PROJECTED IN THE REPORT OF THE TECHNICAL GROUP

REQUIREMENT OF VACCINES CALCULATED ON THE BASIS OF ESTIMATED NO. OF BIRTHS

ASSUMED WASTAGES : BCG-15%, POLIO-30%, DPT-15%, MEASLES-35%, PPIP-20%

REQUIREMENT OF VIT. A - 6 DOSES PER CHILD

REQUIREMENT OF IFA TABLETS - 200 TABLETS PER PREGNANT WOMAN

3.6 Indian Systems of Medicine and Homoeopathy

3.6.1 The Indian Systems of Medicine and Homoeopathy consist of Ayurveda, Siddha, Unani and Homoeopathy, and therapies such as Yoga and Naturopathy. Some of these systems are indigenous and others have over the years become a part of Indian tradition. It

Indian Systems of Medicine & Homeopathy

Strengths of the system are:

- There are over 6 lakh ISM&H practitioners
- The practitioners serve in remote rural areas/urban slums
- They are accepted by the community

Problems are:

- Training institutes lack well qualified teachers and quality of training is not of requisite standard
- Lack of essential staff, infrastructure and diagnostic facilities in secondary/tertiary care institutions
- Potential of ISM&H drugs & therapeutic modalities is not fully exploited
- Existing ISM&H practitioners are not fully utilised to improve access to health care

is estimated that there are over 6 lakh ISM&H practitioners in the country. Many of them work in remote rural and urban slum areas and thus, could play an important role in improving the quality and outreach of health care. These practitioners are close to the community, not only in the geographical sense but in terms of cultural and social ethos. The cost of care is affordable and hence these systems have wide acceptance among all segments of the population. The National Health Policy visualised an important role

for the ISM&H practitioners in the delivery of health services. Measures to popularise and develop Indian Systems of Medicine & Homeopathy have been vigorously pursued during the Eighth Plan. In order to give focussed attention to the development and optimal utilisation of ISM&H for the health care of the population, a separate Department for ISM&H was set up in 1995.

Approach during the Ninth Plan

3.6.2 The Approach during the Ninth Plan period will be to:

1. improve quality of primary, secondary and tertiary care in ISM&H;
2. invest in human resource development for ISM&H so that there is a marked improvement in the quality of services provided by these practitioners;
3. preserve and promote cultivation of medicinal herbs and plants;
4. complete the Pharmacopoeia for all systems of ISM&H; drawing up a list of essential drugs belonging to these systems
5. encourage Good Manufacturing Practices (GMP) and ensure quality control of drugs.
6. promote research and development (R&D) especially on new drug formulations, clinical trial of promising drugs through strengthening of the Central Research Councils and coordination with other research agencies. Special emphasis will be laid on encouraging research aimed at improving ISM&H inputs in National Health Programmes.

Primary Health Care

3.6.3 Physicians belonging to ISM&H provide primary health care to vulnerable population especially those residing in urban slums, and remote rural and tribal areas. There are 21632 dispensaries in ISM&H (Table 3.6.1). In States like West Bengal and Gujarat, ISM&H practitioners are also being posted as the only Medical Officer in Primary Health Centres. In States like Kerala, ISM&H practitioners are posted in PHCs, in addition to the physicians belonging to the modern system of medicine. They both work together and provide complementary health care under both systems in PHCs. Majority of ISM&H practitioners in urban and rural areas are private practitioners and provide primary health care. During the Ninth Plan there will be increasing utilisation of ISM&H practitioners working in Government, voluntary and private sector in order to improve the outreach of primary health care services.

Operational strategy for the Ninth Plan

The focus will be on:

- Strengthening of educational institutes of ISM&H to ensure improvement in the standard of research and teaching in all the systems of ISM&H
- Preservation & promotion of cultivation of medicinal herbs and plants
- Completion of the pharmacopoeia for all systems of medicine
- Drawing up a list of essential drugs and initiating steps to improve their availability at affordable cost
- Ensuring quality control of drugs used and
- research & development of drugs, testing and patenting them.

Secondary Health Care

3.6.4 Majority of existing ISM&H facilities at secondary care level function as separate institutions and do not have linkages with either primary health care institutions in ISM&H or with secondary health care institutions in modern system of medicine. Very often these institutions lack adequate diagnostic facilities and have inadequate infrastructure and manpower. During the Ninth Plan the feasibility and usefulness of posting ISM&H practitioners in District Hospitals will be explored as pilot projects to see how these efforts in providing complementary system of health care to patients in these hospitals are utilised by the patients and at the same time enable patients opting for ISM&H treatment to get the benefits of diagnostic facilities available in secondary care institutions.

Tertiary Health Care

3.6.5 All the ISM&H Colleges and Institutions in private/government sector have attached tertiary health care hospitals. In addition, there are tertiary care and/or speciality Centres attached to National Institutes. Private/voluntary sector institution also provide tertiary health care in ISM&H. Majority of tertiary care institutions lack essential staff, infrastructure and diagnostic facilities. During the Ninth Plan, efforts will be made to improve tertiary care institutions especially those attached to ISM&H Colleges and National Institutions so that there will be simultaneous improvement in teaching, training, R&D and patient care.

Development of Human Resources for ISM&H

3.6.6 Physicians in ISM&H broadly belong to one of the two categories:(1)those trained in the traditional manner in ISM&H (e.g., Vaidis and Hakims) and (2) those who have gone through the educational institutions in ISM&H and have obtained their degrees.

3.6.7 During the last five decades there has been a progressive increase in the number of physicians who are qualifying through educational institutions in ISM&H. At present it is reported that there are 329 ISM&H colleges in the country. It is estimated that about 11,000 health care providers graduate in the system every year (Table 3.6.1). Available information indicates that the quality of training provided in a majority of ISM&H colleges is sub-optimal. The training institutes often lack well qualified teachers; the quality of education provided especially the practical training in patient management, is often not of requisite standard because of lack of adequately staffed hospitals providing care to patients according to the guiding principles of different systems of ISM&H.

3.6.8 During the Ninth Plan period there will be efforts to improve human resource development for ISM&H through: creation of an appropriate mechanism for quality assurance in educational process in ISM&H educational institutions; strengthening the infrastructure in ISM&H colleges and National Institutes of ISM&H to ensure improvement in the uniformity of standard of teaching in all the systems of ISM&H; creation of appropriate mechanism for funding the Government educational institutions so as to ensure quality and relevance of training in ISM&H colleges; promoting Continuing Medical Education for all practitioners of ISM&H

3.6.9 During the Ninth Plan attempts will be made to ensure that ISM&H colleges are strengthened/ monitored so that the manpower produced does have essential skills to tackle health problems in urban and rural areas. The Department of ISM&H has selected 40 institutions for organising re-orientation training for teachers and physicians of ISM&H.

Quality Assurance in Education in ISM&H

3.6.10 It is essential to have appropriate regulations and agencies for implementing these regulations in order to ensure that quality of education is maintained. The Central Council of Indian Medicine (CCIM), a statutory body constituted in 1970 and the Central Council of Homoeopathy (CCH) constituted in 1973 are responsible for laying down and maintaining uniform standards of education for Courses in Ayurveda, Siddha and Unani and Homoeopathy, regulating the practice in Indian Medicine and prescribing standards of professional conduct, etiquette and code of ethics for practitioners and advising the Central Government in matters relating to recognition of appropriate qualifications of Indian Medicines and Homoeopathy. These Councils also maintain Central Registers for Indian medicine and Homeopathy respectively. These central professional bodies work in co-ordination with State Board/Councils in maintaining the standard of medical institutions of ISM&H in the respective States. However, the monitoring procedures and schedules are not adequate. The recommendations of CCIM and CCH are often not acted upon. A system of periodic monitoring by an accreditation committee will be worked out and implemented during the Ninth Plan. Periodic inspection and certification will later be made mandatory for the recognition of the institutions.

3.6.11 In order to improve the manpower development in ISM&H it is important to ensure uniformity in entry standards, and uniformity in the curricula. It is imperative that the condition of hospitals where the students learn the essential clinical care are improved so that appropriate clinical training is given. The focus during the Ninth Plan will be over ensuring quality and relevance of the undergraduate training and over improving clinical skills through a period of internship with possible multi- professional interaction.

National Institutes in ISM&H

3.6.12 Under the Department of ISM & H, some Institutes are being developed as Centres of Excellence such as National Institute of Ayurveda, Jaipur; National Institute of Homoeopathy, Calcutta; Institute of Post-Graduate Teaching & Research in Ayurveda, Gujarat Ayurved University, Jamnagar.

3.6.13 These institutions will be strengthened during the Ninth Plan so that they act as centres of excellence in teaching, service delivery and R.&D.

Para-professionals in ISM&H

3.6.14 Currently there are no arrangements in the Department for a degree or diploma in pharmacy nor is ISM&H pharmacy included as one of the options in general pharmacist course. There are no nursing trainees in ISM&H. These areas need to be looked into and the lacunae rectified during the Ninth Plan.

Continuing Medical Education in ISM&H

3.6.15 Majority of the ISM&H practitioners have qualified from recognised Institutions and could be utilised for delivery of primary health care. Most of these practitioners are in the private sector and require periodic updating of the knowledge and skills through continuing medical education courses. It is also important to provide ISM&H practitioners with sufficient knowledge of the ongoing national health programmes so that they could provide necessary counseling and act as depot holders for selected items such as condom and ORT packages. Increasing the involvement of ISM&H practitioners in counselling and improving the utilisation of services under the National Health and Family Welfare programmes are envisaged during the Ninth Plan period. The ISM&H practitioners will strengthen (i) health education, (ii) drug distribution for national programmes, (iii) motivation for family welfare, (iv) motivation for immunisation, and (v) improvement in environmental sanitation. Necessary curricular changes will be introduced in graduate and CME courses, and appropriate course contents will be developed so as to design learning experiences related to expected task performance. The CME programme may be linked to a system for periodic recertification of practitioners as a part of efforts to ensure quality of care.

Preservation and Promotion of Cultivation of Medicinal Herbs and Plants

3.6.16 With the new thrust for ISM&H, there will be an increasing demand for drugs used in these systems. Over the last two decades the cultivation of medicinal plants and herbs have been unable to meet the increasing demands. Several medicinal plants are no longer available at affordable cost. Some of the species of medicinal plants are also reported to be endangered because of increasing pressure on the forests.

3.6.17 The Department has initiated a scheme for development and cultivation of medicinal plants. The objective of the scheme is to augment the production of raw herbs of plant origin by providing Central assistance for their cultivation and development. In addition, during the Eighth Plan period several States such as Himachal Pradesh have also set up herbal gardens and linked them to production units of drugs for ISM&H. There is a need to create such herbal farms in public, private and joint sector to ensure that the essential plants and herbs of appropriate quality are produced in adequate quantity to meet the demands and the cost of drugs is maintained at affordable levels. Use of appropriate biotechnological tools for preservation and propagation of important medicinal plants have to be taken up. Inter-sectoral co-ordination with Departments of Biotechnology, Horticulture

and Medicinal & Aromatic Plant Research Institutions are important for ensuring that appropriate herbs are grown taking into account agroclimatic conditions. The Department has utilised three gene banks (at Delhi, Lucknow and Trivandrum) under the Department of Bio- technology to store 2000 species of medicinal plants (Germ plasm) required for ISM&H drugs.

3.6.18 At the village level, cultivation of medicinal plants through appropriate utilisation of waste land will have to be undertaken with active collaboration of agriculture Department, Krishi Vigyan Kendra and Department of Rural Development.

Pharmacopoeial Standards

3.6.19 Pharmacopoeial standardisation of Ayurveda, Siddha and Unani Medicine, both for single and compound drugs, is essential. The Department had taken up the task of developing Pharmacopoeial Standards through Pharmacopoeia Committees. Four Pharmacopoeial Committees are working for preparing official formularies/pharmacopoeias to maintain uniform standards in preparation of drugs of Ayurveda, Unani, Siddha and Homoeopathy and to prescribe working standards for single drug as well as compound formulations. The Pharmacopoeia Committees in Ayurveda, Siddha, Unani and Homoeopathy are headed by experts in their respective fields.

3.6.20 Pharmacopoeial Laboratory for Indian Medicine, Ghaziabad, was established in 1970 as standards setting-cum-drug testing laboratory for ISM at the National level. The standards worked out are published in the form of monographs. During the Ninth Plan period the ongoing pharmacopoeial work, development of pharmacopoeial standards, listing essential drugs and formulations will be completed expeditiously. The work of pharmacopoeial laboratories attached to the Department will be supplemented by laboratories of CCRAS and university/college departments of Chemistry and Bio-chemistry. Strengthening of State Drug Testing Laboratories will also be taken up to ensure quality of drugs used in ISM&H. In addition GMP for production of drugs of good quality and strengthening of quality control laboratories will be encouraged.

Research and Development (R&D)

3.6.21 There are four Research Councils in ISM&H; these are Central Council for Research in Ayurveda and Siddha (CCRAS); Central Council for Research in Unani Medicine (CCRUM); Central Council for Research in Homoeopathy (CCRH); and Central Council for Research in Yoga and Naturopathy (CCRYN). These Councils initiate, aid, guide, develop and coordinate basic and applied research, medico-botanical surveys, research on the cultivation of medicinal plants and pharmacognostical studies. These Councils are the apex bodies for research in the concerned systems of medicine and are fully financed by the Government of India.

3.6.22 The Central Research Councils' R&D programmes will be strengthened during the Ninth Plan period, if necessary, by reorganisation and by providing adequate infrastructure and resources. These Councils will also collaborate with outside research institutions and research funding agencies as well as universities. The major focus will be on developing new drug formulations. These, as well as formulations traditionally used in ISM&H for treatment of illnesses for which there is no effective remedy in modern system of medicine will be tested for safety and efficacy. Clinical trials will also be undertaken in formulations traditionally used in tribal societies and reported as being effective.

3.6.23 Formulations found useful will be patented. The Department has established a Patent Cell to keep track of patents being filed in India and other parts of the world with respect to Ayurveda, Siddha, Unani drugs and to extend professional and financial assistance to Government/Private scientists in the ISM&H sector in connection with filing of patents. An Expert Group has been constituted for rendering advise to the Department with regard to the Patent issues relating to ISM&H. This will receive increased attention in the Ninth Plan. The potential contribution of drugs and formulations from ISM&H to meet the national as well as global demands for safe and effective drugs will be fully exploited. Drug safety and pharmacopoeial standards setting will receive due attention. Preventive and curative role of Yoga and Naturopathy in life style related disorders will be fully investigated and utilised.

Outlays and Expenditure

3.6.24 The outlays and expenditure during the Eighth Plan period are given in Table 3.6.2. During the initial four years there was underutilisation of the funds provided. However in the last year, after the establishment of the Department of ISM&H, utilisation of funds has markedly improved.

3.6.25 The strength of ISM&H lies in the fact that the practitioners serve in private sector even in remote rural areas and urban slums. Strengthening of undergraduate and post graduate training in ISM&H, establishment of speciality clinics in major hospitals, standardisation of drugs, enhancing availability of raw materials, research and development and IEC are some of the major areas of input by the Deptt of ISM&H at the national level; they will continue to be the focus during the Ninth Plan. Development of human resources and establishment of speciality clinics are activities that take time and have to be achieved in phases. Taking all these factors into consideration an outlay of Rs. 266.35 crore has been provided to the department of ISM&H for the Ninth Plan period. The outlay for the Annual Plans will be adjusted depending upon the requirements of the department and availability of the funds. The State Governments will be making necessary provisions for development of ISM&H in their budget.

Table 3.6.1

**EXISTING FACILITIES UNDER THE INDIAN SYSTEMS OF MEDICINE AND HOMOEOPATHY
AS ON 1.4.1996**

Sr. No.	Facilities	Ayurveda	Unani Medicine	Siddha	Homoeopathy	Total
1	Hospitals	2178	185	122	338	2823
2	Beds	30653	3596	1636	9288	45173
3	Dispensaries	13655	975	334	6668	21632
4	Reg. Practitioners	350416	41592	12528	171298	575834
5	Colleges	150	31	2	146	329
6	Admission Capacity	5941	1217	155	4519	11832
					(2220)	(2220)

Note :- Figures shown in the brackets are admission capacities in respect of Diploma Courses,
otherwise the admission capacity is for Degree Courses.

Source : Department of ISM&H

Table 3.6.2

OUTLAY AND EXPENDITURE OF DEPARTMENT OF ISM&H

(Rs. In Crores)

Programme/ Scheme	8th Plan	1992-93		1993-94		1994-95		1995-96		1996-97		8th Plan	
	Outlay	Outlay	Actual Exp.	Outlay	Actual Exp.	Outlay	Actual Exp.	Outlay	Actual Exp.	Outlay	Actual Exp.	Allocated	Released
1. Medical Education Institutes	30.00	4.60	4.27	6.25	4.35	6.16	3.69	6.16	4.84	6.37	6.96	29.54	24.11
2. Reseach Intitutions	33.00	5.07	5.93	6.10	4.27	8.10	6.74	8.40	9.82	8.45	9.70	36.12	36.46
3. Statuary Institutions	1.00	0.15	0.00	0.30	0.82	0.42	0.09	0.50	0.28	0.50	0.50	1.87	1.69
4. Other Programme/Schemes	15.00	3.88	2.86	5.75	6.50	0.27	6.09	6.13	6.12	5.51	3.20	21.54	24.77
5. Strengthening Pharma. Laboratories/committees	7.50	1.30	0.42	2.80	0.16	1.15	0.25	1.37	0.33	1.62	1.10	8.24	2.26
6. Investment in Public Sector/ State Govt. Pharmacies of ISM&H	0.00	0.10	0.10	0.05	0.00	0.10	0.00	0.10	0.00	0.01	1.00	0.36	1.10
7. Strengthening of Deptt. Of ISM&H	1.50	0.00	0.00	0.00	0.00	5.00	0.03	0.53	0.61	0.73	0.73	6.26	1.37
8. New Schemes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	88.00	15.10	13.58	21.25	16.10	21.20	16.89	25.19	22.00	25.19	23.19	103.93	91.76

Source :- Department of ISM&H

3.7 HOUSING URBAN DEVELOPMENT WATER SUPPLY AND CIVIC AMENITIES

Perspective and Objectives

3.7.1 The level of urbanisation was around 11 to 12 per cent during the first three decades of this century, increasing noticeably in the decade of independence and rising continuously thereafter from 17.3 per cent in 1951 to 25.7 per cent in 1991. The projected scenario indicates a rising trend. The Planning Commission's Technical Group on Urban Perspectives and Policies has projected the urban population at 31.0 per cent of the total population in 1996-97 and 38.0 per cent in 2006-07. During the last four and half decades, some 5-6 million people have been added to urban India every year. The country has one of the largest urban systems with 217.6 million people in 1991, which is projected to increase to 289 million in 2001 and around 605-618 million during 2021-2025. There will be about 40 metro cities in the country in 2001 as against 23 in 1991.

3.7.2 The slow-down in urbanisation during 1981-91 as compared to 1971-81 (36.4 per cent growth as against 46.1 per cent) and the growing concentration of urban population in larger towns are other urban concerns, towards which the Ninth Plan strategies will be directed. The tasks are challenging, for it is mainly in the mega and metro cities that land is a major constraint for undertaking development work. A large part of civic amenities, particularly water supply, sanitation and sewerage, are managed with assets that have outlived their operational efficiency. The required massive upgradation and renovation of these assets, is constrained by high population density and concentrated commercial activities at the locations where these service assets are installed. The lack of comprehensive urban planning in the past to promote regular upgradation and renewal has resulted in a large backlog of development activities.

3.7.3 The key urban concern is the growing gap between demand and supply of basic services. While there has been a steady growth in the housing stock, infrastructure and services, the gaps between demand and supply have been rising, even in terms of conservative norms. It is now well-recognised that these gaps are unlikely to be bridged over the next 5 to 10 years. Many goals of housing, potable water and sanitation that were to be attained by 2001 AD, may require the target point fixed 10-15 years ago to be extended.

3.7.4 In the midst of growing urbanisation, India, nevertheless, continues to live in her villages. As many as 629 million people live in some 580,706 villages, which works out to an average of 1,083 per village. Rural population density is low at an average of 214 persons per sq.km, which brings out the rural development challenges in terms of provision of human settlements-related services of potable water, sanitation, and access to livelihood programmes. Increased per capita cost of the services, Operation and Maintenance (O & M) logistics and recovery of investment are priority concerns.

3.7.5 The rural hinterland has played a critical role in sustaining urbanisation. This is reflected in the indicators of sources of primary inputs, competitively priced labour for urban economic activities, primary funds as reflected in comparative urban and rural credit-deposit ratios and market for urban products. But the unending migration of the rural poor to urban areas may have a destabilising effect on urbanisation and its sustainability. Income and employment opportunities will have to rise in the rural areas, through both the farm and non-farm sectors and habitats and basic services have to be

improved so that with rural development and congenial habitats, rural areas emerge as sustainable centres of economic activities and human settlements.

3.7.6 The rural-urban continuum would be strengthened so that gaps between rural and urban lifestyles are reduced. Effective urban strategies and programmes cannot be developed in isolation of those in the rural areas. The Ninth Plan will take cognisance of this ground reality, particularly in respect of three critical components of human settlements development, namely, drinking water, sanitation and housing.

3.7.7 In this perspective, the major sectoral objectives of the Ninth Plan are:

- * Development of urban areas as economically efficient, socially equitable and environmentally sustainable entities;
- * Accelerated development of housing, particularly for the low income groups and other disadvantaged groups;
- * Development and upgradation of urban infrastructure services to meet the needs of a growing population;
- * Alleviation of urban poverty and unemployment;
- Promoting accessibility and affordability of the poor to housing and basic services;
- * Promoting efficient and affordable mass urban transportation systems in metropolitan cities;
- * Improvement of urban environment;
- * Promoting private sector participation in the provision of public infrastructure and of the community and NGOs in urban planning and management of specific components of urban services; and
- * Democratic decentralisation and strengthening of municipal governance.

Performance Review, Policies and Strategies

3.7.8 The total Plan outlay in the 46 years of planning has been Rs.8,580 crore on urban development, Rs.10,430 crore on urban housing, Rs.15,100 crore on urban water supply and sanitation, and Rs.19,300 crore on rural water supply and sanitation.

3.7.9 The performance review of the Plan programmes has brought out some of the operational problems. The activities were determined by the availability of funds, which is a common constraint in a resource-scarce economy. This resulted in inadequate coverage of the population and encouraged a top-down approach, with the plans being formulated at the national level on the basis of feedback from the States, with marginal inputs from the functionaries directly working at the grass-roots level. At times, ad-hoc interventions were made, driven often by political and administrative expediencies rather than economic considerations and the ground situation. This has resulted in multiplicity of programmes with varying components directed to the same target group and lack of convergence or proper coordination, sequencing and linkages among them. There has also been poor feedback of experiences from the field to provide the critical ingredients for a peoples-

Major sectoral objectives of the Ninth Plan :

- Development of urban areas as economically efficient, socially equitable and environmentally sustainable entities;
- Accelerated development of housing, particularly for the low income groups and other disadvantaged groups;
- Development and upgradation of urban infrastructure services to meet the needs of a growing population;
- Alleviation of urban poverty and unemployment;
- Promoting accessibility and affordability of the poor to housing and basic services;
- Promoting efficient and affordable mass urban transportation systems in metropolitan cities;
- Improvement of urban environment;
- Promoting private sector participation in the provision of public infrastructure and of the community and NGOs in urban planning and management of specific component of urban services; and
- Democratic decentralisation and strengthening of municipal governance.

centred and people-oriented planning. The policy framework under the Constitution (73rd and 74th Amendment) Act provides an opportunity to shift the approach in the Ninth Plan.

3.7.10 Some estimates are available on the magnitude of work ahead. In terms of financial indicators, the investment for urban housing has been estimated at Rs.526,170 crore and for rural housing Rs.172,930 crore between 1997 and 2021 for new housing, upgradation and extension, Rs.70,300 crore to Rs.307,500 crore for different types of urban drinking water systems with the investment being higher for surface than for ground water system. A large part, in some cases, more than one-half, will be the backlog of investment(1). In a shorter term perspective of 1997-2002, urban housing investment has been estimated at Rs.121,370 crore and for urban water supply at Rs. 26,300 crore and for rural water supply at Rs. 40,000 crore (2).

3.7.11 In terms of reach-out indicators, new housing stock required is about 9.0 million units in urban areas and 7.7 million units in rural areas during 1997-2002 and about 77.0 million and 63.0 million units in the longer term perspective, extending upto 2021. Housing upgradation has to cover about 7.5 million units and 20.0 million units in urban and rural areas, respectively, during the Ninth Plan period. As regards drinking water, the aim is to cover the total urban and rural population with existing norm and then take up qualitative and quantitative upgradation. Total conversion of dry latrines into low-cost wet latrines is the immediate task in urban areas.

Water Supply and Sanitation

3.7.12 Drinking water supply and sanitation facilities are very important and crucial for achieving goal of 'Health for All'. The Government is committed to provide drinking water to every settlement in the country within 5 years. The Government has also decided to go all out to achieve the goal of expansion and improvement of sanitation facility along with other social infrastructure.

1. Government of India (1996), Second United Nations Conference on Human Settlements (Habitat II), National Report, Ministry of Urban Affairs & Employment.

2. Planning Commission (1996), Reports of Ninth Plan Working Groups.

Performance Review

Drinking Water (Urban)

3.7.13 In the initial period of planning, from the First to the Fifth Plan, the outlay on urban drinking water was considered substantial with respect to the size of the urban population (17.3 to 19.9 per cent) but thereafter, the thrust in the Plan programme was diverted to rural water supply and sanitation, inspite of the rapidly increasing proportion of urban population which was 23.3 per cent at the time of the Sixth Plan and 25.7 per cent at the time of the Eighth Plan. The proportion of this sector's outlay to total public sector plan outlay marginally increased from

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1.28 per cent to 1.38 per cent between the First Plan (1951-56) and the Eighth Plan (1992-97). The likely expenditure in the Eighth Plan was about Rs. 7,000 crore. In terms of the Seventh Plan expenditure, the Eighth Plan expenditure was 274 per cent in nominal terms.

3.7.14 The task in the Eighth Plan was to increase the coverage of access to safe drinking water to about 94 per cent of the urban population from 84 per cent at the end of Seventh Plan and of urban sanitation services to 69 per cent from 48 per cent. While the full feedback on coverage is not available, it has been estimated that in terms of estimated 1997 population, the coverage of urban population is unlikely to increase from the level attained in the Seventh Plan. Adequate investment would be needed to meet the requirements of incremental population for drinking water and sanitation services.

3.7.15 The programme review has brought out the concentration of efforts on State capitals and other major cities and on augmentation and improvement, without any significant additional population coverage, resulting in the efforts being absorbed by population growth. The participation of financial institutions and the private sector was not significant, particularly due to the absence of cost recovery, appropriate tariff rate policies and lack of fiscal and monetary incentives.

3.7.16 In this perspective, a new programme was launched in the Eighth Plan for urban water supply, namely the Accelerated Urban Water Supply Programme (AUWSP), which was targetted to small towns (population less than 20,000, 1991 Census) as these towns had been excluded earlier,had encountered severe problems of water scarcity and the revenue base of the urban local bodies in these was weak. The AUWSP was launched in 1993-94 with a modest outlay of Rs.50 crore, with envisaged funding by Central and State Governments in the ratio of 50:50. Out of the 2,151 eligible towns (1991 Census), project reports were approved by the Central Ministry for 227 towns for an estimated cost of Rs. 218.50 crore and Rs. 68.62 crore was released to State Governments upto March 31, 1997. The progress was modest, partly because the scheme was launched only in March, 1994 and there were delays in the acquisition of land, change of water sources, procurement of materials and equipments, submission of timely physical and financial reports by States and release of funds by the State Governments to the implementing agencies. These teething problems would be resolved and the activities should go on full stream in the Ninth Plan

Drinking Water (Rural)

3.7.17 The Plan investment during the eight Plans for rural water supply as a proportion of public sector Plan, has gone up from 0.15 per cent to 2.47 per cent. The Eighth Plan outlay was Rs.10,055 crore and the target was to extend the coverage of water supply facilities from an estimated 78 per cent to 100 per cent, covering all the 3,000 spill-over "problem villages" of the 1985 list and 1.5 lakh "partially" covered villages including hamlets. To achieve this objective, schemes were implemented under the State Sector, Centrally Sponsored Accelerated Rural Water supply Programme (ARWSP), Sub-missions for tackling quality problem (QP) habitations suffering from excess fluoride, salinity, iron, arsenic, scarcity of sources, and requiring sustainability of the sources and the systems. The infrastructure and the support programmes like human resource development, education, information and communication, research and development, science and technology, management information system including computerisation of implementing departments and field formations in the States and monitoring and evaluation were taken up.

3.7.18 Subsequently, the State Governments undertook comprehensive surveys during 1991-94 for the Rajiv Gandhi National Drinking Water Mission, which provided the feedback that the tasks ahead were much more than envisaged at the beginning of the Eighth Plan. As on April 1, 1994, there were 1.41 lakh not-covered (NC) villages/habitations and 4.30 lakh partially covered (PC) villages/habitations, apart from 1.51 lakh villages/habitations suffering from acute water quality problems (QP). In addition, the Sundaresan Expert Committee constituted in May 1993 by the Central Department of Rural Development has evaluated the rural water supply programme with special reference to the Mini-Missions and Sub-Missions.

3.7.19 Recent provisional data indicate that the rural water supply programmes have covered 3.40 lakh villages/habitations during the Eighth Plan. The State feedback has further suggested that during the Eighth Plan, after the survey, 1.114 lakh NC, 1.524 lakh PC and 0.11 lakh QP villages/habitations are expected to have been covered leaving a balance of 0.296 lakh NC, 2.776 lakh PC and 1.40 lakh QP villages/habitations as on 1-4-1997. However, keeping in view the field realities, Rajiv Gandhi National Drinking Water Mission in consultation with the State Govts, further revised/updated the number of NC and PC villages/habitations and thus the task for the Ninth Plan would be to cover 0.88 lakh NC, 3.91 lakh PC and 1.40 lakh QP villages/habitations. In terms of population, about 86.74 per cent of the rural population, as per 1991 Census, is expected to have been provided with an access to safe drinking water. The Eighth Plan review has also brought out the short life span of hand pumps, say 5-6 years due to variety of reasons including the general depletion of the ground water table. The Constitution (73rd Amendment) Act, an Eighth Plan initiative, has provided an institutional mechanism for effective decentralisation of activities and the drinking water and sanitation schemes are good candidates for these, especially because community participatory efforts have to play a key role.

3.7.20 There is a need to bring about organisational reforms in the implementation machinery in the Centre and the States to equip them to work effectively in a Mission mode with guidance from the Rajiv Gandhi National Drinking Water Mission Authority and its empowered committees at the Centre and similar Authorities, empowered committees and District Committees in the States to ensure the achievement of goals and inter-sectoral integration and co-ordination.

3.7.21 The Eighth Plan review brings out the need to strengthen the contents of the ongoing Centrally Sponsored Schemes of ARWSP, especially in the light of the lessons learnt, suggestions of the Sundaresan Expert Committee and the feedback from the country-wide evaluation study conducted in 1996 by the Programme Evaluation Organisation (PEO) as also the Comprehensive State Survey on rural water supply. The Ninth Plan strategy would, in this context, give priority to totally uncovered and poorly covered settlements (where the supply is upto 10 lpcd) as well as the severely affected quality problem habitations and then to other habitations. There after progressively raise the present norm of 40 lpcd to 55 lpcd, reduce the distance norm from 1.6 km. to 0.5 km. in plain areas and 100 mtr elevation difference in hilly areas as recommended by the CMs' Conference, held in July 1996 on Basic Minimum Services. Furthermore, installation of piped water supply system should be discouraged, as it has been found to be less dependable by the PEO in their recent country-wide survey. The villagers should be motivated to take over the routine O&M activities and also contribute resources for repair and maintenance.

3.7.22 In rural areas, where piped water scheme is operational or is proposed to be developed, the Maharashtra model may be adopted, which is structured on the basis of strong community participation, through Village Panchayat Committees and Village Water Committees, whose members are directly involved during the construction of different components of the scheme, including in assisting the Maharashtra Water Supply and Sewerage Board in deciding the location of the village works, such as service reservoirs, standposts, etc. and ensuring that the standposts in their jurisdiction are maintained in good running conditions and are properly drained. The Village Water Committees would have at least 50 per cent women members and adequate representation for SC/ST and these local committees are entrusted with the responsibility for house connection. Before these connections are provided, the owner has to ensure that adequate arrangements are made for disposal of sullage water. The village committees are also responsible for ensuring hygienic conditions of all water sources in the villages.

3.7.23 As regards O & M of handpumps, community-based models have been developed in a number of States, particularly in Betul district of Madhya Pradesh, Banda and Barabanki districts of Uttar Pradesh and Midnapore district of West Bengal. The Midnapore model has been recognised as a good practice and is being emulated and adopted by other States. In this model, a Water Committee is established in each villlage/habitation, two women from the community are trained as caretakers, the beneficiaries raise Rs. 500 per handpump as the initial fund for maintenance and each family contributes 50 paise per month towards maintenance. This has resulted in an optimum level of functional handpumps on a wholly self-sustaining basis with the active participation of the community and the local NGOs.

3.7.24 In this perspective, the Ninth Plan envisages 100 per cent coverage of all habitations with safe water, together with the installation of a quality monitoring and surveillance system all over the country, evolving cost-effective and socially acceptable O&M strategies, re-orienting the structure and functioning of rural water supply planning and implementing agencies and taking all measures to ensure sustainability of drinking water sources. Tackling the problems of drying of sources, providing a role for the beneficiaries and Panchayati Raj Institutions (PRIs) in planning and implementation of the water supply facility are other priority tasks. In view of the resource constraints, it would be necessary to restrict the role of external agencies to priority areas.

Urban Sanitation

3.7.25 The Centrally Sponsored Scheme of Urban Low-Cost Sanitation for Liberation of Scavengers was an important Eighth Plan scheme for urban sanitation. It was first operated through the Ministry of Home Affairs and subsequently implemented by the Ministry of Welfare. It is being operated through the Ministry of Urban Affairs and Employment (earlier Ministry of Urban Development) since 1989-90. The Eighth Plan provision was Rs. 150 crore in the Central Plan, which was only about 25 percent of the required assistance to meet the objective of conversion of all the existing dry latrines in urban areas of the country numbering 50 lakh units into low-cost pour-flush sanitary latrines and 100 per cent liberation of scavengers on "whole town" coverage basis.

3.7.26 As on March 31, 1997, 760 schemes were sanctioned in 1,155 towns with a total project cost of Rs.1,062.36 crore, towards which a loan of Rs. 477.09 crore and subsidy of Rs. 363.31 crore was sanctioned. The loan released was only 30.16 per cent (Rs. 143.87 crore) and the subsidy released was 41.23 per cent (Rs. 155.50 crore). The projects were sanctioned to construct 14.52 lakh new units and convert 19.25 lakh dry latrine units into low-cost pour-flush latrines for the individual households and 3,463 community latrines. In terms of actual work done, 6.95 lakh units were completed upto Eighth Plan period out of 33.77 lakh units sanctioned (20.6 per cent). It is expected that at 1991-92 prices, the expenditure during the Eighth Plan was 45.3 per cent of the Plan outlay.

3.7.27 The impact of the programme on the physical and financial front has not been impressive. This is due to a variety of reasons, particularly insufficient schemes provided by the State Governments, delays in preparing documents and papers for sanction of loan and subsidy (separately for each beneficiary), slow release of subsidy due to inadequate physical progress, inappropriate technology, lack of awareness and reluctance of State Governments to give guarantee. An evaluation of the programme in three States, sponsored by the Central Ministry of Urban Affairs and Employment had brought out evidence to show that the objectives of the scheme were not strictly adhered to, the recommended technology was often unsuitable, relatively better-off families took over a substantial number of the pour-flush latrines and funds were inadequate or not available for the superstructure.

3.7.28 Another Centrally Sponsored Scheme, the Ganga Action Plan (GAP), implemented by the Central Ministry of Environment and Forest, has contributed to the improvement of the sanitation facilities in 25 Class I cities along the river Ganga in the States of Uttar Pradesh, Bihar and West Bengal. Interception, diversion and treatment of sewage works and low-cost sanitation units were set up in GAP -I and 792 mld of sewage has been intercepted and diverted and 596 mld of sewage treatment facilities have been installed.

Rural Sanitation

3.7.29 The Eighth Plan outlay for rural sanitation was Rs. 674 crore to cover an additional 2-3 per cent of the rural population, as per the 1991 Census. Recent data show that population coverage by sanitary latrines has increased from 11 percent to about 16 per cent during the Eighth Plan. This is inclusive of the efforts of IAY, JRY, UNICEF, CAPART and private initiatives, besides the Centrally Sponsored Rural Sanitation Programme (CRSP) and its State counterpart.

3.7.30 As per the existing policy, subsidy under the rural sanitation programme is given to people below the poverty line for construction of individual household latrines and conversion of dry latrines into sanitary latrines. Subsidy is extended to the Panchayats for exclusive sanitation complexes for women, in areas, where adequate space is not available for individual household latrines and other sanitation facilities in the villages/habitations. Interest-free loan is also provided to entrepreneurs/Panchayats to set up sanitary marts and link them to production centres for facilitating easy availability of the materials required for the sanitation programmes. Sensitisation for other sanitation facilities covers drains, soakage/ garbage pits and intensive health awareness through IEC. These activities should be further strengthened and modified, where required.

Ninth Plan Priorities and Strategies

3.7.31 While the provision of drinking water facilities in urban areas in the country has improved over the years, the provision of sewerage and drainage facilities has not received adequate attention. Ideally the water supply and liquid waste management schemes should be integrated. The absence of this integrated approach has resulted in the degradation of the environment, with serious health impact from water-borne and vector-borne infections. In some areas, industrial contamination with heavy metals also leads to severe health hazards. The Ninth Plan Sub-group of the Planning Commission on Environment and Health had concluded that the unsatisfactory progress in supply of safe drinking water and sanitary disposal of solid and liquid waste has contributed to the continued high morbidity from water-borne and vector-borne diseases. The Expert Group on Public Health and the Working Group on Health Care Delivery in Urban and Rural Areas recommended that water quality monitoring and surveillance as well as the projects for urban waste management should be taken up on a priority basis to achieve substantial reduction in morbidity due to water and vector-borne diseases.

Drinking Water (Urban)

3.7.32 The urban drinking water supply strategies in the Ninth Plan would address the priority concerns of universal coverage, adequacy in terms of minimum per capita consumption norms, quality, distance from source as well as regularity of supply, bringing in its wake the policy and operational issues of drying and inaccessible sources of water, recycling of waste water and sewage for non-domestic use, water harvesting,

The urban drinking water supply strategies in the Ninth Plan would address the priority concerns of universal coverage, adequacy in terms of minimum per capita consumption norms, quality, distance from source as well as regularity of supply, bringing in its wake the policy and operational issues of drying and inaccessible sources of water, recycling of waste water and sewage for non-domestic use, water harvesting, among others. The strategies to promote and strengthen decentralisation of production and distribution systems, privatisation and participation of the community in management and maintenance are expected to not only induct higher efficiency levels and effective reach out but also contain line leakages and wastages. Over-exploitation of ground water must be avoided to maintain quality and to control water pumping cost. Appropriate legislation and its effective implementation should form an integral part of the strategy. The modified model Bill of the Central Ministry of Water Resources on ground water exploitation may be considered by State Governments for adoption.

among others. The strategies to promote and strengthen decentralisation of production and distribution systems, privatisation and participation of the community in management and maintenance are expected to not only induct higher efficiency levels and effective reach out but also contain line leakages and wastages. Special attention will be given to strengthen the on going Centrally Sponsored Accelerated Urban Water Supply programme (AUWSP) to saturate the small towns with

population less than 20,000 during the Plan period.

3.7.33 The State and UT Governments should prepare long-term Master Basin River Plans, following the guidelines issued by the Central Ministry of Water Resources, apart from making proper estimates of water needs for drinking, cooking and non-consumption domestic uses like bathing, washing, toilets, gardening, etc. City water management system should have atleast a 20-25 year development perspective. Provision should be made to recycle waste water, rain water harvesting, re-use of sewage after appropriate treatment for flushing of sewers and toilets, air conditioning, etc. Over-exploitation of ground water must be avoided to maintain quality and to control water pumping cost. Appropriate legislation and its effective implementation should form an integral part of the strategy. The modified model Bill of the Central Ministry of Water Resources on ground water exploitation may be considered by State Governments for adoption.

3.7.34 Financing of drinking water supply programmes is a crucial issue in urban areas in view of the massive investments required. These are beyond the scope of the Plan, but nevertheless, these would have to come into the sector to meet the goals of the Plan and maintain the sustainability of the human settlements. Further, drinking water and sanitation activities will have to be taken up as an integrated programme, because in the absence of such a linkage, sanitation activities tend to be overlooked. Innovative financial strategies, including alternative leasing instruments and fiscal intervention are called for. Plan funds would be used not only for direct intervention but also as a leverage instrument, a strategy already introduced during the Eighth Plan in case of some urban infrastructure projects. This strategy has to be increasingly adopted to activate and sustain the funds flow from outside the government sector. Equally important is recovery of full cost. New strategies would be gradually developed, in terms of recovery of O&M cost in the first instance and total capital cost later, though subsidy in pricing will continue, more sparingly than in the past.

3.7.35 The delivery and management system has to be strengthened. In the light of the Constitution (74th Amendment) Act, while State agencies may continue to plan and implement capital works, the responsibility of distribution may be progressively decentralised to local bodies, and where feasible, to the private sector, within the policy guidelines of the State Governments. While this process will be initiated with distribution works, in due course capital works may be decentralised. Concerted efforts will be made to enhance the capacity of the municipalities to bridge the gap between their resources and commitments. At the same time, city agencies may continue

in mega and metro cities, as long as they operate on sustainable basis.

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3.7.36 In view of the massive investment required, it is obviously not possible for either the State Governments or the Central Government to go forward with this magnitude of funds. Institutional sources/externally aided projects,

private sources and community sources would all have to come forward in case we have to provide every body with safe potable water within the stipulated time frame. Alternative strategies, new technologies, cheaper methodologies as also mechanisms like rain water harvesting etc would have to go in a big way to provide alternatives to the present method of handling the work relating to the sector. It is expected that by deferment of some of the less important activities, use of low cost technology, people and private sector participation and better management, the objective of 100% population coverage in Urban area with safe drinking water supply could be achieved with an investment of about Rs.20750 crore.

Drinking Water (Rural)

3.7.37 The Ninth Plan strategies for rural water supply would seek to attain universal coverage of drinking water through different programmes and strategies in no source villages/habitations, partially covered villages/habitations and water quality problem villages/habitations. A habitation-driven approach will be adopted in preference to a purely village-centred approach. The highest priority is to be given to all the remaining "no-source" and poorly-served "partially covered" (less than 10 lpcd) villages/habitations as well as those facing acute water quality problems. Thereafter, priority will be given to other partially covered (11-40 lpcd) and water quality problem villages/habitations. In each category, completion of the on-going schemes will be given priority before starting new schemes. The liberalised norms for service level of 55 lpcd and one HP/PSP for every 150 persons as also distance norm of 0.5 km may be adopted only after having covered all the villages/habitations with the existing norms of 40 lpcd, 250 persons per HP/PSP and distance norm of 1.6 km. To cater to the drinking water requirements of cattle in the DDP areas, an additional 30 lpcd of water may be provided.

3.7.38 Water is perceived in the rural areas as a social good, to be provided free by the government rather than as a scarce resource that should be managed as an economic asset. Supply of water to consumers should normally be based on the principle of effective demand which should broadly correspond to the standard of service that the users are willing to maintain, operate and finance. There should be a capital cost recovery of 10 per cent from the users in all the new drinking water supply projects aimed at increasing the service level beyond 40 lpcd.

3.7.39 The present practice is that the water supply projects are designed and executed by the implementing departments and passed on to the end-users. The experience has brought out the unwillingness of the Panchayats to take on the responsibility for operating and maintaining them. The State Governments do not have an effective machinery at the village level to maintain the assets. A radical change in the management system is required. Rather than being supply-driven, the system should be demand-driven, and should take into account user preferences, private connections and related issues. People should be aware of the technologies and given the option to select the technology, as well as meet the expenditure on the project. People's participation at all stages of the project implementation is likely to help get over the problems of sub-standard materials, poor workmanship and inadequate maintenance. These problems should be addressed to in the Ninth Plan.

3.7.40 As an experiment, it may be advisable, in some places, to transfer the funds to the user communities or the panchayats, who may be induced to buy pipes and install handpumps on their own. The Panchayati Raj Institutions and the local administration should be entrusted with the responsibility for the O & M of the installed systems. The PRIs should be given the option to levy and collect user charges for drinking water and

sanitation services, so that at least the O & M, if not the further development works too, may become a self-financing activity.

The rapid development in ground water –based irrigation in many States has caused ground water depletion, resulting in a reduction in the life of the drinking water supply sources. A number of steps need to be taken up to manage ground water in a more scientific manner especially in dark and grey zones and the States should bring in a legislation to control over-exploitation of ground water on the lines of the model Bill brought out by the Central Ministry of Water resources. User groups should be formed, on the pattern of the Joint Forest Management Group, to take up the monitoring of ground water and ensuring that it is managed as a common property resource rather than allowing it to be over-exploited as an open access resource.

3.7.41 The rapid development in ground water-based irrigation in many States has caused ground water depletion, resulting in a reduction in the life of the drinking water supply sources. The highly subsidised electricity tariff for irrigation has led to an indiscriminate and disproportionate level of ground water extraction. Ground water depletion has aggravated water quality problems due to excess fluoride, arsenic and brackishness in certain areas forcing the engineering departments to abandon the low-cost handpump-

based systems and to opt for expensive and complicated piped water supply systems. A number of steps need to be taken up to manage ground water in a more scientific manner, especially in dark and grey zones and the States should bring in a legislation to control over-exploitation of ground water on the lines of the model Bill brought out by the Central Ministry of Water Resources. User groups should be formed, on the pattern of the Joint Forest Management Group, to take up the monitoring of ground water and ensuring that it is managed as a common property resource rather than allowing it to be over-exploited as an open access resource.

3.7.42 As in the urban areas, integrated water supply and sanitation programmes will be increasingly implemented during the Plan in the rural areas also. The implementing machinery in the Centre and the States will require organisational restructuring to work in a Mission mode with guidance from the Rajiv Gandhi National Drinking Water Mission Authority and its empowered committees. Micro water-shed based master plans should be prepared to ensure the sustainability of water sources by taking care of demand and supply. The inputs of professional institutions, NGOs and Community Based Organisations (CBOs) should be inducted into planning, development and management. At the same time, integrated water use and conservation methods should be adopted.

3.7.43 Private sector efforts in construction and maintenance of rural water supply and environmental sanitation should be encouraged and mobilised to the maximum extent. Financing of water supply activities in rural areas might not appear to be as attractive to the private sector as those in urban areas. Nevertheless, Sri Satya Sai Trust of Puttaparthi has set an unparalleled example of private initiative in implementing on their own, without any State's budgetary support, a massive water supply project, with an expenditure of Rs. 250 crore, to benefit about 730 scarcity and fluoride /salinity-affected villages and a few towns in Anantpur district of Andhra Pradesh in a time frame of about 18 months. This path-breaking effort should encourage business groups, trusts and foundations. Also full cost recovery might not be a realistic approach during the Plan period. Alternative financial strategies will be evolved as the need to ensure adequate supply, in terms of quantitative and qualitative parameters, is a national commitment.

3.7.44 In view of huge requirement of funds, we have to think of other methodologies for raising other resources and alternative strategies to effect economy, such as adoption of low cost technological solutions using local materials to the extent possible and deferment of programme for quality affected habitation, which are not of severe nature and adoption of liberal norms. Some economy could also be effected by taking into account the privately owned sources which yield sufficient water and are accessible to the common people, involvement of community in O&M and some contribution for capital works, ensuring better sustainability to avoid early failure of HPs etc (presently 15-20% HPs go defunct every year), involvement of NGOs and private sector participation to the extent possible. With these measures and the available outlays, it may be possible to achieve the set objective of providing safe drinking water facility to every settlement in rural areas within 5 years.

Urban Sanitation

3.7.45 In spite of the substantial efforts made to eliminate manual scavenging and bring in total conversion of dry latrines into low-cost pour-flush latrines, with a target of 100 per cent elimination of manual scavenging during the Eighth Plan, the problem remains a challenge to planners on the eve of the Ninth Plan. Consistent with the goal of "Health for All", efforts will be made to provide a reasonable level of sanitation to a larger population in urban areas by rapid expansion and improvement of sanitation facility during the Plan, with the specific objective of elimination of manual handling of night-soil through conversion of all dry latrines into low cost sanitary latrines. The goal of 100 percent conversion of dry latrines, elimination of manual scavenging and total rehabilitation of the liberated scavengers will be a permanent tribute to the Father of the Nation. To ensure this, municipal byelaws would need to be modified to ban construction of dry latrines and States should legislate, on the lines of the Central legislation, to prohibit employment of manual scavengers beyond a specified date in the Ninth Plan.

3.7.46 Low-cost on-site sanitation will be encouraged in unsewered parts of cities, small and medium towns and other locations where this strategy might be feasible. In the larger towns and cities and congested locations, including important tourist places and centres of pilgrimage, it would be desirable to adopt the conventional sewerage and treatment system.

3.7.47 The incidence of plague in some parts of the country stimulated interest in solid waste management. Technological innovations to improve the re-usability of the recycled wastes will contribute to the viability of projects and should be encouraged. This strategy would promote the segregation of different kinds of wastes at the collection point to reduce the cost of disposal. Toxic wastes should be collected and disposed of separately. The "polluter pays" principle should be applied and the proceeds may be used to finance waste disposal programmes. Solid waste disposal can be privatised also. Priority will be also given to the implementation of liquid and solid waste management programmes in the State capital towns.

3.7.48 As far as sanitation is concerned, greater community participation is the most important criterion without which other activities would fail. Drainage, sewerage, treatment of wastes/effluents, sanitary land fills, location and installation of incinerators, low cost sanitation etc are areas of concern, but there can be no uniform solution for the whole country and the State Governments would naturally be expected to play their role in a manner suitable to the needs of towns/cities where the sanitation coverage is far below the required levels. In view of the over all resource-constraint and other competing demands, it may perhaps not be possible to make a very huge investment in the next 5 years and therefore we

may have to restrict the target in respect of sanitation to about 60%, which may require an investment of around Rs.5500 crore. Besides sectoral plan outlays under State/UT Plans and Central Plan, a significant amount of Central assistance will also be available under the Central Plan scheme of National river conservation plan. A substantial amount is also expected to be contributed through private participation and institutional finance outside Plan.

Rural Sanitation

3.7.49 While the elimination of manual scavenging is a mandatory requirement in urban areas, in the rural areas, a demand-driven low-cost sanitation approach would be increasingly adopted in preference to a supply-driven approach. A network of production centres and rural sanitary marts would be integral components of the new

While the elimination of manual scavenging is a mandatory requirement in urban areas, in the rural areas, a demand-driven low cost sanitation approach would be increasingly adopted in preference to a supply –driven approach. A network of production centres and rural sanitary marts would be integral components of the new approach to reach out self sustainable and people centred sanitation programmes.

approach to reach out self-sustainable and people-centred sanitation programmes. It is essential to adopt a "package" approach to rural sanitation, integrating it with rural drinking water programme and providing sufficient motivation inputs for its effective implementation. This is required in view of the late start of the rural sanitation programme.

3.7.50 In this perspective, rural sanitation programmes should be implemented by PRIs and NGOs, who should be directly involved in creation of demand, IEC, training, implementation, including setting of production centres and sanitary marts. Each State should have a nodal State NGO who would coordinate the NGO activities at the district level. Women should be given a special role at all stages and assisted through credit, skill inputs and employment. Equally important is to mobilise the children, especially through schools and anganwadis so that sanitation and hygiene practices are promoted at an early age and the demonstration effect filters within the rural society.

3.7.51 The programme should improve the technology content and also include compost toilet and latrines-based bio-mass activities. The Midnapore programme has been implemented with little or no subsidy or Government intervention, through the efforts of Ramakrishna Mission, an NGO. The demonstrated sustainability of this people-driven approach has stimulated its subsequent replication across West Bengal.

3.7.52 It is therefore proposed to restructure the ongoing exclusively subsidy-driven sanitation programme using valuable field experience on the low cost sanitation with extensive advocacy and people's participation. A number of interesting campaigns have conclusively demonstrated the weaknesses of the subsidy-oriented, top-down sanitation programme and have extensively and successfully co-opted NGOs, Banks, Panchayats to achieve very impressive coverage levels (e.g. Midnapur in West Bengal, periyar in Tamil Nadu, Mysore in Karnataka, Allahabad in U.P.). A policy note in this regard, under preparation in the Ministry, envisages the use of the CRSP funds as "Seed Money" to propagate low-cost rural sanitation, based on felt-needs, a greater private sector involvement and using the "vertical upgradation" concept. A campaign approach would be developed on the lines of the literacy/immunisation and the subsidies structure reoriented to specifically target the poorest strata. With the above approach and the available outlays, it may be possible to achieve coverage of about 35% rural population by the end of the Ninth Plan.

Action Points for Consideration

3.7.53 For the attainment of the set objectives/targets within the Ninth Plan, the following action points are called for :

(A) Urban Water Supply and Sanitation

- (i) Larger external assistance (higher priority to Urban Water Supply and Sanitation) be provided. At present it is estimated to be around Rs.5250 crore for the 9th Plan.
- (ii) The Government of India will play a role of facilitator in policy framework, institutional capacity building and financial reforms so as to enable the State Governments and urban Local Bodies to achieve the desired objective within the prescribed time frame. In addition to this, the Government of India will also provide technical guidance in order to create proper environment for the concerned agencies to plan and formulate water supply and sanitation schemes.
- (iii) As recommended by the Working Group, an 'Urban Development Fund' may be created on the lines of the Tamil Nadu model which could be utilised for creating infrastructure facilities in urban areas and such a fund should act as a catalyst to finance those schemes which are viable and with a little help from this kind of fund local bodies can become eligible to obtain loans from commercial institutions like IDBI, ICICI, IF&LS and from the open market. The assistance from the fund can be provided to small and medium towns in the form of soft loans and grants so as to enable them to take further loans from the open market as most of these small towns otherwise might not be in a position to obtain loans from financial institutions, on their own strength.
- (iv) Since it is difficult to meet the huge resource gap out of State and Central Plan funds, greater emphasis would need to be given for institutional financing through HUDCO, LIC and other institutions. Widening the equity base of the financing institutions like HUDCO for raising the market borrowings could be encouraged.
- (v) Some financial support to the ULBs to meet the expenditure towards interest differential on the loan taken from the financing institutions would encourage the ULBs to come forward to take loan even at commercial rate of interest.
- (vi) Rebate on excise and customs duties for purchase of leak detection equipment and other such machinery needed for development and improvement of infrastructure facilities could be of great assistance to the State Governments/ULBs.
- (vii) As a follow up of 74th Constitution Amendment Act, most of the State Governments are likely to entrust the responsibility of operation and maintenance of urban water supply and sanitation systems to local bodies and therefore it would be necessary for the State Finance Commission to explicitly

indicate the norms and other financial implications make a realistic assessment of requirement of funds and also to make suitable recommendations for provision of finances by different categories of towns.

- (viii) Private Sector participation in construction and maintenance of water supply and sanitation schemes, to the extent possible be encouraged/mobilised..
- (ix) Involvement of NGOs and community be encouraged by the State Governments.
- (x) Adoption of improved low cost technology be encouraged to save cost of construction and maintenance.
- (xi) The water tariff be raised substantially to meet at least the full cost of operation and maintenance in smaller towns and to raise some surplus also in bigger towns/cities particularly those having industrial base. This will not only make the running cost self-financing, but also enable the State Governments/ULBs to raise institutional financing.
- (xii) Improved metering systems, particularly in Class-I Cities, would not only help in actual quantification of the water uses but also the proper billing of the water supply, which would also improve the revenue collection.
- (xiii) Each organisation at the State/ULBs level should be encouraged to have its own training plan and adequate infrastructure facilities commensurate with the work plan. Special emphasis should be given to the need for skill upgradation for the personnel responsible for O&M. The Human Resource Development Programme must endeavour to enhance user sensitivity on the part of O&M staff and increase public awareness which will promote NGOs and consumer participation with respect to protection of assets and improved service delivery.
- (xiv) The quick and amicable solutions between States through Central intervention for sharing of water resources would avoid delay in implementation of the water supply projects and save the increased capital investment.
- (xv) There is a need for development of National Data Bank and creation of Monitoring Cells at State and Central level for rigorous monitoring of the urban water supply and sanitation system. This would help in detection of bottlenecks and suggest mid-course corrections/reorientation of policies at Central/State level for developmental activities of the sector.
- (xvi) Over exploitation of ground water must be avoided to control deterioration of its quality and reduced cost of pumping. Regulatory mechanism for ground-water exploitation be brought in by the State Governments, particularly in all such urban areas which are facing acute shortage of drinking water throughout the year, for better sustainability of the sources of water.
- (xvii) Conservation of water by better management to reduce leakages and pilferage and re-cycling of treated waste water for non-domestic uses be encouraged by

giving incentives. This will not only save precious fresh water but also reduces load on waste water/sewage treatment units.

- (xviii) Rain water harvesting structures be encouraged in a big way to increase availability of water and also increase ground-water recharge for better sustainability of ground water sources.

(B) Rural Water Supply and Sanitation

- (i) Larger external assistance (higher priority to rural water supply and sanitation) need to be provided to augment State resources.
- (ii) Transfer the responsibility of at least operation and maintenance of Rural Water Supply to the PRIs in line with 73rd C.A.A.
- (iii) Adoption of improved low cost technology be encouraged to save cost of construction and maintenance.
- (iv) Free supply of water to people in rural areas should be discouraged and some user charges collected through community participation.
- (v) Private Sector participation in construction and maintenance of water supply and sanitation schemes to the extent possible be encouraged/mobilised.
- (vi) Involvement of NGOs and community be encouraged by the State Governments.
- (vii) The rapid development in ground water based irrigation in many States has caused ground water depletion. Highly subsidised irrigation electricity tariff have led to an indiscriminate and disproportionate level of ground water extraction. To regulate and develop ground water resources in a scientific manner, a Model Bill was framed by the Water Resources Ministry in 1970 and was circulated to the States. The Bill has again been recently revised and circulated to States in 1996. Except for Maharashtra, the implementation of the provision of the legislation was not satisfactory. State Ministers' Conference held in August, 1997 resolved against any strong legal measures of controlling ground water discharge and cropping pattern. Instead, they preferred to rely more on improving recharge and arresting run off through water shed programmes. Rain Water Harvesting Structure, therefore, be encouraged in a big way to increase availability of water and also increase ground water recharge for better sustainability of water supply schemes.
- (viii) Water supply links with watershed development programmes should be made more stronger for better sustainability of drinking water sources.

Housing

Performance Review

3.7.54 The dimensions and problems of housing need to be viewed in the overall environment of human settlements. Housing has been primarily a self-help activity. The housing policies and programmes, while accepting that housing is essentially a private

activity, has to recognise that State intervention is necessary to meet the housing requirements of the vulnerable sections and to create an enabling environment in accomplishing the goals of "shelter for all" in a self-sustainable basis.

3.7.55 An important development in the Eighth Plan was the bringing about of a consensus in the approach to human settlements development. The National Housing Policy (NHP) provided the basic approach, the economic reforms stimulated the process and the preparatory process for the Habitat II Conference brought together the key actors through the National Steering Committee, Key Groups of human settlements managers, NGOs and CBOs, private sector and the National Human Settlement Forum, which crystallised and endorsed in the National Report.

3.7.56 The Eighth Plan outlay for urban housing was Rs.3,581.67 crore in the State Sector and Rs.1,341.35 crore in the Central Sector (Rs.860 crore as IEBR and Rs.481.35 crore budgetary support, inclusive of equity support). The expenditure under the Central Sector was 96 per cent and in the State sector, 112 per cent. However, there was significant inter-State variations in the funds utilisation rate. In terms of the total activities and investment requirement in the housing sector, the Plan outlay was modest.

3.7.57 The Eighth Plan target was 7.80 million new housing stock, including 6.29 million units in Economically Weaker Sections (EWS) and Low Income Group (LIG) categories. The estimated investment requirement was Rs. 5,779 crore, at 1989-90 prices. Metropolitan cities were estimated to account for as much as 2.75 million units at an investment of Rs. 22,770 crore. The urban upgradation activity was estimated at 1.75 million units at an investment of Rs. 1130 crore. Housing for the totally houseless population, urban and rural, would require an investment of Rs. 610 crore. Housing has been, therefore, largely a people's activity, but constraints of finance, land, other inputs and the absence of a stimulating environment has pushed the urban housing solutions beyond the reach of the majority of the people. Recent Habitat II housing and urban indicators for mega cities and secondary towns show that the cost of a median house in terms of the annual household income goes up sharply with the city size: 13 years income in Mumbai, 12 years in Delhi, 11 years in Bangalore and 7 years in Chennai, and it goes down to 3 to 4 years in secondary towns. This is the situation in the formal housing market, but a similar trend is seen in informal housing with 2-3 years income in mega cities and less than one year in the secondary towns. The comparative variations in housing costs in the formal and informal housing sectors and the composition of the population in the latter also bring out a shift from formal to informal housing as costs go up. Rental housing indicator also shows market distortions as reflected in high rental to income ratio, 20-25 percent in secondary towns and 30-50 percent in the mega cities.¹

3.7.58 In this perspective, public housing thrust is, most appropriately, directed towards social housing, to reach out housing solutions to the priority groups. An equally important activity is to provide a policy framework and a legislative, fiscal and financial system that would put into effect the enabling role of the government in stimulating, supporting and promoting other actors to play direct roles in the housing delivery system. These two activities have been the pillars of the Eighth Plan approach and would continue in the Ninth Plan.

¹ Habitat II National Report that 50 per cent of the units constructed through the cooperatives are in the LIG category.

3.7.59 It has been estimated that during the Eighth Plan., funds flow from the formal sector was about Rs.25,000 crore, inclusive of Central and State Governments, Life Insurance Corporation (LIC), General Insurance Corporation (GIC), National Housing Bank (NHB), Housing and Urban Development Corporation (HUDCO), Provident Fund, commercial banks, housing finance institutions and cooperative apex federations. The State level apex cooperative housing federations had disbursed Rs. 884 crore as loan to primary

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housing cooperatives during the first three years of the Eighth Plan and this enabled the construction of 2.95 lakh units.

3.7.60 The net flow to individuals was about 50 per cent of the total funds flow from the formal sector. The estimation of output of housing stock and serviced sites from the formal sector investment is difficult

because the data have to be compiled from different Central and State agencies. There is an element of duplication in the data of financial institutions and housing agencies. While data on individual loans and other resources mobilised, especially for upgraded units and construction on serviced plots are often not collected, the physical achievements have not been monitored closely with reference to the Plan outlays for new housing stock and upgraded units. The only systematic data collection is undertaken for the 20 point programme in respect of EWS and LIG housing units. Their output in the first four years of the Eighth Plan was 4.68 lakh EWS units and 1.87 lakh LIG units.

3.7.61 It is broadly estimated that the housing stock provided by public agencies, cooperatives and private agencies, with the help of institutional finance, budget outlays and internal resources, may be of the order of 7 lakh units of EWS housing and an equal number of slum housing units are estimated to have been upgraded under the Nehru Rozgar Yojana (NRY). The LIG incremental stock may be 6 to 7 lakh units, on the assumption. The output of units for other higher categories may not exceed 5 lakh. Thus, as against the projected physical housing output of 30 lakh units in the urban areas during the Eighth Plan period, the contribution of the formal sector may not exceed 20 lakh units.

3.7.62 In this development perspective during the Eighth Plan, the tasks ahead for the Ninth Plan have to be examined. Several estimates are available of the present housing shortage and the projected shortage at a fairly disaggregated level. The National Buildings Organisation (NBO) has estimated the 1991 shortage at 8.23 million, up from 7.0 million in 1981, but expects the absolute shortage to decline progressively to 7.57 million units in 1997 and 6.64 million 2001. However, other estimates indicate that the shortage will increase to 9.4 million units in 2001 (Habitat II estimates..)

3.7.63 A major initiative was taken in the Sixth Plan, when the public sector was entrusted with a promotional role in housing in general and restricting its direct operations to housing for the urban poor and provision of house sites and construction assistance for rural landless labourers. Development activities were diversified in the Seventh Plan by providing for setting up an institutional financial system for housing and urban infrastructure and thrust was given to slum upgradation in situ., development, in preference to relocation and provision of basic services for the poor. Work on the National Housing Policy (NHP) was initiated in the mid-eighties, together with preparatory work to set

up a National Housing Bank and the process gathered momentum during the International Year of Shelter for the Homeless (IYSH), 1987.

3.7.64 Social Housing Schemes are implemented in the State Sector with State Plan provision and loan assistance from HUDCO and other financial institutions. These include Housing Schemes for EWS; LIG; MIG/HIG; and Rental Housing Scheme for State Government Employees. HUDCO provides upto 15 per cent of its resources for EWS housing and NHB refines the State cooperatives and others involved in this activity. The income, cost and loan ceilings were revised in 1992 and are again under review, keeping in view the cost escalations and changes in the incomes of the target groups.

3.7.65 In the case of the EWS, for example, the income ceiling was raised from Rs. 700 in the Seventh Plan to Rs. 1250 in the Eighth Plan and the loan component to Rs. 19,500 for construction and Rs. 9,500 for repairs. The emphasis in the development strategy for the EWS is on sites and services and self-construction. The LIG housing scheme is primarily a loan scheme and is executed by the State Governments through Housing Boards and Housing Departments, and the budget provision is supplemented by institutional finance. The income eligibility level, which was Rs.701-1500 in the Seventh Plan, was raised to Rs.1251-2650 in the Eighth Plan. HUDCO supplements the efforts of State Governments/UT Administrations and its loan component for LIG category housing is Rs.55,000 for construction and Rs.37,500 for repairs/additions. There is a need to further revise the ceilings and norms, which would be taken up in the Ninth Plan.

3.7.66 A national network of Nirmithi Kendras (Building Centres) has been established with Central assistance through HUDCO under a Central scheme. These Centres impart training to artisans in low-cost construction skills and produce building materials and components by utilising agro-industrial wastes. A Central grant of Rs.2 lakh was provided to each Centre till 1994-95 and under a revised funding pattern, effective from 1995-96, the Central grant-in-aid ranges from Rs.3-5 lakh, depending on the level of the activities and a HUDCO loan is also available. As on 31.12.96, 435 Centres have been identified and 239 Centres have become functional. The total Central grant has been Rs.5.75 crore and the output of training exceeds 75,000 construction workers. The ultimate impact on the contribution of these trained workers to new housing stock, including upgradation and renewal, has not been made and will form a part of the Ninth Plan agenda. It is necessary to monitor the career path of the outturns of the centres through tracer studies and indicators.

3.7.67 The scheme of Night Shelters/Sanitation Facility to Footpath Dwellers in Urban Areas provides night shelter and sanitation facilities to footpath dwellers. The per capita development cost provided for this is Rs.5000, 20 percent of which is financed by Central Government and 80 per cent from implementing agencies or a HUDCO loan. The programmes overall implementing agency is HUDCO and the coverage is all urban areas, having the problem of footpath dwellers. As on 31.12.96, HUDCO had sanctioned loan of Rs.10.06 crore and subsidy of Rs.9.13 crore to 56 schemes to provide 19,366 beds, 5,258 pay-and-use toilet seats, 64 baths and 145 urinals. The total number of beneficiaries under this scheme is expected to be about 60,000, but the feedback regarding its impact in terms of actual users, coverage of the footpath dweller population and their satisfaction level is not available and this task will be taken up in the Ninth Plan.

3.7.68 The schemes for other priority groups which include handloom weavers and beedi workers, are implemented through Central Government subsidy released by the concerned Ministries and HUDCO loan. HUDCO also provides loan for construction of hostels for working women. The National Housing Bank (NHB) has recently launched housing schemes for slum dwellers and households headed by poor women with the funds mobilised under the Voluntary Deposits Scheme.

3.7.69 Under the one-time scheme of Central Assistance for reconstruction of floods-damaged houses in Tamil Nadu, Karnataka and Kerala, HUDCO has sanctioned construction of 77,969 houses till the end of December, 1996, of which 20,318 houses have been reconstructed. The funding pattern provides for 30 percent Central subsidy, 30 percent State subsidy and 40 percent HUDCO loan.

3.7.70 Rural housing did not receive much attention during the first 25 years of planning. The rehabilitation programmes of the Ministry of Refugees Rehabilitation provided, until around 1960, housing to about 5 lakh households, mainly in Northern India. A Village Housing Scheme was also launched in 1957 as part of the community development movement, under which loans were provided to individuals and cooperatives, subject to a ceiling of Rs. 5,000 per house and 67,000 houses were built under this scheme by the end of the Fifth Plan (1980). The Estimates Committee, in its 37th Report (1972-73), expressed distress at the unsatisfactory conditions of kutcha housing in rural areas and the apathy of the Government. In response to this assessment, the Housing Sites-cum-Construction Assistance Scheme was launched as a Central Scheme in the Fourth Plan which was later transferred to the State Sector in April, 1974, on the recommendation of the NDC.

3.7.71 Indira Awas Yojana (IAY) is the most important rural housing scheme. Its genesis can be traced to the rural employment programmes like the National Rural Employment Programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP), in which construction of houses was a major activity. There was, however, no uniform policy for rural housing. In June, 1985, a specific proportion of RLEGP funds was earmarked for construction of houses for SCs/STs and freed bonded labour. Later in April, 1989, the NREP and RLEGP were merged into the Jawahar Rozgar Yojana (JRY), and upto 1992-93, the IAY was continued as a part of the JRY, with a special provision of 6 percent of the housing units free of cost to members of SC/ST and freed bonded labour living below the poverty line in the rural areas. The proportion of free housing units was raised to 10 percent in 1993-94 and the scope was extended to cover non-SC/ST rural poor, subject to the condition that the non-SC/ST beneficiaries should not receive more than 40 percent of the total allocation. Further extension of the coverage was made in 1995-96 to include families of servicemen of the armed and para-military forces killed in action. In the identification of the beneficiaries, weightage is given to victims of atrocities, households headed by widows and unmarried women, households affected by natural calamities or displaced by development projects, nomadic, semi-nomadic denotified tribes, internal refugees and disabled families. After the JRY was restructured from January 1, 1996. The IAY has become an independent Centrally Sponsored Scheme for shelter, with the resources being contributed on 80:20 basis by Centre and States.

3.7.72 The output of the IAY is estimated at 37.16 lakh houses during the period 1985-86 to 1996-97 at an investment of Rs. 5,038 crore. The IAY has been recognised as a positive support activity that has provided to the homeless poor in rural areas a feeling of security and has facilitated their integration in the emerging social milieu. An evaluation of

the IAY by the Planning Commission in 1993 brought out a high satisfaction rate, with 84 per cent of the beneficiaries being satisfied with their houses. States have accepted it as a major activity and almost every year since its inception, the annual targets have been exceeded. The programme received a major thrust in the Eighth Plan, particularly in 1995-96, when the outlay was substantially enhanced from Rs. 437.69 crore in 1994-95 to Rs.1368.34 crore in 1995-96. During the Eighth Plan period, the total allocation was Rs.3821.73 crore, utilisation Rs.3781.63 crore (99.0 percent), and houses constructed 26.21 lakh, which was 86.7 per cent of the target of 30.22 lakh.

3.7.73 The cost norms under the IAY have undergone changes during the period 1985-86 to 1996-97. The Chief Ministers Conference in July, 1996 recommended an increase in the construction assistance under the IAY from Rs. 14,000 to 20,000 and this was followed by the Ministry of Rural Areas and Employment enhancing the ceiling for new construction to Rs. 20,000 per unit in plain areas and Rs. 22,000 per unit in hilly and difficult areas, effective from 1.8.1996.

There is an enormous shortage in the housing sector and major deficiencies in the housing related infrastructure. The Government has been progressively adopting the role of an enabler rather than a direct provider. This has necessitated a policy shift to encourage private and cooperative sector to play a major role in housing sector, modifying the existing legal and regulatory regime. Keeping this fact in mind Government has since adopted a new Housing and Habitat Policy (approved by the Cabinet in July 1998).

Implementation of Agenda 21

3.7.74 During the Eighth Plan period, significant activities were undertaken towards the implementation of Agenda 21, endorsed at the Rio de Janeiro Environment Meeting of 1992. This document had laid stress on the deteriorating situation in human settlement conditions,

assessed to be a result of low levels of investment because of resource constraint and recommended promotion and improvement of activities in eight priority areas. The Government of India has responded positively.

3.7.75 The key objective of the National Housing Policy (NHP) 1994 is to provide access to adequate shelter for all. There is an enormous shortage in the housing sector and major deficiencies in the housing related infrastructure. The Government has been progressively adopting the role of an enabler rather than a direct provider. However, this necessitated a policy shift to encourage private and cooperative sector to play a major role in housing sector, modifying the existing legal and regulatory regime. Keeping in view the above Government has since adopted a new Housing and Habitat Policy (approved by the Cabinet in July 1998). Efforts are also being made by the Central and State Governments to achieve the objective of shelter for all through a number of Centrally sponsored schemes and institutional financing through HUDCO and other institutions. Several enabling programmes have been initiated, such as, the establishment of a housing finance system with a National Housing Bank at the apex level, amendment to the Urban Land (Ceiling and Regulation) Act to expand the supply of land, formulation of a model Rent Control Act, model Apartment Ownership Bill and schemes to link up housing and income generation programmes for the poor.

3.7.76 As a part of the strategy to strengthen the human settlements management activities, the Central Government has introduced several schemes such as : Environment Improvement of Urban Slums, a State sector scheme; Integrated Scheme of Low-cost Sanitation; Nehru Rozgar Yojana (NRY) with three components namely Scheme of Urban Micro Enterprises (SUME), Scheme of Urban Wage Employment (SUWE), and

Scheme of Housing and Shelter Upgradation (SHASHU); Urban Basic Services for the Poor (UBSP); Scheme of Integrated Development of Small and Medium towns (IDSMT); Scheme of Infrastructure Development in Mega-cities (IDM); Integrated Rural Development Programme (IRDP); Jawahar Rozgar Yojana (JRY); Development of Women and Children in Rural Areas (DWCRA); Accelerated Rural Water Supply Programme (ARWSP); Accelerated Urban Water Supply Programme for small towns with population less than 20,000 (AUWSP) and Minimum Needs Programme (MNP)/ Basic Minimum Services (BMS).

3.7.77 In order to improve the land-use planning capabilities at the city/town level, the Central Government has launched an urban mapping scheme which utilises advanced technologies such as remote sensing and aerial photography to prepare physical and utility maps on appropriate scales. Two-third of Indian States and Union Territories are vulnerable to natural disasters. In order to develop policies and strategies for planning human settlements in disaster-prone areas, the Government of India has set up the National Centre for Disaster Management. A Vulnerability Atlas is being developed to indicate disaster-prone sites in the country.

3.7.78 The rapidly growing demand for housing and infrastructure is exerting heavy pressures on the natural environment. To promote sustainable development of the construction industry, Government of India has taken several initiatives to promote energy-efficient building materials and shift the reliance from non-renewable resources to renewable resources. The national network of Building Centres is disseminating information on these eco-friendly and energy-efficient building materials and construction technologies and the Building Material and Technology Promotion Council (BMTPC) is promoting large-scale utilisation of agro-industrial wastes. The Council of Scientific and Industrial Research (CSIR) is co-ordinating the R&D activities on the development of new wood substitutes for use in construction activity. The Department of Environment, Government of India has launched a scheme of labelling eco-friendly building materials and the Bureau of Indian Standards has formulated standards, specifications and code of practice on several innovative building materials. Further capacity building programmes are being launched all over the country to improve human resource development. Sustainable energy and transport systems like Mass Rapid Transit System (M.R.T.S.) are being developed in order to tackle pollution and traffic congestion.

Ninth Plan Priorities and Strategies

3.7.79 While the housing needs of all segments of the population will have to be met, the Ninth Plan will focus special attention on households at the lower end of the housing market, the priority groups identified for such support, such as, for example, people below the poverty line, SC/ST, disabled, freed bonded labourers, slum dwellers and women-headed households. Minimum

- While housing needs of all segments of the population will have to be met, the Ninth Plan will focus special attention on households at the lower end of the housing market, the priority groups identified for such support, such as eg. People below poverty line, SC/ST, disabled, freed bonded labourers, slum dwellers and women headed households.
- Government will, as a facilitator, create an environment in which access to all the requisite inputs will be in time, in adequate quantum and an appropriate quality and standards.
- There will be provision for more direct intervention by the Government in the case of lower segments of the housing market and selected disadvantaged groups.
- A package of incentives and concessions to attract private sectors would be introduced to shoulder the task of housing for the poor.

housing adequacy norms will be evolved that would include per capita living space, structural durability, access to drinking water with minimum quantitative and qualitative norms, sanitation facilities and connectivity. The responsibility to fix the norms will be entrusted to the States and it is expected that the State governments will further decentralise the responsibility to Urban Local Bodies (ULBs) and Panchayati Raj Institutions (PRIs), with provision for a participatory process to determine the norms. The norms would be the base for working out State and district housing action plans for both the urban and rural areas.

3.7.80 Housing has been always a people's activity and will continue to be so in the Ninth Plan, both in the urban and the rural areas. Government will, as a facilitator, create the environment in which access to all the requisite inputs will be in time, in adequate quantum and of appropriate quality and standards. All housing delivery systems, such as the cooperatives, private sector, community groups, and people's self efforts, will be stimulated to make their contributions to new housing stock as well as upgradation and renewal of the existing stock. In the case of the cooperatives, the endeavour will be to encourage the formation of cooperatives from the planning stage of the housing programme and maintaining a high continuity rate of the original members.

3.7.81 There will be provision for more direct intervention by the government in the case of the lower segments of the housing market and selected disadvantaged groups, whose needs may not be effectively or adequately met by the market-driven forces, which will, in other cases, be a prime mover of housing development activities, particularly in the urban areas. However, a package of incentives and concessions to attract private sectors would be introduced to shoulder the task of housing for the poor. Uptill now private sector has been playing an almost non-existent role in the shelter delivery for the vulnerable group. Cooperative sector and other public housing agencies could also be encouraged to share the responsibility. Subsidy would continue to be provided for some more time and the flow mechanism will be made transparent and increasingly routed outside the financial system. Government has set the goal to provide housing for all and towards this end it proposes to facilitate the construction of 20 lakh additional housing units annually. The focus will be on providing houses to the houseless, inadequately housed and disadvantaged groups below poverty line. Since ratio of housing shortage between rural and urban areas is 65:35 as per the NBO statistics derived from the 1991 census, out of 20 lakh additional houses 13 lakh will be in the rural areas and 7 lakh will be in the urban areas.

3.7.82 Land market reforms will be undertaken through restructuring legal, planning and fiscal provisions, on which considerable work has been done during the Eighth Plan and the results incorporated in several official documents. A work agenda to implement them will be taken up. Land scarcity is one of the key elements to development of housing and infrastructure services. Legislative provisions like the Urban Land Ceiling and Regulation Act (ULCRA) 1976, whose basic objective is to make land available to all income segments in the urban agglomeration, has in practice, led to distortions in the land market operation. The Cabinet has since taken a decision to repeal ULCRA. To promote sustainable human settlements, the Plan will take specific initiatives to promote and adopt in human settlements programmes energy-saving, eco-friendly and environment-friendly technologies and building materials.

3.7.83 Apart from new construction, the Ninth Plan agenda will take up the massive task of upgradation and renewal of old and dilapidated housing stock. In the urban, this is a major challenge in the inner city areas and in the growing slum and squatter settlements,

which have become an ingenious solution to get shelter perfected by the people who cannot enter the formal housing market on their own. Within this category, the Plan will look into the needs of the households below the poverty line. Urban renewal in this direction is crucial to the health and sustainability of the urban environment.

3.7.84 To build sustainability into the housing of the urban poor as well as in rural housing, integrated development of settlement should be promoted, on the principle of strengthening the linkages and inter-dependency between shelter and income upgradation. India has made a commitment to this approach in the NHP and the Habitat II National Plan of Action (NPA). To promote this strategy, the Ninth Plan will support the use of composite credit instrument, modify land-use patterns and city master plans and strengthen the linkages between the farm and the non-farm sector in the rural and semi-urban areas. The NGOs and other voluntary organisations would have to play the role of a catalyst.

3.7.85 Some special development needs have to be addressed as regards rural housing. Urbanisation has had an impact on the traditional rural housing development activities, with increased flow of information on housing designs, new technology, and materials. The options and need to upgrade the structure, especially the roof and the wall, has been recognised in the NHP and in rural housing programmes. This would reduce the annual maintenance inputs, including human inputs, and provide better protection against natural calamities. Rural housing is also qualitatively different from urban housing, in that the housing activity is not very much based on the cash economy but depends to a considerable extent on land rights and access to resources. Rural housing has also emerged as a major component of rural development programmes and, as such, is considered to be an integral part of rural development planning. Keeping in view the varied range of geo-climatic conditions and housing typologies in rural areas, the tasks are stupendous in developing and managing rural housing programmes. One set of materials, plans or construction techniques cannot be applicable across the country, and hence rural housing requires grass-root level feedback on housing needs, together with basic amenities like approach roads, internal roads, drainage, water supply, sanitation and work place.

3.7.86 As per 1991 census the total rural household shortage was 13.72 million. Of these 3.41 million households were without shelter and 10.31 million households were living in 'Kutcha unserviceable' houses. In addition an estimated increase of 10.75 million households would be required on account of population growth during the period 1991-2002. It has also been estimated that between 1990-91 and 1996-97, about 5.7 million units would have been added to the rural housing stock through the on-going programmes of IAY, State Governments, HUDCO and self-help system. Thus the net housing shortage between 1997 and 2002 is 18.77 millions of which 8.46 millions are new houses and 10.31 million are kutcha/unserviceable houses. Another set of estimates, presented in Habitat II National Report, also brings out a similar scenario with new housing requirement estimated at 7.7 million units and upgradation requirement at 11.2 million units. An additional estimate was made of extension of existing units, which was 8.7 million units. It is clear that large upgradation activity has to be taken up during the Ninth Plan for which realistic estimates of net housing shortage, Statewise, will be required. The overall housing shortage does not reveal the regional dimension of the problem. While housing shortage exist in almost all States, there is a large concentration in a few States with Bihar accounting for nearly 1/3 of the housing shortage in the country followed by Andhra Pradesh, Assam, Uttar Pradesh and West Bengal, which together account for another 44.65 per cent. In each

of remaining States the housing shortage is less than 5%. Therefore in the backdrop of the total housing requirement the housing shortage in selected States is more acute.

3.7.87 Apart from the quantitative dimensions of the rural housing requirements, the qualitative aspects are equally important, particularly those relating to per capita living space, durability and access to amenities. The 1991 Census indicated that 40.8 percent of the 112 million rural households lived in one-room units and the pre-dominant roofing materials used were grass, straw and thatch. These rural housing activities have to be incorporated under the IAY, as a special mechanism for financing is required to facilitate the use of market-sourced materials for increasing the durability of structure and providing access to basic habitat services.

3.7.88 There is virtually no institutional finance in the rural housing sector except what is provided through its scheme by Housing and Urban Development Corporation. The housing finance institutions will have to overcome their reluctance to enter into the rural housing market. The access to rural housing credit, outside the Government schemes like the IAY, would require special attention during the Ninth Plan, as also full access to low-cost materials and appropriate technology. With the growth in the rural housing programme emphasis would also have to be placed on training and development of skills so that skilled masons in adequate numbers are available in the rural areas to carry out construction works, particularly, using new building materials and low cost technology. The financial institutions will have to meet the credit needs of rural housing through innovative credit instruments and delivery systems that take into account the specificities of rural housing, geo-climatic conditions and socio-cultural practices, besides the need to finance the habitat-related services. Multiplicity of institutions to service the shelter and basic needs may not be very much desirable.

3.7.89 The provision of house sites has emerged in recent years as a crucial requirement in some parts of the country, and especially for the rural poor, a large proportion of whom do not have security of tenure nor the right or access to land for building a house. Land should be acquired in places where public land supply may be a constraint and this strategy should take into account the ecology and environmental considerations, as also the appropriateness of the location in terms of the economic activities and access to basic habitat services. Under an on-going programme of House Sites-cum-Construction Assistance, which is implemented by the State Governments, 233.43 lakh house sites have been allotted and construction assistance provided to 77.6 lakh beneficiaries upto 1995-96. The implementation of this scheme has been slow, with most States not being able to keep up the desired pace vis-a-vis the extent of the housing shortage. The IAY may be modified to include a provision for making minimum land available to such rural poor and the land would have to be acquired in the proximity of village habitations. Tenurial arrangements to protect the vested rights of the rural poor and disadvantaged groups on the houses and lands occupied by them is another priority concern.

3.7.90 The IAY would be the main Government programme for achieving the objective of shelter for all rural poor. It would continue to be a 100 per cent subsidised programme, targeted specifically towards providing shelter for the houseless, inadequately housed and disadvantaged groups. Under the IAY, the funds are allocated to the State/UT on the basis of the proportion of rural poor in the State/UT to the total rural poor in the country. This modality fails to take account of the actual housing shortage and does not take into account the housing needs of the economically weaker section who are just above poverty line.

There is need for modification of present IAY. This issue being discussed separately under this chapter.

3.7.91 In view of the massive upgradation activities to be undertaken, the IAY may have to be modified to support these activities, initially utilising upto 20 percent of the total IAY funds for upgradation of unserviceable kutcha houses. The Ninth Plan would also give a thrust on improving the quality of houses under the IAY through cost-effective measures and introduction of appropriate technologies and functional designs to suit the housing needs of different geo-climatic conditions, cultural preferences and lifestyles of the people.

3.7.92 In this effort, the focus of research and development would be on innovative low-cost building and construction technologies, cultural-specific housing designs and appropriate housing materials for building durable and safe houses. Apart from developing new technologies, the rich stock of appropriate technologies will be disseminated to the rural areas. To utilise these technologies effectively a major role will be provided for development of skills by the Nirmithi Kendras (rural building centres) under the aegis of HUDCO for dissemination of rural building techniques and for effective training to rural youth in trades related to low-cost housing. Institutional facilities already available in select rural ITIs, polytechnics and vocational training centres will also be strengthened. NGOs should also participate in conserving and upgrading the traditional housing architecture and should promote development of integrated programmes for the upgradation of artisans' skills and the deployment of unemployed youth in various trades related to low-cost housing.

3.7.93 Integrating the financing of rural and urban housing within a single organisation might not necessarily be in the interest of the rural housing sector. Rural housing finance requires a different type of approach, more development-oriented than a purely financial approach. Rural housing finance might have to take into account the financing of habitat-related services and in the case of housing in poorly connected areas, also economic activities. Kutcha housing units should be eligible for institutional finance and there must be a high level of flexibility in the repayment schedule, linked more to seasonality of income flows than to the conventional monthly repayment programme. There is also the problem of ownership of land as in some parts of the country, particularly in tribal societies, land is owned by the community rather than on an individual basis. The Ninth Plan would examine the feasibility of special integrated rural human settlements finance and development institution, as well as specific programmes like the IAY that would look into the financing and development of upgradation activities.

3.7.94 Several States/UTs are implementing their own housing programmes, in addition the IAY. It is necessary to coordinate all the efforts with a view to addressing the housing shortage in a phased manner. There should be regular and timely data on allocations, cost norms, and the number of houses constructed each year, Statewise. A strong data base and monitoring system is required for this purpose. The Central and State Governments, along with financial institutions would then be able to jointly undertake the tasks of providing a house to all, with basic habitat services, in a time bound manner. Activities will have to be undertaken at the village level through convergence and collective action. This would necessitate the proactive participation of the village community who would formulate an action plan on the basis of identified needs and priorities and in line with the resources available.

3.7.95 The magnitude of the housing task ahead is so great that besides the State Government's efforts at providing land and finance, making available easy access to local construction materials and dissemination of appropriate building technologies, there has to be a more active involvement of several other agencies such as cooperatives, the community, voluntary organisations and the private sector. Public sector undertakings would also be required to participate in the programme as part of their social obligation and commitment. The PRIs have to also play a key role.

3.7.96 A few legislative changes are required particularly relating to tenurial arrangements, including rights to house and land. The "nistar rights" of the poor to access traditional building materials and undertaking cadastral surveys are priority activities to be undertaken during the Ninth Plan. Another concern, in the case of States with large tribal population, is to safeguard the non-alienable property rights of the people and evolving a workable solution to the oft-identified problem of mortgaging of community owned land for individual home loan programme. It is equally important to converge all habitat-related activities presently implemented by various departments into a single programme so that planning, community mobilisation and effective monitoring and impact assessment can be taken up in a more effective manner. The village should be made an effective planning unit, giving full recognition to the Constitution (73rd Amendment) Act.

Special Action Plan- Urban Housing

3.7.97 It has already been mentioned about the target of construction of 20 lakh additional houses every year under the Special Action Plan. The target of additional dwelling units has been broadly bifurcated as 13 lakh units for rural areas and 7 lakh units for urban areas. This division of target is stated to be based upon the ratio of housing shortage in the urban and rural (basis 1991 census). The Government's role is that of an enabler than that a builder. Taking a clue from this approach government may provide necessary fiscal concessions, access to land, appropriate technological support and inexpensive finance to the sector. There would be necessity to bring the legal reforms required for the sector particularly in respect of rent control regulating the activities of builders, Apartment Ownership Act Building Bye-laws and National/Departmental Standards and Codes. Land is most critical input. An integrated programme for land assembly and infrastructure development to be taken up on a priority basis.

3.7.98 Keeping in view the large quantum of low cost funds needed, the finance Ministry would have to consider allowing substantially higher allocation of tax free bonds for resource mobilisation. The banking sector would need to be directed to make available more funds for housing, both by expanding the percentage of incremental deposits as well as earmarking dedicated funds under the priority sector especially for EWS/LIG housing. Fiscal incentives under the Income Tax Act for housing initiatives need to be provided. Further assistance under I.T. Act to the HFIs should be continued. Tax concession under Wealth Tax may be provided for promoting rental housing scheme. Amendments to the NHB Act need to be expedited for early foreclosure procedures.

3.7.99 Based on the average cost of EWS and LIG of Rs. 35000 and 1 lakh respectively the investment requirement for 7 lakh new units has been worked out to be of the order of around Rs. 4000 crore. The extent of funding from institutional financing is proposed to be 70% and the balance 30% is proposed to be met partly as subsidy from Central/State Governments and partly as beneficiary contribution in cash, kind and labour. This, however, is the assumption that there would not be any change in technology

Special Action Plan – Urban Housing

- Government has set a goal to provide housing for all and towards this end it proposes to facilitate the construction of twenty lakh additional housing units annually.
- The target of additional dwelling units has been broadly bifurcated as 13 lakh units for rural areas and 7 lakh units for urban areas.
- Based on the average cost of EWS and LIG housing units of Rs. 35000 and Rs. 1 lakh respectively the investment requirement for 7 lakh new units would be of the order of around Rs. 4000 crores.
- The extent of funding from institutional finance is proposed to be 70 per cent and the balance 30 per cent is proposed to be met partly as subsidy from Central/State Governments and partly as beneficiary contribution in cash, kind and labour.
- Investment expected from the institutional financing bodies would be of the order of Rs. 2800 crores.
- A package of incentives and concessions is needed to attract the private sector.

leading to reduction in costs. The investment expected from the institutional financing bodies would be of the order of Rs. 2800 crores. The bulk of institutional finance for housing in the country is provided by HUDCO, NHB, 25 HFI's and Commercial Banks for direct lending

and the LIC/GIC for supportive lending for housing sector. There is a need for all financing institutions to lend their helping hand for supporting the additional 20 lakh houses every year.

3.7.100 One of the key demands in the housing programme is active participation of Private Sector. A package of incentives and concessions is needed to attract the private sector. It is proposed that shelter delivery would be through private sector public housing agencies, co-operative sector and NGO/CBOs. The implementation of the programme would require a strong public private partnership in assembly/ development of land provision of infrastructure and shelter delivery.

3.7.101 While the Union government is responsible for policy formulation, the actual implementation lies with the State Governments. At the Central Government level, the Ministry of Urban Affairs & Employment will be directly involved in the policy formulation on urban housing, for the techno-financing dimensions for the whole housing sector and legal and regulatory reforms in the sector. Ministry of finance would be involved in granting various fiscal concessions so as to make the housing sector attractive for investment and in allowing additional resource mobilisation through market borrowings and international assistance. Ministry of Law would need to consider reforms in the regulatory regime particularly speeding up of foreclosure procedures and amendments required on other statutes which have impact on the housing sector.

Requirements of Funds

3.7.102 As has been pointed above, the total investment requirement for the construction of 7 lakh additional units is of the order of Rs. 4000 crore, annually. This consists of institutional finance of the order of Rs. 2800 crores including equity support to HUDCO to be provided through central budget and the balance Rs. 1200 crores consists of subsidy from Central/State Govts. and beneficiary contribution in cash, kind and labour. Assuming that the investment requirement remains constant over a period of time the requirement for implementation of PMSA during IX.th Plan works out to Rs. 16000 crores because PMSA commences from the second year of the Ninth Plan (1997-2002).

Physical Targets

3.7.103 The physical targets under SAP are 7 lakh additional dwelling units annually starting from second year of the Ninth Plan (1997-2002).

3.7.104 Assuming that physical output of formal sector institutions in the implementation of SAP would be commensurate with the investment requirement of 70%, the target for formal sector financial institutions would be 4.9 lakh dwelling units annually and the balance 2.1 lakh units would be provided by the beneficiary contribution ,subsidy. Out of formal sector institutions HUDCO is expected to build one third of the total target namely 2.33 lakh dwelling units annually. However since there is likely delay in the implementation of the SAP and HUDCO is currently engaged with the task of providing roughly one lakh dwelling units annually through ongoing schemes the additional target for HUDCO has been kept at a reduced level of 1.5 lakh dwelling units for 1998- 99 instead of 2.33 lakh originally proposed. The shortfall in the current year (0.83 lakh dwelling units) may be undertaken by other Formal Sector Institutions. During the remaining years of IXth Plan (i.e. 1999-2002), HUDCO could take up one third of the shortfall in 1998-99 (i.e. 0.83 lakh dwelling units) over and above the original target of 2.33 lakh dwelling units.

3.7.105 Formal sector housing institutions would be encouraged to take up housing for the deprived sections of the society through their various activities/programme.

3.7.106 Housing is a State subject. Given the wide variation in the housing needs in the States and constraint of resources to meet the housing needs, State Govts. and UTs would have to play a critical role in formulating plans and programmes suited to local needs and conditions in consultation with the local bodies. State Governments would need to identify the specific agencies for implementation of the Action Plan. Development of housing infrastructure and services has not kept in tune with the growth of housing. The problem of upgradation and renewal of basic services like potable drinking water and sanitation is serious. An integrated programme for land assembly and infrastructure development particularly water supply, sanitation, drainage and electric supply would require to be taken up on a priority basis. Action of the State Government would need to take into account the resource flow from the private, cooperative and public sectors. The role of the Central Government would be to guide and facilitate the implementation of Action Plan. The synergy created with the efficiency of private sector and experience of the public agencies would ensure that the overall costs is kept at minimum.

Special Action Plan for Rural Housing.

Present Status Of Construction In Rural Housing

3.7.107 At present it is estimated that approx **12.3 lakh houses** are being constructed annually in rural areas under various housing schemes. Based on this estimation it was projected that approx **61.50 lakh houses** (i.e. 12.30 lakh x 5 years) will be added to the overall housing stock between 1997-2002 AD at the 1997-98 level of funding. In addition, from the Additional Central Assistance (ACA) for BMS which includes rural housing as one of the seven components, it is estimated that at least 1.70 lakh additional housing units would be constructed annually from 1998-99 to 2001-02. Therefore, a total of 68.30 lakh units of rural houses were to be constructed as per earlier projections.

be constructed annually from 1998-99 to 2001-02. Therefore, a total of 68.30 lakh units of rural houses were to be constructed as per earlier projections.

Special Action Plan For Social Infrastructure: Targets For Rural Housing

3.7.108 Under the **Special Action Plan for Rural Housing**, an additional **13 lakh new houses** are required to be constructed annually in the rural areas in addition to the existing 12.3 lakh units per year. Therefore, the total houses to be constructed **annually** would increase commensurately to **25.30 lakh**.

Operational Strategy To Achieve The Targets Set Under Special Action Plan For Social Infrastructure: Portfolio Of Rural Housing Schemes To Be Implemented

3.7.109 The task for preparing the Action Plan on Rural Housing has been taken up in the second year of the Ninth Five Year Plan i.e. 1998-99. The composite housing strategy for the Ninth Five Year Plan is multi-pronged and includes proposed modifications in the existing housing schemes and certain new initiatives. These are detailed below:

i) **Indira Awaas Yojana (IAY)- Main Programme:** The Indira Awaas Yojana is the most important rural housing scheme which aims at providing dwelling units free of cost to the rural poor living below the poverty line. On 1.1.1996 with the restructuring of Jawahar Rozgar Yojana (JRY), IAY became an independent Centrally Sponsored Scheme (CSS) for shelter for the rural poor with resources being shared on a 80:20 ratio between the Centre and States. The main objective of the scheme is to construct dwelling units free of cost for the target group below the poverty line which comprises SC/ST, freed bonded labourers and also non-SC/ST families. The cost norms under IAY have been periodically increased and in the latest upward revision the maximum ceiling of assistance admissible under IAY has been raised from Rs.14,000 to Rs.20,000 in plain areas and from Rs.15,800 to Rs.22,000 in the hilly/difficult areas.

The existing scheme has a limited format i.e. construction of new houses. As the need for upgradation of unserviceable kutcha houses in the rural areas is acutely felt, the existing pattern of public investment in the rural housing sector is not necessarily the most efficient. In principle, it would be cost effective to provide part financing for upgradation of existing houses as the field level situation supports this. Hence in its modified form it is proposed to implement the IAY in two components namely, (a) **construction of new houses** (at an average weighted cost of Rs.20,900) and (b) **upgradation of kutcha and unserviceable houses** (at a unit cost of Rs.10,000). States would be allowed to use upto 20% of the funds allocated under IAY for the upgradation of unserviceable kutcha houses.

To correct the regional imbalance, implicit in the overall housing shortage, in the country, it would be imperative to change the existing allocation criterion under IAY from the incidence of poverty to actual housing shortages in States. Also the absorptive capacity of the States both physical and financial in terms of their 20 per cent share would also have to be taken note of as problems of implementation are acute in some States.

ii) Credit-cum-Subsidy Scheme (CCS): There are a large number of households in the rural areas who have not been covered under IAY, since they do not fall within the BPL category. For such households living just above the poverty line, but still constituting the segment of economically weaker sections, a new Credit-cum-Subsidy Scheme (as a sub-scheme of IAY) is proposed to be launched covering people upto twice the income level of the BPL families. The Finance Minister in his budget speech for 1998-99 has also made a reference to the introduction of such a scheme. Under this scheme it is proposed that 50% of the assistance would be in the form of subsidy and 50% as loan but within the IAY cost norms (presently Rs.20,000 for the plain areas and Rs.22,000 for the hilly/difficult area). The loan portion would be provided by financial institutions, commercial banks, housing boards, etc. and the refinance facility will be provided from HUDCO, National Housing Bank etc. The funding of the subsidy portion would be shared in the ratio of 80:20 between the Centre and the States. It is proposed to launch this scheme in 1998-99

Special Action Plan for Rural Housing

- The National Housing and Habitat Policy 1998 aims at providing 'Housing for All'.
- 20 Lakh additional housing units proposed to be constructed annually, of which 13 lakhs dwelling units would be in rural areas. These would be in addition to 12 lakh units constructed per year. Therefore, a total of 25 lakh rural houses would be constructed annually.
- **Main ingredients of the composite housing strategy are:**
- Indira Awas Yojana (IAY) – for construction of new houses free of cost for the target group below the poverty line comprising SCs/STs, freed bonded labourers and also non-SCs/STs families to continue. In addition, a new component for upgradation of kutchha and unserviceable houses is being introduced.
- Credit –cum–subsidy scheme to cover people upto twice the income level of the Below Poverty Line families. Assistance in the form of subsidy and loan on a 50:50 basis within Indira Awas Yojana(IAY) cost norms.
- Innovative Stream for Rural Housing and Habitat Development (ISRHHD) – to encourage the use of cost effective, environment friendly, scientifically tested and appropriate indigenous and modern designs, technologies and materials.
- National Housing Bank(NHB) – to finance 1 lakh housing units under the Swarna Jayanti Housing Finance Scheme.
- Greater equity participation to HUDCO for construction of additional houses in rural areas.
- Rural Building Centres to facilitate technology transfer, information dissemination, skill upgradation and production of cost effective and environment -friendly materials.
- Basic Minimum Services(BMS) Programmes – Housing is one of the seven components identified under the BMS to provide housing to the shelterless poor in a time bound manner.

iii) Innovative Stream for Rural Housing and Habitat Development (ISRHHD): The Innovative Stream for Rural Housing and Habitat Development (ISRHHD) is proposed to be launched as a sub scheme of IAY on a pilot project basis for the BPL poor. Under this scheme it is proposed to encourage the use of cost effective, environment friendly, scientifically tested and proven indigenous and modern designs, technologies and materials to construct IAY houses suited to the particular location. The Innovative Stream for Rural Housing and Habitat Development would be launched in 1998-99, on a pilot scale.

iv) National Housing Bank/Commercial Banks Funding: The National Housing Bank (NHB) and other banks would have to enhance their performance in rural housing. The Golden Jubilee Rural Housing Finance Scheme (GJRHFS) was launched by the National Housing Bank in 1997-98 with its coverage extending to the rural areas and to small towns having a population upto 50,000. The benefits of this

scheme have however been cornered mainly by the small towns. The total estimated contribution of NHB and other commercial banks to rural housing annually is only 0.6 lakh units.

In the Budget speech of the Finance Minister, the NHB has been directed to finance 1.00 lakh rural dwelling units under the Swarna Jayanti Housing Finance Scheme (SJHFS) as against the existing 50,000 units..

v) **Rural Building Centres (RBCs):** To address the primary objectives of technology transfer, information dissemination, skill upgradation through training of rural masons, plumbers etc. and production of cost effective and environment friendly materials, there is a need to establish an institutional network of RBCs in all the districts in the rural areas as has been done in the urban areas.

Rural Building Centres in the rural areas would be taken up initially on a pilot basis. After assessing the viability of this scheme, it would be extended in a phased manner to cover all the districts of the country.

vi) **Housing and Urban Development Corporation:** The Housing and Urban Development Corporation (HUDCO) is functioning with equity support provided by Government of India, as the apex national techno-financing agency in the housing sector. So far its operations have been largely confined to urban areas. However, at present HUDCO is directing 15% of its total housing resources for financing housing activity in the rural areas and constructing approx. 3.00 lakh rural houses annually. In his budget speech the Finance Minister has enhanced the capital base of HUDCO by Rs.110 crore so that it may leverage more funds for housing construction in the urban and rural areas.

Equity participation by the Department of Rural Employment and Poverty Alleviation (DREPA), Ministry of Rural Areas and Employment (MRAE) in HUDCO earmarked for rural housing would facilitate HUDCO to raise eight times of the amount from the market for construction of additional houses. By way of illustration Rs.50 crore equity participation in HUDCO would leverage Rs.400 crore and which would finance 1.8 lakh houses in rural areas (It may be noted that houses to be constructed by HUDCO with equity participation from Department of Rural Employment & Poverty Alleviation in the remaining 4 years of Ninth Plan (1998-99 to 2001-2002) would be an additionality over their existing effort at constructing 3 lakh houses annually.

vii) **Cooperative Housing:** The cooperative housing movement has also contributed to the housing sector by constructing 7.00 lakh units in the rural areas. It is expected to improve its performance in the ensuing years of the Ninth Five Year Plan period.

viii) **Others including BMS:** The Basic Minimum Services (BMS) programme was launched in pursuance of the recommendations of the Chief Ministers' Conference held in July, 1996. Housing has been identified as one of the seven components of the BMS to provide housing to the shelterless poor in a time bound manner. In addition to the normal State Plan provisions for BMS being made in the States/UTs Annual Plans and the funds routed through the Centrally Sponsored Schemes, the Central

Government provided Additional Central Assistance (ACA) for BMS to the States and UTs. It is assumed that from the ACA provided to the States for BMS, at least 1.70 lakh additional housing units would be constructed annually under BMS in the rural areas. Further, it is projected that outside IAY 5.80 lakh housing units will be constructed by various financial institutions like NHB/Commercial Banks and State Governments rural housing programmes. It is therefore estimated that 7.50 lakh additional units would be constructed annually outside IAY by various housing agencies.

Ninth Plan : Physical targets

3.7.110 In the first year of the Ninth Plan i.e. 1997-98 the Central outlay for rural housing (i.e. IAY) was Rs.1190.00 crore. With this financial provision approximately 7.00 lakh IAY houses were constructed during that year. Approx. 5.30 lakh units have been constructed outside the IAY by various housing agencies and by the State Governments. Therefore the total houses constructed in 1997-98 were approx 12.30 lakh.

3.7.111 In the financial year 1998-99, a Central outlay of Rs.1600.00 crore has been provided in the Budget for Rural Housing. Based on this Central provision it is estimated that 13.28 lakh houses can be constructed under the IAY and other housing schemes. In addition 7.50 lakh houses would be constructed under other rural housing schemes implemented by the State Governments, including rural houses constructed under BMS, thereby cumulating a total of 20.78 lakh units in the current year.

3.7.112 A composite profile of the total houses to be constructed in each of the five years of the Ninth Plan is given in Table 3.7.1.

Lakh units			
Year	Houses to be constructed Under IAY & other Schemes with Central Contribution	Addl. Houses to be constructed under other housing schemes including BMS	Total houses to be constructed
1997-98	7.00	5.30	12.30
1998-99	13.28	7.50	20.78
1999-2000	17.83	7.50	25.33
2000-2001	18.06	7.50	25.56
2001-2002	18.06	7.50	25.56
Total	74.23	35.30	109.53

Note: It may be noted that the above calculation is based on the current unit cost.

3.7.113 The schematic break-up of houses to be constructed during the Ninth Plan period is detailed in Table 3.7.2.

Table 3.7.2

Schemes	Lakh units				
	1997-98	1998-99	1999-2000	2000-01	2001-02
IAY(Main)*	7.00	10.87	12.99	12.62	12.62
CCS		0.60	1.20	1.80	1.80
ISRHHD		0.01	0.04	0.04	0.04
HUDCO		1.80	3.60	3.60	3.60
Sub-Total	7.00	13.28	17.83	18.06	18.06
Other Housing schemes/State Government effort/BMS	5.30	7.50	7.50	7.50	7.50
Grand Total	12.30	20.78	25.33	25.56	25.56

* Includes both new construction and upgradation component under IAY.

3.7.114 At the end of the Ninth Plan i.e. 2001-02, 109.53 lakh units would be constructed under various housing schemes in the rural areas. The break up of these 109.53 lakh units in terms of new constructions and upgradation of unserviceable kutcha houses is given in Table 3.7.3.

Table 3.7.3

Year	Lakh Unit		
	New	Upgradation	Total
1997-98	12.30	-	12.30
1998-99	17.05	3.73	20.78
1999-2000	20.87	4.46	25.33
2000-2001	21.13	4.43	25.56
2001-2002	21.13	4.43	25.56
Total	92.48	17.05	109.53

Tenth Plan

3.7.115 By the end of the Ninth Plan , 109.53 lakh units would be constructed leaving a residual gap of 78.17 lakh units (i.e. 187.70 – 109.53= 78.17 lakh units). It may be noted that at the end of the Ninth Plan the housing shortage would be only in terms of unserviceable and kutcha houses needing upgradation in the Tenth Plan. However, housing shortages during the Tenth Plan are likely to be surfaced on account of population growth. These shortages would be taken care of during the Tenth Plan.

IMPLEMENTATION

3.7.116 The IAY is implemented through District Rural Development Agencies (DRDAs) specially set up in each district of the country for the implementation of rural development programmes or through Zilla Parishads. At the field level the block machinery is entrusted

with the responsibility of ensuring that targets for construction of houses under IAY are achieved. At the village level the onus is on the gram sabha to identify and select the beneficiaries. However, given that most State Governments also have their own rural housing programmes, in order to facilitate the implementation of a composite housing plan in the States, it is proposed that the Centrally Sponsored Scheme of Indira Awas Yojana be transferred to the State sector, to be implemented by the State Governments with Central assistance specifically earmarked for this purpose.

3.7.117 The Credit-cum-Subsidy Scheme and the Innovative Stream for Rural Housing and Habitat Development would also be implemented by the DRDAs/Zilla Parishads. The former scheme would be implemented in collaboration with financial institutions/commercial banks, housing boards with the refinance facility being provided by HUDCO and the NHB. The Innovative Stream for Rural Housing and Habitat Development would be implemented on a project basis through HUDCO/NGOs.

3.7.118 The scheme of Rural Building Centres would be implemented by HUDCO/well known State rural housing organisations and NGOs through the DRDAs.

3.7.119 Among the other housing schemes being implemented in the rural areas, the Golden Jubilee Housing Finance Scheme, which has a rural component, is being implemented by the NHB. The NGOs engaged in construction of rural houses are financed through CAPART.

MONITORING

3.7.120 The Department of Rural Employment & Poverty Alleviation in the Ministry of Rural Areas & Employment is responsible for release of Central share of funds, overall guidance, policy-making, monitoring and evaluation of the rural housing programme at the National level.

3.7.121 The programme is continuously monitored by Department of Rural Employment & Poverty Alleviation, on the basis of the monthly reports received from the States/UTs. Senior Officers of the rank of Deputy Secretary and above in the Ministry are appointed as Area Officers for different States/UTs. These Area Officers visit the allotted States/UTs from time to time and inspect among other programmes the actual implementation of the rural housing programme in the field. They also participate in the State Level Coordination Committee (SLCC) meetings providing thereby, an effective link between the policy makers (Government of India) and the implementing agencies (State/UT Governments). The programmes are also reviewed at the meetings with the State Secretaries of Rural Development and with the Project Directors of DRDAs in the Workshops which are held annually.

3.7.122 The State Level Coordination Committee (SLCC) monitors the programme at the State Government level.

3.7.123 In addition to the regular monitoring of the programmes by the Ministry, the Programme Evaluation Organisation (PEO) of the Planning Commission also periodically evaluates programmes in the rural development sector. The PEO has carried out a quick study of IAY in 1992-93. A system of Concurrent Evaluation has been evolved by the Ministry of Rural Areas & Employment under which reputed independent

institutions/research organisations are involved in undertaking the evaluation work. A Concurrent Evaluation of the IAY is being undertaken on the initiative of Department of Rural Employment & Poverty Alleviation.

Urban Development

Performance Review

3.7.124 The National Commission on Urbanisation (1988) had provided an assessment of the urban scenario and a long-term perspective. With this document as the base, and on the feedback of major sectoral developments and urban sector projects, the range of economic reforms initiatives, the New Delhi Declaration of ESCAP countries, 1994, Habitat II national report and UN Habitat Agenda, 1996, the formulation of a National Urban Policy was taken up as a priority activity. The preparation of State urbanisation strategy documents was another important activity, providing an insight into the future development needs in terms of new assets required to meet the anticipated demand for urban services. These State level documents have not, however, brought out the urban renewal and upgradation requirements. The Ninth Plan will seek to incorporate this aspect in the State urbanisation strategy documents so that, if required, these activities may be given special attention in on-going and future programmes, particularly relating to water supply, sanitation, sewerage and waste disposal. At the same time, the Plan would seek to strengthen the preparation and updating of State urbanisation strategy documents, with technical assistance, where necessary. The adoption of a commercial and market approach to infrastructure planning, development and management will be encouraged. For this purpose, suitable capacity building inputs would be provided to State and city officials. Within this macro urban agenda, various on-going schemes like the IDSMT, Mega City, UBSP, Slum Development, NRY, PMI-UPEP, Urban Mapping and any new schemes that might be introduced, will be dovetailed to attain the goals of the State macro urban development model.

3.7.125 The two aspects of urban development activities, namely the creation of new assets and upgradation of existing assets, would need to be taken up simultaneously to maintain the healthy urban environment, prevent the further process of deterioration and reduce the inequity in access to basic civic amenities. This deteriorating urban situation is reflected most glaringly in the extension of the "city within a city" syndrome of vastly varying urban environment conditions in different parts of the urban agglomerations. Action will be directed to positively contribute to the reduction of the existing level of these disparities and the State urban strategy will provide a valuable policy and operational framework.

3.7.126 Among the major legislative contributions of the Eighth Plan was the Constitution (74th Amendment) Act, 1992, also known as the Nagarpalika Act, which was passed by Parliament in 1992 and received the assent of the President on April 20, 1993. This landmark legislation provides a common framework for the structure and mandate of ULBs for effective democratic decentralisation. The Act provided a period of one year to amend or modify the existing municipal laws to bring them

Among the major legislative contributions of the Eighth Plan was the Constitution (74th Amendment) Act, 1992, also known as the Nagarpalika Act, which was passed by Parliament in 1992. This landmark legislation provides a common framework for the structure and mandate of Urban Local Bodies for effective democratic decentralisation. Among the major legislative contributions of the Eighth Plan was the Constitution

in conformity with the provisions of the Nagarpalika Act. The State and UT Governments have taken measures to establish State Finance Commissions (SFCs) and State Election Commissions (SECs). All States have established the SFCs and by March 1997, 10 SFCs have submitted their reports to their respective State Government. There is, however, a long time lag between the submission of the SFC Report and its placement in the State legislature. The SECs have been established and have conducted elections in all ULBs except in Bihar and Orissa. In the case of Punjab, elections have been held in only two municipalities and 29 nagar panchayats. By January, 1997, about 60,000 elected representatives are in municipal corporations, municipal councils and nagar panchayats in 15 major States. The responsibilities and functions of the elected representatives have, however, yet to be articulated and defined by the State Governments. The District Planning Committees have been set up in only West Bengal, Kerala and Madhya Pradesh, where separate legislations have been enacted for this purpose. In none of the States has the government notified an area as a metropolitan area for the purposes of the Amendment.

3.7.127 Major efforts were made during the Eighth Plan to identify the lacunae and operational constraints in the Urban Land Ceiling and Regulation Act, 1976 and these have been documented in the Habitat II National Report. The feedback on the implementation indicates failure to curb or prevent concentration of urban land holdings, profiteering, and ensure equitable distribution of land. Out of 4,06,282 applications filed in relation to excess vacant land, less than two-third were dealt with by the State/UT Governments and only 7.5 per cent of the 220,774 hec. of land declared surplus had been taken over. In terms of other indicators also, the performance has not been satisfactory. Exemption under Section 20 of the Act was provided in 53,963 cases, which was 42.1 per cent of the total application number submitted under this provision and only 2,984 schemes out of 9,638 (31.0 percent) received approval under Section 21 of the Act for construction of dwelling units for the weaker section of society. The approved activities are expected to result in the construction of 4.83 lakh tenements on 5,327 hec. of land. There has been a slow-down in housing development due to delays in acquisition and transfer of surplus land. The Central Government should take up the rationalisation of the Act during the Ninth Plan and the thrust of the new approach would be guided development rather than regulation per se.

3.7.128 The NCR Planning Board was established with the object of containing Delhi's population within a manageable level and developing the National Capital Region in a harmonious and planned manner. As a part of its Regional Plan - 2001, the Board is finalising extensive land acquisition and development of physical infrastructure. It has prepared functional plans for Delhi Metropolitan Area as well as basic strategies and financial mechanism for use of funds. Sub-regional plans for Uttar Pradesh and Rajasthan sub-regions were approved by the Board in June, 1992 and April, 1994 respectively, while those for Haryana sub-region and for Delhi are under preparation and finalisation. An important functional plan for transport sector seeks to bring out a coordinated development of transport networks and shift the modal share from road-based to rail-based transport, which is likely to be more efficient, economic and environment-friendly.

3.7.129 The NCR is an innovative effort at regional planning and development is the only urban initiative to encompass several States. The approach is inter-sectoral, covering various components of regional infrastructure like road and rail transportation, power, communication, among others, apart from local level town-specific infrastructure and civic amenities. The regional development initiative is dependent on timely release of

funds and convergence of the various activities of different organisations and partner governments so that the requisite infrastructure can be speedily developed and made operational. This is critical because any delay would lead to an increase in the population who may have to be deflected from Delhi and may create a situation which may be beyond the capacity of the 6 DMA and 8 priority towns in the NCR to properly absorb in terms of providing them adequate and affordable shelter, civic amenities and opportunity to take up a sustainable income-generating activity. Delay in implementation of the programmes carries the risk of making the regional planning initiative a non-viable activity within a short period.

3.7.130 Recognising the potential of the NCR strategy to promote and sustain effective regional development, the NCR programme will be further strengthened to promote regional development in the identified locations. Similar programmes of developing new townships will be promoted in other parts of the country where regional disparities and economic backwardness are critical concerns and also where there is a need to develop viable townships around metropolitan cities.

3.7.131 The IDSMT scheme, an extremely valuable development instrument for small and medium towns, was initiated in the Sixth Plan in 1979-80 to develop the infrastructure, primarily the physical components, in selected towns with population upto 5 lakh, that were assessed to have the potential to emerge as regional centres of economic growth and employment and serve as catchment centres to arrest migration to large towns and cities. The guidelines were revised in August 1995 to make its implementation more effective. A major change was in the financing strategy. Prior to the revision, the entire funding was in the form of loan and a large proportion, 40-70 per cent, was to be mobilised from financial institutions, which was found to be a major operational constraint for most of the municipalities. The revised guidelines provide for varying levels and mix of grant (Central and State) in the ratio of 60:40 and institutional finance /internal revenues to the extent of 20-40 percent of the project cost. Grant-in-aid for the preparation of town development plans and project reports has also been provided for.

3.7.132 The IDSMT scheme has covered 904 towns upto the end of the Eighth Plan and the the cost of the approved schemes, as on March 31, 1997, was Rs. 1427.38 crore and the Central assistance released was Rs. 283.96 crore. During the Eighth Plan, 387 towns were covered, with approved cost of Rs. 890.65 crore and as much as Rs. 403.68 crore was on commercial shops and stalls. The Ninth Plan would develop mechanisms to ensure a better mix of projects.

3.7.133 The revised scheme is expected to be a major instrument of urban sector reforms in the selected growth centres, as envisaged under the Constitution (74th Amendment) Act, as it promotes the use of Central and State grant components to leverage resources internally through the project and externally from financial institutions. The internal resources will develop a Revolving Fund, which would strengthen the municipal financial base for the future. Also, special attention is now paid to economic analysis of the projects, based on cost-benefits techniques.

3.7.134 The performance review brings out a concentration of project activities in a few areas like market complex/shopping centre, tourist facilities, roads and bus terminals. There is no feedback on the impact of these developments on city/town development as well as regional development. The efforts of the implementing agencies have been to see that the number of towns earmarked for coverage in the Plan has been largely covered, but even in

respect of the numerical targets of coverage, the annual Plan sanctions have not been as per the provisions made in the Plan. The release of funds has not been satisfactory.

3.7.135 It is too early to get a feedback on the introduction of the cost-benefit analysis in the IDSMT activities, as this component was introduced in the revised guidelines in August, 1995 and is being actually included in the project reports from 1996-97. The Ninth Plan would monitor the progress on this important component since the social and economic benefits should be higher than the cost of the special initiatives taken through the IDSMT at the town and regional level.

3.7.136 One reason for the shortfall has been identified to be the failure of the State Governments to make their contribution and in some cases, the Central funds have not been properly utilised. This has happened because of inadequate monitoring, as the monitoring exercise was limited to administrative reports from the State Government and occasional visits by Central officials to the State capital and some project sites, where there was not much opportunity for Central officials to directly interact with the beneficiaries independently.

3.7.137 The Mega City Scheme, introduced in 1993-94, covers five megacities of Mumbai, Calcutta, Chennai, Bangalore and Hyderabad. As on April 30, 1997, 163 projects were sanctioned for an approved project cost of Rs. 1,439.22 crore. Work has been completed in 14 projects, is in progress in 136 projects, and is to be initiated in 13 projects. An expenditure of Rs. 493.99 crore had been incurred, even though the Central and State governments had released Rs. 703.80 crore as their share. The balance is to be raised by the projects from the capital market and financial institutions, using the Central and State government's contribution for leverage. HUDCO had approved a loan of Rs. 383.56 crore to 20 projects (26.6 percent of approved project cost), and only 31.1 percent of this had been released (Rs. 119.16 crore). The Ninth Plan will strengthen the follow-up and monitoring functions so as to accelerate the development of projects at all the stages and ensure that the leverage effect is a minimum of 50 per cent. To facilitate the attainment of this target, the scope of more financial institutions providing institutional finance, including from the private sector, will be explored.

3.7.138 The Scheme takes up three categories of projects, namely, remunerative, user charge-based and non-remunerative or service-oriented. The recommended mix is 40:30:30 among the three categories so that the total city project is financially viable. A study of the project mix shows under-realisation of the ratio of remunerative projects in the case of Calcutta, Bangalore and Mumbai,, where the ratio is in the range of 16-18 per cent and it is 35 per cent in Chennai. However, it is 51 per cent in Hyderabad. In contrast, the ratio was attained in all cities except Calcutta for the non-remunerative projects suggesting that the concern of total city-level project viability does not appear to have been given due attention. This aspect in project selection will be taken up in the Ninth Plan projects.

3.7.139 Project selection criteria should also take into account the inclusion of only those projects which are not likely to receive funding from other accessible sources, especially under the remunerative projects category. Housing, truck terminal, market, shopping and office complexes may have to be given a lower priority. Some non-remunerative category projects have a good potential to be covered under user-charge category, such as flyovers, bridges, public conveniences. The Ninth Plan would focus on development of urban fringes, urban renewal, sanitation, sewerage and drainage, ring roads, while other activities in the illustrative guidelines will have to be taken up through

other financial strategies. Thus, for example, city beautification may be given for adoption by major corporates in the public and private sectors, with advertisement rights; wastes collection and disposal through commercialisation of the recycling of solid wastes; slum improvement through alternate programmes; and truck and bus terminals, housing, land development and commercial complexes through privatisation.

3.7.140 While the period of implementation of the Mega City Scheme may not be adequate to assess the impact, the Ninth Plan would take up impact assessment as an activity before extension of the programme within the selected cities and to other megacities that are likely to emerge in the country. The impact assessment inputs would also facilitate the project components to become more focussed. The initial flow of projects brings out the need for a comprehensive City Urban Agenda on infrastructure requirements, new as well as in the renewal category, together with proper estimates and the cost-benefit analysis. The mega city nodal agencies should also take into account the metropolitan and regional aspects and not restrict their activities to land development and housing. In this context, the state and city town planning laws, urban development authority acts, etc, should be amended to facilitate planning reforms and permit schemes like land adjustment, for example, to promote the use of land as a resource.

3.7.141 This macro approach to mega city planning is essential to decide upon the projects that may be undertaken under the Mega City Scheme and those that may have to be marketed for implementation by other agencies and sources of financing, including the private sector. It is also necessary to break up the massive activities during the Ninth Plan and thereafter into a well-defined time schedule, to ensure the completion of the total infrastructure development on which the sustainability of the mega city depends.

3.7.142 The project feedback brings out that the leverage activity has not yet become fully operational. The Plan will review the reasons for inadequate leverage effect in the project funding and, in that context, consider modifications in the scheme and any other inputs, including fiscal instruments, and professionalising the financial functions that may be required to make the instrument of leverage funds an effective mechanism. Special attention should be paid to strengthen the monitoring of the scheme, which presently is being done through informal reviews and reporting mechanism. The regular monitoring and impact assessment functions may be institutionalised in an independent agency, outside the project for the effective implementation of the scheme.

3.7.143 Cost recovery is another crucial factor for the success of the scheme and for this purpose direct as well as indirect methods will be introduced. The latter may include, for example, conversion charges for change of land use, development and betterment charges related to impact of on-site and off-site activities, Tradable Development Right (TDR) as per the Mumbai model, extra FAR/FSI surcharge, Shelter Tax on large and luxury housing to finance low-income housing, etc. These innovative strategies will be preceded by specific assessment of the real estate market situation and potential revenue generation analysis to determine the type of instruments to be used and the most suitable timing for mobilising resources to meet the cost of the project, and possibly for generating a surplus.

3.7.144 Slum Development is another major activity taken up to upgrade the urban environment and see that the proliferation of slum and squatter settlements does not further deteriorate it. In the past, several schemes have been introduced to improve the living conditions in the slums, where an increasing proportion of the urban poor and migrants live

and often work. Recognising the poor access to basic urban services in these settlements, the UBSP and EIUS have been provided some specific Plan support to improve the access to basic services. During the Eighth Plan, a new Centrally assisted Scheme was introduced in 1996, with an initial outlay of Rs. 250 crore for the year and this amount was raised to Rs. 330 crore for 1996-97. The funds have been provided as additional Central assistance to the States/UTs. The Planning Commission has constituted a Working Group to examine the mechanism for determining the State allocations under this Scheme and to examine, among other issues, the possibility of going beyond the conventional criterion of the share of urban population in the State for funds allocation. The NHB introduced a Slum Redevelopment Scheme during the Plan period to provide financial assistance to the implementing agencies for housing development and upgradation and provision of habitat infrastructure like drinking water and sanitation.

3.7.145 The Environment Improvement in Urban Slums (EIUS) scheme is a high priority programme to provide seven basic amenities to slum households, namely, water supply, storm water drains, community baths and latrines, widening and paving of existing pathways and street lighting and other community facilities. The scheme was introduced in 1972 as a Centrally sponsored scheme but was transferred to the State sector in 1974. The ceiling on per capita expenditure has now been raised to Rs.800/per slum dweller in consultation with the Planning Commission effective from 1.4.1995. The programme is integrated with the existing urban poverty alleviation scheme and seeks the involvement of resident associations.

3.7.146 A scheme for provision of infrastructural facilities in the Displaced Persons (East Bengal refugees) Colonies in West Bengal is in operation. After considering a note submitted by the Ministry of Rehabilitation in 1976, the Cabinet approved the proposal to fund infrastructural development for 1,03,157 plots in 612 colonies at a cost of Rs.23.85 crore. The development components included provision of water supply, drainage, roads and pathways, sanitation and other items. A revised ceiling cost of Rs.17,777/per plot for development, reimbursement of Rs.2.33 crore to the State Government and provision of Rs.78 crore in the Central budget as grant for completing the work on the remaining 44,025 plots (originally approved in 1976) was approved by the Cabinet in January, 1995.

3.7.147 Several programmes are on stream with international assistance and cooperation. The KFW loan and grant assistance to HUDCO is for undertaking housing schemes for EWS, Building Centre Programme, low-cost housing in rural and urban areas, low-cost sanitation, slum improvement, reconstruction in Latur and to HDFC for low cost housing and urban infrastructure. The OECF (Japan) has provided assistance for city water supply project in Sholapur and New Mumbai and some other infrastructure activities. The World Bank has extended a grant of US \$ 1.0 million to HUDCO for strengthening its infrastructure-related operations, in particular, technical assistance for the preparation of the proposed Urban Infrastructure Financing Project. The World Bank has also provided a line of credit to the Government of Maharashtra for reconstruction of the housing stock and other infrastructure damaged in the Latur earthquake. According to the latest report, 15,713 houses have been completed and 9,292 houses are under construction. Under the repairs and retrofitting component 57,196 houses have been retrofitted, and 86,999 houses are under development.

3.7.148 The Overseas Development Administration (ODA, UK) supports slum improvement projects in seven Indian cities, in collaboration with the Ministry

of Urban Affairs & Employment, Government of India. The Programme started in 1983 in Hyderabad, and since 1988, additional projects have been approved in Vishakapatnam, Vijayawada, Indore, Calcutta, Cuttack and Cochin. The project components include development of physical infrastructure, provision of civic amenities, community development and provision of social, economic and educational inputs to contribute towards raising the standard of living of inhabitants in slum settlements. The Government of Netherlands supports a pilot project, Bangalore Urban Poverty Alleviation Project (BUPP), at an estimated cost of Rs.1.5 crore in phase -I, which commenced in November 1993 and is likely to be completed by the end of March 1997. The second phase is likely to commence soon. The project is being executed jointly by the Central Ministry of Urban Affairs and Employment, HUDCO and the Government of Karnataka.

3.7.149 The Urban Mapping Scheme, a Eighth Plan programme, with an outlay of Rs. 6 crore, was undertaken for preparing, on a pilot basis, base maps for 25 identified towns, using the aerial photographing and remote sensing techniques so that urban maps could be updated with the Geographic Information System (GIS). The Town and Country Planning Organisation (TCPO) is the national nodal agency for this task, which is to be undertaken by the National Remote Sensing Agency (NRSA), Hyderabad. The task ahead is enormous, including preparation of new maps, apart from updating some existing maps in some urban centres. This would constitute an important Ninth Plan activity to provide a strong base for effective implementation of the Constitution (74th Amendment) Act provisions relating to a three-tier planning structure at the local, state and regional level.

3.7.150 Other Programmes include research on urban policy, land use planning and development, municipal governance, housing, etc, with an outlay of Rs. 1 crore per annum during the Eight Plan. Impact assessment of the research output has not been made. The Ninth Plan will review these activities and make the funding of research through this outlay as per an urban research agenda, which will be prepared by sectoral experts, keeping in view the priority concerns in the Ninth Plan. A transparent system of funding policy and research impact assessment will be developed.

3.7.151 The World Bank and the Asian Development Bank have provided external assistance for urban sector projects, the former in Tamil Nadu and Uttar Pradesh and the latter in Karnataka. While Uttar Pradesh Urban Development Project was closed on 31.3.96, Tamil Nadu Urban Development Project is under implementation, with a revised project outlay of Rs.988.50 crore. Negotiations were held with the World Bank for restructuring the existing Tamil Nadu Municipal Urban Development Funds (MUDF) into Tamil Nadu Urban Development Funds (TNUDF) to be set up under the Companies Act.

3.7.152 The ADB is funding the Karnataka Urban Infrastructure Development Project, whose estimated cost is \$ 132 million. The project aims to decongest Bangalore through decentralisation of economic activities to four project towns of Mysore, Tumkur, Channapatnam and Ramanagaram to be developed as counter-magnets and maintain the status of Bangalore as a centre for high-tech industry, reduce the pressures on the infrastructure of Bangalore and improve living conditions in the city. Another ADB project in the pipeline is the Development of West Coast Districts of Karnataka. The Department of Economic Affairs, Central Ministry of Finance has recommended to the ADB, the proposal with having an estimated cost of Rs.758 crore and an external assistance component of Rs.430 crore. The Bank has since approved in principle to

provide a Project Preparatory Technical Assistance of US \$ 800,000 during 1997. Another ADB activity is the India Urban Sector Profile (TA Study), for which an agreement was signed in October, 1994 with ADB for financial assistance of US \$ 435,000. The project will review India's Urban Sector policies and programmes and suggest areas/projects for future ADB involvement in urban infrastructure in India. Another Technical Assistance (TA) agreement has been signed between Government of India and ADB to determine the scope of investment in six selected towns in Rajasthan.

Ninth Plan Priorities and Strategies

3.7.153 Urban India presents a classic example of a developing scenario with high concentration of urbanisation and economic growth in certain parts of the country, as well as in certain parts of a State. While the IDSMT scheme, special industrial development programmes in backward regions and fiscal incentives have sought to reduce disparities in regional development, the regional disparities have continued.

The priority concern is not only to stop the growing deterioration in the urban environment, reflected in key urban indicators on housing conditions, pollution levels, traffic congestion, informal sector, among others, but to positively change the trend and ensure an improved, healthy and congenial environment. The wide gap between the demand and supply of basic amenities will be reduced through creation of new assets, upgradation and renewal of existing assets, attaining better operational and managerial efficiency and stimulating flow of resources.

3.7.154 The priority concern is not only to stop the growing deterioration in the urban environment, reflected in key urban indicators on housing conditions, pollution levels, traffic congestion, informal sector, among others, but to positively change the trend and ensure an improved, healthy and congenial environment. The

wide gap between the demand and supply of basic civic amenities like potable water, sanitation, transport and housing, which has shown an increasing trend over the last five decades, will be reduced, through creation of new assets, upgradation and renewal of existing assets, attaining better operational and management efficiency and stimulating flow of resources into all urban development activities.

3.7.155 Regional development, strengthening of the rural-urban continuum and development of new centres of human settlements and economic activities as an alternative to the highly congested metro and mega cities will be among the priority tasks in the Ninth Plan. An increasing proportion of these activities will be financed from outside the Plan resources. The Eighth Plan had initiated a few innovative practices, most notably the use of Plan funds to leverage non-Plan resources from the financial system, through leveraging funds from financial institutions and the capital market. Conceptually, the strategy is well-founded; how effective it has been in the Indian urban situation has to be ascertained. The instrument has been effectively used in the industrial sector for a considerable period, though the leverage base has been the equity capital that has to be serviced and not a grant. If the impact assessment of the urban infrastructure leverage instrument brings out a performance that is lower than anticipated, the reasons should be identified so that the Government, as a facilitator, would be in a position to take appropriate steps to ensure the effectiveness of the leverage strategy. Fiscal instruments, legal provisions and strengthening of professionalism in the municipalities and urban local bodies will be some illustrative areas for suitable intervention with the aim of formulating financially viable projects, undertaking rigorous techno-economic appraisal and facilitating efficient implementation of projects.

3.7.156 The matching of the Central Plan outlays with State finances was another positive participatory endeavour. These activities will be strengthened and the observed operational constraints would be removed. The new approaches to urban finance, initiated during the Eighth Plan, together with an integrated approach to planning and management, should be supported by an equally strong system of monitoring the project and periodic assessment of its impact, to ensure the reachout, especially of the subsidised non-remunerative projects to the specific target groups. The much-required sustainability in financing urban development is expected to be attained through this route. A composite approach to urban development that encompasses inter-dependent urban basic services will further strengthen the development process. These, indeed, are the challenges for the Ninth Plan.

3.7.157 In the context of a regional approach to urban development, the activities of NCR Planning Board are critical to contain deterioration of the environment of Delhi and the participatory efforts of the States should be effectively mobilised. At the same time, development of small and medium towns should gather further momentum and there is clear need to improve the package of remunerative and non-remunerative projects in IDSMT scheme to go beyond the conventional activities like shopping plaza and bus terminal to take up also activities that would bring in sustainability to the urban environment. Critical among them are drinking water, sanitation and waste management as the sustainability of small and medium towns has to be ensured not only in terms of the economic viability parameter but also the environmental sustainability parameter. The standard of cost-benefit analysis to assess the viability of projects, introduced during the Eighth Plan, will be improved through capacity building for inducting a high level of professionalism in the project contents. It is equally important to improve the composition of the projects under the Mega City scheme and shift the focus to development of urban fringe, urban renewal, sanitation, sewerage and drainage, ring-roads in preference to the Eighth Plan activities like housing, truck terminal, market, shopping and office complexes, which should be given lower priority in the product mix, as they can be supported through commercial and privatisation routes. The slow pick-up of the Mega City scheme was to an extent due to the teething problems but in view of its significant potential to become a catalyst of infrastructure development, the Plan will seek to accelerate project development and implementation processes. It would be desirable in the Ninth Plan to evolve the criteria for funds allocation under the scheme and going beyond the present population criterion to give weightage to indicators like decadal population growth rate, performance in project implementation, resource mobilisation, credibility of the nodal agency and development needs. More emphasis will also be given to promote integrated land use development planning with regard to mapping, use of remote sensing and Geographic Information System (GIS) for preparation of city maps and city/town, metropolitan and district 3-tier Development Plans, covering the annual, five year and long-term perspectives (20-25 years).

3.7.158 Planning and development of urban infrastructure in mega cities as well as elsewhere should be properly structured and the basic requirement is a comprehensive city agenda which would estimate the current infrastructure requirements as also the projections for the next two decades, covering new assets as well as renewal of existing assets. The operational plan, particularly the activities to be undertaken by the key actors should be formulated at the city level and participatory approach should be adopted to earmark the tasks of implementation of tasks among the various agencies, including the private sector. The massive investment activity should be broken up into a well-defined time

schedule so that the physical and financial targets are attained and the anticipated impact realised. Cost recovery has to be a major concern though in certain cases, the concept may have to be gradually introduced and subsidy in the provision of certain services may have to be continued during the Plan.

3.7.159 A process of rapid urbanisation invariably places pressures on land, resulting in an increase in land cost, and consequent impact on cost of all land-based activities and services required for sustainable urban development and environment. A choice has to be often made between high-rise and low-rise urban planning strategies. Within each of the alternatives, there is the planning option to promote high or low densities, though the tendency, a priori, is to relate high density with high-rise planning and low density with low-rise planning.

3.7.160 It will not be desirable, in this perspective, to recommend a single strategy in the planning of cities. There has to be a different approach in urban planning in small and medium towns, where land may not be a scarce resource as compared to that in metro and mega cities. Several parameters should be given appropriate weightage in conceptualising and developing the city plans and these may include, for example, the affordability of the people to absorb the high-rise and low-rise housing solutions, the impact on the urban environment and quality of life, the implications on energy consumption, travel time from home to workplace, recreation facilities, open spaces, linkage with habitat-related services, etc. Equally important is the financial implication and the cost of funds that might be required for different types of city development programmes.

3.7.161 It was in this context, that the National Commission on Urbanisation had recommended Low-Rise High Density (LRHD) development to be the pre-dominant built up form in urban India. The adoption of this strategy would require a good understanding of the socio-economic conditions of the city dwellers and often modification in existing building bye-laws, zoning regulations, developments codes and land use and management systems. The advantage of low-rise settlements is the low cost of construction, efficiency in energy consumption, socially and psychologically more acceptable and environment-friendly neighbourhoods. From the operational point of view, a high density component in low rise structures might give rise to management challenges. Operational and financial implications of spread of essential utilities and services, including transport, have to be taken into consideration.

3.7.162 The Ninth Plan will follow up on the progress made during the Eighth Plan in creating an urban development-friendly planning and fiscal environment. The Constitution (74th Amendment) Act and the liberated economic policies have ensured an era of democratic decentralisation of the planning and a greater degree of involvement of the private sector. In this changed operational scenario, the urban planning system in vogue should be made more dynamic and participatory and the process of decentralisation has to be extended from the State to the urban local government. The institutional framework for financial and other intermediation, including planning and project development and management, has to recognise the key role assigned to the elected urban local bodies. The Plan will seek to promote and strengthen this approach. It will, for example, encourage the constitution of the District Planning Committees (DPC), with an elected official as chairperson. The roles and functions of the DPC would include the consolidation of the plans of the panchayats and the municipalities to prepare the development plan for the district, coordination of all inter-related activities and funds, and monitoring the

implementation of the district plans, schemes and projects and related activities. The Plan funds would be increasingly decided on the feedback from the DPC.

3.7.163 The Town Planning, Municipal and urban Development Authority and other State Parastatals Acts and regulations should be speedily amended and legal framework strengthened to assign the planning and development functions to the urban local bodies, facilitate planning reforms, permit schemes like land adjustment, for example, to promote the use of land as a resource and include all the emerging needs of planning and development in the light of the Constitution (74th Amendment) Act. The municipal/city/town development plan will form a key component of plan financing at the local level and seek to maximise the linkages between infrastructure, land use, urban growth and economic growth.

3.7.164 The massive tasks of development and renewal of housing, urban infrastructure and civic amenities requires their integration into the urban and metropolitan planning system as well as in the broader State and city economic and financial plans. There should be complete integration of spatial, economic and financial planning at the city and regional levels. This has been a weak part in the urban development agenda. The Ninth Plan will take positive steps in this direction.

3.7.165 Within this macro framework, an integrated urban planning approach would require integration of planning and development of inter-dependent infrastructure components such as, for example, water supply, sewerage and sanitation, and wastes collection and disposal, which in their totality, determine the quality of the urban environment. A total package should be prepared, which would also facilitate the financing of the programme as it would have a judicious mix of projects that have the potential to provide commercial returns, recover full-cost user charges and provide zero return on certain critical social services. While the commercial projects would not be eligible for any subsidy, the user-charge projects should recover O & M and debt servicing cost, though subsidy through the financial package and other facilities may be provided on case-to-case basis, related to the extension of the services to the disadvantaged groups in the urban society.

Financing of urban infrastructure is bound to pose new challenges to the different constituents of the financing system. Innovative mechanisms and practices will have to be encouraged and supported to stimulate the flow of finances such as the municipal bond system, municipal financial reforms, fiscal and monetary incentives for the creation of environment-friendly environment, participation of cooperatives, community groups and NGOs etc

sector. Financing of urban infrastructure is bound to pose new challenges to the different constituents of the financing system. Innovative mechanisms and practices will have to be encouraged and supported to stimulate the flow of finances such as the municipal bond system, municipal financial reforms, fiscal and monetary incentives for the creation of investment-friendly environment, specialised infrastructure development and financial institutions, participation of cooperatives, community groups and NGOs, and public-private partnership in the development and management of urban services and social infrastructure facilities.

3.7.166 The massive urban growth and the resource constraints would, together, result in a situation where the availability of funds would not keep pace with the growing demand. The State Government's efforts would have to be supplemented with larger participation by the private

3.7.167 The fiscal provisions at the Central, State and local level should be made investment-friendly and conducive towards the flow of funds for urban infrastructure assets creation and renewal. Privatisation of activities in the social service sector as well as projects with long gestation period should be stimulated through the fiscal route rather than through direct subsidy in term loans and other development inputs. This will make the subsidisation of programmes not only transparent but will also speed up the development work and ensure the creation/renewal of the assets, as the fiscal instrument is ex-post and not ex-ante. Monitoring the effective reachout and periodic impact assessment would be also facilitated.

3.7.168 The Ninth Plan will strengthen the activities relating to data base, monitoring and evaluation as the existing system has been found to be inadequate. There is no single agency that is responsible for compiling and maintaining data and information and undertaking regular monitoring and evaluation work at the national, regional, state or city/town levels. Even the Plan provisions have not been fully utilised. By way of illustration, the outlay of Rs. 11 crore to Central Public Health Engineering and Environmental Organisation (CPHEEO) and State/UTs during the Seventh Plan for creating a monitoring and MIS Cells was not utilised due to technical problems and procedural delays, and a similar provision in the Eighth Plan did not lead to the establishment of these Cells. For development of the data base for housing and undertaking housing census, the Eighth Plan outlay was under-utilised. In the case of the Urban and Regional Information System (URIS), the TCPO as a nodal agency for many Centrally Sponsored Programmes like the IDSMT, has taken up the task of developing the urban data bank. These activities will be further strengthened and the scope for privatisation of certain components of the activity within the overall supervision of the TCPO would be explored.

3.7.169 Apart from these activities, where the Plan provisions for data base, monitoring and MIS were provided but were not effectively utilised, in all other major urban sector programmes, the Plan will seek to develop a strong data base and monitoring and impact assessment systems. This is a key requirement for efficient urban management. Regular feedback on the reachout of activities of all the actors, some of whom may not be subject to normal administrative monitoring, becomes crucial for the Government to decide when, where and how to intervene and the extent of the intervention. An effective partnership of the government and non-government agencies in this activity would be promoted and the UNCHS housing and urban indicators would be adopted to build up this activity.

Urban Transport

Performance Review

3.7.170 Urban transport has been a sector whose development and investment requirements have been largely overlooked in the past. The Central Plan allocation till the Eighth Plan was a modest Rs.4.6 crore, as urban transportation system was essentially perceived in the Plans to be an appendage to inter-city rail/road transport systems. It was not recognised that the development programmes in urban transportation were critical to the sustainability of the urban systems. This basic need has been acknowledged now as the rapidly deteriorating transport systems have been seen to affect the urban lifeline. Recent urban transport indicators have shown that the average travel time between home and work place is as much as 44.34 minutes in Delhi, 33.37 minutes in Mumbai, 21.62 minutes in Chennai and 17.60 minutes in Bangalore. The transport indicators also show that

transport services utilise 13.6 per cent of the total land area in urban agglomerations, with 11.0 per cent in megacities and 20.0 per cent in metro cities and 17.1 per cent in secondary towns.

3.7.171 A review of the mass transport modes in metropolitan cities has brought out that except in Mumbai, Chennai and Calcutta, which have suburban rail systems, the bus has been the main mode. Some metropolitan cities do not even have an intra-city bus system. Except for mega cities, modal split in favour of mass transport is poor and generally less than 20 per cent. Share of walk trips and mechanised non-motorised modes in total transport demand is quite high in metropolitan cities. Measures to promote non-motorised modes through provision of footpaths and other pedestrian facilities, cycle tracks and priority treatment at intersections should be an integral part of city transport plans. Land use and transport are strongly inter-related. Integrated Land Use-Transport Plans should be prepared for all metropolitan cities during the Ninth Plan period.

3.7.172 During the Eighth Plan, Central assistance was mainly confined to support the preparation of feasibility and other studies relating to urban transport systems in metro cities, DPR for Delhi MRTS project and contribution towards equity capital of Hyderabad LRT project. The total expenditure, as on March 31, 1996, was Rs. 18.32 crore and Rs. 16.80 crore was spent during the Eighth Plan period.

3.7.173 The major urban transport projects that were approved or proposals were initiated during the Eighth Plan are in Delhi, Mumbai, Calcutta, Chennai and Bangalore. The Modified Phase I of the Delhi MRTS project was approved by the Union Cabinet in September, 1996. It consists of 11 kms of underground and 44.3 kms of surface/elevated railway tracks. The total cost of the modified Phase-I project is estimated at Rs. 4,860 crore at April, 1996 prices. The project is to be implemented by Delhi Metro Rail Corporation Limited, a joint venture of Government of India and Government of National Capital Territory of Delhi. The OECF (Japan) has agreed to provide loan assistance upto about 60 per cent of the project cost. Initially, a loan of Rs. 478.78 crore (14.76 billion Yen) will be provided at 2.3 per cent rate of interest per annum.

3.7.174 The Mumbai Urban Transport Project-II consists of construction of fly-overs, roads, bridges, optimisation of suburban railways, and is being planned by the Government of Maharashtra and the Mumbai Metropolitan Regional Development Authority (MMRDA) in consultation with the Ministry of Railways. Studies on relocation and resettlement, community environmental management plans, among others, are being conducted by the Government of Maharashtra and further activities will be taken up by the State Government on completion of these studies. The Calcutta Metro Rail System, covering a length of 16.5 kms. from Dum Dum to Tollygunge, is operational. The system has been constructed by the Ministry of Railways out of their own budgetary sources. Government of West Bengal have proposed extension of this facility by 8.4 kms., from Tollygunge to Garia. As the Central Government's budgetary resources would not be adequate, the Government of West Bengal has been requested to meet 50 per cent of the project cost.

3.7.175 The Government of Karnataka has mooted a proposal for introduction of a Light Rail Transit System in Bangalore, covering a length of about 90 kms. at an approximate cost of Rs. 4,200 crore. A rail-based surface-cum-elevated MRT system already exists in Chennai from the Beach to Chepauk (5.05 kms.) This system is being extended upto Luz (3.5 kms.) by the Ministry of Railways. A proposal for construction of

rail-based MRT system from Luz to Velacherry has also been approved and will be funded jointly by the Government of Tamil Nadu and Government of India (Ministry of Railways).

Ninth Plan Priorities and Strategies

3.7.176 It is now widely recognised that as cities grow in population and size, the demand for transport increases more than proportionately. A good network of roads, coupled with an efficient mass urban transport system makes a substantial contribution to the "working efficiency" of the cities and enables them to become catalysts of economic, social and political development. An efficient transportation system is, thus, critical for productivity and economic growth in cities. It has been estimated that inefficient traffic and transportation system in the urban areas currently results in an annual loss of Rs. 20,000 crore in vehicle-operating costs and travel time costs.

3.7.177 Recognising the inter-dependence between the sustainability of urban systems and the transport network, the Ninth Plan would have a major focus on planning and development of a viable mix of transportation systems including road transport, MRTS and LRT, making full use of all travel modes that would utilise underground, surface and elevation systems.

3.7.178 The development activities in the Ninth Plan would give a thrust to multi-modal transport programmes in order to meet the requirements of all categories of passengers, rather than giving priority to single modal transportation systems such as exclusive expressways which would primarily benefit only a small segment of the population, even though, these activities may be commercially viable through the levy of high user charges. The Ninth Plan strategy would, in this context, seek to reduce the role of private modes, owned by individuals and promote public transportation system, keeping in view the road density, pollution, travel time, parking facilities and other operational concerns.

3.7.179 There is also a need to regulate the entry of private vehicles in the central business districts as part of a demand management strategy. Disincentive measures may be introduced to restrict the entry of low passenger occupancy vehicles. The operational policy instruments may include high entry and parking charges and special levies for low occupancy. This has been already demonstrated as an efficient transport management strategy in several countries. The annual registration of new vehicles should keep in mind the holding capacity of the cities and the availability of the parking spaces. Proliferation of personalised modes like cars and scooters needs to be contained by measures such as penal registration rates.

3.7.180 Equally important is the strengthen the organisational and institutional systems to provide for planned and efficient intra-urban transportation system in the cities. A series of initiatives are required, such as, the setting up of an urban transport unit in the nodal ministry and in the Planning Commission, along with similar units at the State level.

3.7.181 The financing of transportation programmes is a critical issue. The initiatives of the Eighth Plan in regard to financing of urban infrastructure programmes should be made an integral part of the financing strategy for urban transportation. Effective public-private partnership will be promoted through appropriate fiscal and other stimulating initiatives so that the massive investment requirements, which are definitely beyond the capacity of the Plan can be mobilised from other sources as well as the domestic and international capital markets. These financing systems may include different types of leasing finance.

3.7.182 It must be recognised that the high costs, low profits and long-gestation periods of rail-based mass urban transportation projects do not make them financially viable nor do they yield commercial returns that would be as attractive as in the surface-based/elevated urban MRT projects. The Central/State Governments would have to necessarily participate in the equity of such projects and also consider making certain provisions for interest-free/low interest subordinate debt, incentives for property development, tax exemptions/concessions, freedom to fix fares, etc. Budgetary and Plan support from the Central and State Governments will be required for these purposes. The resource mobilisation strategy that the Central and State Governments may adopt for financing these activities may include a mix of dedicated levies and taxes on user and non-user beneficiaries of mass transport systems, which may be in the form of additional excise duty/sales tax on petrol/diesel, surcharge on motor vehicle tax, entry fee on motor vehicles entering metropolitan areas, passenger terminal tax (rail, road, sea and air), surcharge on property tax and a mass transportation tax. The proceeds from these levies may be used to finance the capital costs of MRT projects, and also to discharge part of the long-term loan liabilities. The exploitation of air space above and around the metro stations, depots, sheds etc, for commercial and residential purposes could generate a substantial amount towards the project cost, which can form a part of the State Government's capital contribution to MRT projects. Keeping in view these possible developments, there is a need to set up a National Urban Transport Development Fund during the Ninth Plan. This Fund would provide financial assistance for mass urban transport projects in the country, preparation of feasibility studies and project reports and training and R&D activities. Similar Funds at the city level may also be encouraged to meet the share of contribution of the State and the Urban Local Governments in urban transport projects.

Financial Resource Mobilisation

3.7.183 The wide range of activities that have to be undertaken in the sectoral programmes relating to urban development, housing, water supply, sanitation and transport would require not only a large quantum of financial resources but also their mobilisation on varying terms with respect to their cost and servicing conditions. The funds should be available in such a quantum and on terms that would meet the capacity/potential of the user sectors in absorbing and servicing them. In some cases, such as housing development and urban transport, there is a strong case for mobilising funds at market cost and then adopting a strategy of cross-subsidisation through different market segments. New housing construction has a good potential to absorb market-sourced/cost funds, especially for the upper market segments, as also public transport services. The lower end of the housing market would need subsidised funds, which should be provided through cross-subsidisation within the housing market. A large part of the rental housing market is also in a position to absorb market-sourced funds. Fiscal incentives such as income tax and property tax would, of course, be a good stimulant.

3.7.184 In the case of other sectoral activities like those relating to water supply, some portion of the funds may have to be mobilised at less than market cost, especially for augmentation of capacity of water supply, but for distribution, which generates immediate income flows, market-sourced funds are likely to be a feasible proposition. This is an activity suitable for privatisation and for accessing funds from the private sector. The Ninth Plan would promote this route of resource mobilisation.

3.7.185 Plan resources by themselves cannot be expected to meet all the requirements. The well-structured financial sector reforms during the Eighth Plan have opened up the urban sector to a wide range of financial instruments including leasing finance and bond

issues, even to urban local governments. International financial institutions are now keen to provide long-term credit, including on soft terms, to urban sector programmes. The Asian Development Bank has provided this type of assistance for the first time in India for some urban projects in Karnataka during the Eighth Plan. Specialised financial institutions have developed a range of term assistance programmes in the areas of housing, urban development, water supply, sanitation and urban transport. A strong financial system has been put into place which can play a significant role in providing the large quantum of financial resources on different terms and conditions to meet the requirements of the sector during the Ninth Plan.

3.7.186 Apart from mobilisation of funds from the domestic and global capital market, it would be necessary during the Ninth Plan for the implementing agencies to reduce the cost of their projects through careful planning of the details of the project, proper monitoring of the implementation so as to minimise, if not totally eliminate, time and cost overruns and ensuring efficiency in operational management. It is important to optimise the utilisation of the assets created, eliminate operational losses and pay special attention to recovery of user charges and other tariffs, which also require a significant degree of rationalisation in terms of base and rate. The guiding principle should be full-cost recovery. There is a point of view that full-cost recovery in the initial period may have to be restricted in some sectors to O & M and it may be gradually extended over the Ninth and Tenth Plan periods. The important policy issues are to reduce project cost, optimise utilisation of assets and introduce a realistic pricing policy. These major steps would generate significant amount of internal resources, which could finance the developments in the sector, as well as reduce the total investment requirement.

3.7.187 The implementation of the Constitution Amendment Acts that empower urban local governments and panchayati raj institutions, has to be followed up by reviewing the resource-base of the local governments, both urban and rural, improving tax/revenue administration and rationalising some of the major income sources that have not kept in tune with developments in their areas as well as other economic realities. Active participation of the people in the planning and management of the sectoral programmes is also likely to improve the financial management system and thereby contribute to generation of internal funds for investment.

3.7.188 In this emerging economic and financial scenario, the Plan funds and other subsidised funds should be effectively used as a leverage to mobilise funds from other sources and for very specific programmes included in the Basic Minimum Services (BMS) and those that are targeted to identified priority groups. The leverage strategy was specifically introduced during the Eighth Plan in the Megacity project and the IDSMT scheme. It would be necessary to assess its impact, and if necessary, remove the operational constraints and then extend the strategy to all other sectors.

3.8 EMPOWERMENT OF WOMEN AND DEVELOPMENT OF CHILDREN

INTRODUCTION

3.8.1 Women and children, who represent more than two third (67.7 per cent) of the country's total population, constitute the most important target groups in the context of the present day developmental planning. Therefore, their concerns are placed on the priority list of the country's developmental agenda. Needless to say, they have the strength and support of the Constitution.

EMPOWERMENT OF WOMEN

3.8.2 Women, as a separate target group, account for 407.8 million (including girl children) as per the 1991 census and constitute 48.1 per cent of the country's total population. Depending upon the developmental needs of the individual age groups, the entire female population has been categorised into five distinct sub-groups, viz. i) girl children in the age-group 0-14 years, who account for 153.85 million (37.8%) and deserve special attention because of the gender bias and discrimination they suffer from at such a tender age; ii) adolescent girls in the age group 15-18 years, who account for 38.70 million (9.5%) and are very sensitive from the view point of planning because of the preparatory stage for their future productive and reproductive roles in the family and society; iii) women in the reproductive age group of 15-44 years, numbering 183.67 million (45.1%) who need special care and attention because of their reproductive needs; iv) women in the economically active age group of 15-59 years, who account for 226.04 million (55.5%) and have different demands like those of education/training, employment, income generation and participation in the developmental process, decision making etc; and v) the elderly women in the age group 60+, numbering 27.17 million (6.7%) who have limited needs mainly relating to health, emotional and financial support.

3.8.3 The principles of gender equality and equity and protection of women's rights have been the prime concerns in Indian thinking right from the days of Independence. Accordingly, the country's concern in safeguarding the rights and privileges of women found its best expression in the Constitution of India. While Article 14 confers equal rights and opportunities on men and women in the political, economic and social spheres, Article 15 prohibits discrimination against any citizen on the grounds of sex, religion, race, caste etc; and Article 15(3) empowers the State to make affirmative discrimination in favour of women. Similarly, Article 16 provides for equality of opportunities in the matter of public appointments for all citizens. Yet, another Article 39 mentions that the State shall direct its policy towards providing to men and women equally the right to means of livelihood and equal pay for equal work. Article 42 directs the State to make provisions for ensuring just and humane conditions of work and maternity relief. Article 51(A) (e) imposes a fundamental duty on every citizen to renounce the practices derogatory to the dignity of women. To make this de-jure equality into a de-facto one, special legislations have been enacted from time to time in support of women.

3.8.4 In the earlier phase of developmental planning, the concept of women's development was mainly 'welfare' oriented. During the Sixties, women's education received priority along with the measures to improve maternal and child health and nutrition services. During the Seventies, there was a definite shift in the approach from 'welfare' to 'development' which started recognising women as participants of development. The Eighties adopted a multi-disciplinary approach with a special thrust on the three core sectors of health, education and employment. Accordingly, priority was given to implementation of programmes for women under different sectors of agriculture and its allied activities of dairying, poultry, small animal husbandry, handlooms, handicrafts, small scale industries etc. Recognising the role and contribution of women in development, the early Nineties made a beginning in concentrating on training-cum-employment cum-income generation programmes for women with the ultimate objective of making them economically independent and self-reliant.

THE CURRENT SITUATION

3.8.5 Developmental policies and programmes, both in the women-specific and women-related sectors, put into action through various Five Year Plans, have brought forth a perceptible improvement in the socio-economic status of women in the country. The following paragraphs give an account of important achievements along with the problems and gaps that are existing and requiring attention of the Government in the core Sectors of health and demography, education, employment, decision-making, political participation etc.

3.8.6 In the field of health and demography, significant gains in respect of women's health status have been recorded. Expectation of Life at Birth for females has risen steadily from 31.7 years in 1951 to 59.7 years in 1989-93 and finally overtaken the male life expectancy of 59.0 years during the same period, as detailed in Table 3.8.1.

Table - 3.8.1

Life Expectancy at Birth (1951-1991)

(in years)

Year	Female	Male
1951	31.7	32.5
1961	40.6	48.9
1971	44.7	46.4
1981-85	55.7	55.4
1987-91*	58.6	58.1
1989-93*	59.7	59.0

* Based on the SRS Estimates
Source : Census of India, 1991 - Final Population Totals, Paper 2 of 1992, Government of India, New Delhi, 1993

3.8.7 Similarly, the Mean Age at Marriage for females has also increased from 15.6 years in 1951 to 18.3 years in 1981, while the effective age at marriage stood at 19.4 years in 1995. The Child Marriage Restraint Act of 1976 which raised the age of marriage for girls from 15 to 18 years has helped prevent child/early marriages amongst girls and the consequent early pregnancies and birth of premature babies. Acquiring higher/continuing education and greater employment by women has also played a role in raising their age at marriage as per the details given in Table 3.8.2.

Table - 3.8.2
Mean Age at Marriage during 1951- 1995
(in years)

Year	Female	Male
1951	15.6	19.9
1961	15.5	21.3
1971	17.2	22.4
1981	18.3	23.3
1991	19.5*	NA
1995	19.4*	NA

* Mean age at effective marriage

Source :- SRS – Fertility and Mortality Indicators for respective years, Registrar General of India, New Delhi

3.8.8 Further, while the Crude Birth Rate (CBR) has declined from 40.8 in 1951 to 27.5 in 1996, the Crude Death Rate (CDR) has gone down from 15.6 in 1970 to 8.9 in 1996. Similarly, the Total Fertility Rate (TFR) has also declined from about 6 in the early 1950's to 3.5 in 1994. For further details, refer the Chapter on 'Family Welfare'. The maternal mortality which stood at a very high rate of 437 per one lakh live births in 1993, as per the National Health and Family Survey, is a matter of great concern. This high rate of maternal mortality is attributable to the following major causes, as indicated in Table 3.8.3. which are both treatable/preventable through effective health and nutrition interventions :

Table 3.8.3
Percentage Distribution of Cause- Specific
Maternal Deaths – 1995

Cause	Percentage
- Bleeding of Pregnancy & Puerperium	28.9
- Abortion	17.6
- Anaemia	17.0
- Toxaemia	9.9
- Puerperium Sepsis	8.5
- Malposition of Child	4.0
- Non Classifiable	14.1
Total	100.0

Source : Survey of Causes of Death (Rural), India, Annual Report (1995), Office of the Registrar Gen.of India, New Delhi

3.8.9 As could be seen above, the highest number of maternal deaths in 1995 were due to bleeding of pregnancy and Puerperium which are preventable through better reproductive health care. Abortion which is the second high accounted for 17.6 per cent of total maternal deaths in 1995, although abortion was legalised as early as in 1972 as a health measure through the Medical Termination of Pregnancy (MTP) Act, 1971. Despite this special sanction, illegal abortions still continue to be performed by the unauthorised persons like the local quacks and untrained persons under unhygienic and unsafe conditions because of the non-availability of MTP services within the easy reach of most of the rural population. Further, about 47.5 per cent of deliveries were performed by untrained persons during 1995-96. While the Reproductive Tract Infections (RTIs) and Sexually Transmitted Infections (STIs) are already very high, cases of HIV/AIDS have also been increasing amongst women. Of the total 3161 cases of AIDS reported by the end of 1996, 749 were women.

3.8.10 The Sex Ratio which illustrates the survival scene of women, has been exceptionally unfavourable to women, besides being on a declining trend right from the beginning of this century, except for a marginal rise in 1951 and 1981. The sex ratio which was 946 females per 1000 males in 1951 has declined further to 927 in 1991, as shown in Table 3.8.4.

Table – 3.8.4

Sex Ratio (1951-1991)

YEAR	SEX RATIO
1951	946
1961	941
1971	930
1981	934
1991	927

Source: Census of India, 1991-Final Population Totals. Paper 2 of 1992, GOI, New Delhi, 1993.

3.8.11 According to the National Institute of Nutrition, Hyderabad, 49.3 per cent females were suffering from varying degrees of Chronic Energy Deficiency (CED) and 87.5 per cent of pregnant women were anaemic of various degrees during 1989-90. These deficiencies, as stated earlier, are easily preventable by providing better nutrition to women through their adolescence period and more specifically during pregnancy. For more details, see 'Nutrition' under Chapter 'Food and Nutrition Security'.

3.8.12 The gains in the women's education, has been reflected in the increase of female literacy rate from 7.9 per cent in 1951 to 39.3 per cent in 1991, which is twice the increase over the male literacy rate during the same period, as indicated in Table 3.8.5.

Table 3.8. 5**Literacy Rates (1951 - 1991)**

Year	Female	Male
1951	8.86	27.16
1961	15.34	40.40
1971	21.97	45.95
1981	29.85	56.50
1991	39.19	64.13

Source : Census of India of respective years; Office of the Registrar General of India, GOI, New Delhi.

3.8.13 The enrolment of girls at the primary level has also increased from 5.4 million in 1950-51 to 47.9 million (provisional) in 1996-97, representing a nine-fold increase. Correspondingly, the enrolment of girls at the middle level has also increased from 0.5 million to 16.3 million and at the higher secondary level from 0.2 million to 9.8 million, indicating an increase by more than 32 times and 49 times, respectively during the same period, as per the details given in the later part of this Chapter under 'Development of Children'.

3.8.14 Similarly, the number of women/girls in the higher education which includes colleges, universities, professional colleges of Engineering, Medicine and Technology, has also increased from 13.60 lakh (33.2%) in 1990 to 21.39 lakh (35.5%) in 1997, as per the details given in Table 3.8.6.

Table 3.8.6

Enrolment of Girls at Graduate/Post Graduate/Professional Courses during 1990-91 & 1996-97
(Figures in lakhs)

Levels	1990-91		1996-97	
	Girls	Total	Girls	Total
Graduate (B.A./B.SC./B.Com.)	11.40 (34.7)	32.87	18.20 (37.4)	48.72
Post Graduate (M.A./M.SC./M.COM.)	1.16 (32.8)	3.54	1.65 (30.5)	5.41
B.ED./B.T	0.40 (44.2)	0.92	0.50 (43.1)	1.16
B.E./B.Sc(Eng)/ B.Arch.	0.26 (10.9)	2.41	0.49 (14.9)	3.28
M.B.B.S.	0.28 (34.3)	0.84	0.43 (35.4)	1.21
Ph.D/D.Sc./D.Phil	0.10 (26.2)	0.33	0.12 (29.2)	0.41
Total	13.60 (33.2)	40.91	21.39 (35.5)	60.19

Note: Figures within the parenthesis indicate percentage to total.
Source: Selected Educational Statistics - 1990-91 And 1996-97
Department of Education.

3.8.15 The drop-out rates, which have a direct bearing on the school retention rates, have also shown a definite declining trend both in the case of boys and girls at all levels of school education during the last decade 1986 to 1996 as per the details given in the later part of the Chapter under 'Development of Children'. However, the drop-out rates in the case of girls have always remained higher than those of boys. This was further compounded by the highly pronounced regional and rural-urban differentials, besides sex differentials which continue to persist. Though the gains in the educational status of Women have been impressive, gender justice in education still continues to be a distant goal, with 60.7 per cent of women being illiterate as per the 1991 Census.

3.8.16 According to the 1991 Census, the female Work Participation Rate (WPR) registered an increase from 14.2 per cent in 1971 to 22.3 per cent in 1991. But, at the same time, it was much lower than the male work participation rate with both urban and rural differentials and with much wider regional variations ranging from as high as 34 per cent to as low as 4 per cent amongst the major States. Data on the subject is given in Table 3.8.7.

Years	T/R/U	Females	Males	Persons
1971	Total	14.22	52.75	34.17
	Rural	5.92	53.78	35.33
	Urban	7.18	48.88	29.61
1981	Total	19.67	52.62	36.70
	Rural	23.06	53.77	38.79
	Urban	8.31	49.06	29.99
1991	Total	22.27	51.61	37.50
	Rural	26.79	52.58	40.09
	Urban	9.19	48.92	30.16

Note : 1. Excludes Assam and J&K.
2. 1971 figures are totals of workers and non-workers with secondary work whereas, 1981 and 1991 figures are totals of main and marginal workers.

Source : Census of India, Series-I, Registrar General of India, New Delhi.

3.8.17 The Table 3.8.8 attempts to give the distribution of women work force in the organised and unorganised sectors in comparison to their male counterparts :

Sector	Female		Male		Total	
	Actual	%	Actual	%	Actual	%
- Organised	3.78	4.2	22.95	10.2	26.73	8.5
- Unorganised	85.99	95.8	201.41	89.8	287.40	91.5
Total	89.77	100.0	224.36	100.0	314.13	100.0

Note : Computed based on the Census data and of the DGE&T, GOI, New Delhi.

3.8.18 Of the total women workforce of 89.77 million ((28.6%) in 1991, their share in the organised sector is only 4.2 per cent, while the rest of the 95.8 per cent are in the unorganised sector where there are no legislative safeguards even to claim either minimum or equal wages along with their male counterparts, leave aside the other benefits that the women in the organised sector enjoy.

3.8.19 According to the Director General of Employment and Training (DGE&T), New Delhi, women's share in the organised sector has steadily increased from 11.0 per cent in 1971 to 15.9 per cent in 1997, but it still stands very low when compared to men, as per the data given in Table 3.8.9.

Year	Public Sector		Private Sector		Total	
	Women	Men	Women	Men	Women	Men
1971	8.6 (8.0)	98.7 (92.0)	10.8 (16.0)	56.8 (84.0)	19.3 (11.0)	155.6 (89.0)
1981	14.99 (9.7)	139.85 (90.3)	12.95 (17.5)	61.01 (82.5)	27.93 (12.2)	200.52 (87.8)
1991	23.47 (12.3)	167.1 (87.7)	14.34 (18.7)	62.43 (81.3)	37.81 (14.1)	229.52 (85.9)
1997	26.11 (13.8)	162.57 (86.2)	17.77 (20.4)	69.20 (79.6)	43.88 (15.9)	231.77 (84.1)

Note : Figures in parenthesis are percentages.
Source: DGE&T, Ministry of Labour, GOI, New Delhi.

3.8.20 Similarly, while representation of women in the Government account for only 13.7 per cent, their representation at the decision-making levels through the three Premier Services in the country viz. Indian Administrative Service (IAS), Indian Police Service (IPS) and Indian Foreign Service (IFS) has accounted for only 5.8 per cent in 1987. Although, the same has been increased marginally to 7.5 in 1997, yet it stood at a very low ebb as per the data given below, requiring both affirmative action and special interventions to help raise the number of women at various decision-making levels.

Service	1987			1997		
	Total	Female	%	Total	Female	%
IAS	4204	339	7.5	4991	512	10.2
IPS	2418	21	0.9	3045	67	2.2
IFS	480	53	10.0	575	71	12.3
Total	7102	413	5.8	8611	650	7.5

Source: Ministry of Home Affairs; Ministry of External Affairs; Department of Personnel, GOI, New Delhi.

3.8.21 The problem of unemployment, especially amongst the educated women, has become a matter of great concern in the recent past. The rate of unemployment amongst urban females which stood at 5.4 per cent in 1990-91 has become very significant when compared to 0.4 per cent amongst rural females during the same year. The same trend is visible even in the NSSO data based on the current weekly status of unemployment, which stood at 5.3 per cent for urban females and 2.1 per cent for rural females in 1990-91. While the number of women on the Live Registers of Employment Exchanges has increased from 5.5 million in 1988 to 8.4 million in 1996, the educated unemployed women (Matriculates and above) in 1992 stood at 5.4 million.

3.8.22 The landmark achievement of both 73rd and 74th Constitutional Amendments in 1993 brought forth a definite impact on the participation of women in the grass-root democracy through the Panchayati Raj Institutions (PRIs) and Local Bodies. In the recent elections of PRIs held during 1993-95, women have achieved participation even beyond the mandatory requirement of 1/3rd of total seats in States like West Bengal (35.1%), Kerala (36.4%) and Karnataka (43.4%). In fact, these amendments are expected to achieve effective participation of women in grass-root democratic institutions and its processes, both as individuals and as representatives of interest groups.

3.8.23 In the State Legislative Assemblies, although the number of women has increased from 102 (2.5%) in 1977 to 162 (3.9%) in 1997, the same stands at a very low ebb. Similarly, the number of women in the Lok Sabha has also increased from 22 (4.4%) in 1952 to 41 (7.5%) in 1998 as shown in Table 3.8.11, but the same continued to be very low.

Table 3.8.11

Representation of Women in Parliament (1952-1998)

Year	Lok Sabha Females	Males	Year	Rajya Sabha Females	Males
1952	22	475	1952	15	201
1980	28	514	1984	24	209
1991	39	486	1990	24	221
1996*	39	501	1996	19	219
1998	41	543	1998	18	218

* Provisional as on 20.8.1996.

Source: Election Commission of India.

3.8.24 The status-quo, referred to above, can only change when women's concerns gain political prominence and a fairly representative number of women are in position not only at grass-roots level, but also at the state and national levels to convert them into a political will. This calls for affirmative action on the part of the Government.

3.8.25 Efforts of both governmental and non-governmental women's organisations and women's activists to contain violence against women have not been able to meet much success, as the incidence of atrocities against women has been increasing. The problems of dowry/dowry deaths continue unabated despite the existence of legislation prohibiting dowry and prescribing stringent measures for violating the law. Similarly, the legislation of Immoral Traffic (Prevention) Act, 1956 (as amended and renamed in 1986) could not curb the age-long social evil of prostitution as it started spreading even amongst children.

3.8.26 Violence against women, both domestic and at work place, continues its existence as is evident from the increasing incidence of rape, dowry-related cruelty and murders. As per the data published by the National Crimes Record Bureau, New Delhi, out of the total 1,15,723 cases related to women and registered under IPC in 1996, rape accounted for 14,846 (12.8%), dowry deaths 5513 (4.8%) and cases of torture 35,246 (30.5%). The media, particularly the TV and Cinema, has been perpetuating gender stereo-types, with visuals becoming more and more sex and violence oriented. Through selective and biased messages, women's role is projected as passive and victimised wives/mothers/sisters. This, in fact, has been rendering invisibility to many aspects of women's contribution to society.

THE STRATEGY FOR THE NINTH PLAN

3.8.27 'Empowerment of Women' being one of the nine primary objectives of the Ninth Plan, every effort will be made to create an enabling environment where women can freely exercise their rights both within and outside home, as equal partners along with men. This will be realised through early finalisation and adoption of the 'National Policy for Empowerment of Women' which laid down definite goals, targets and policy prescriptions along with a well defined Gender Development Index to monitor the impact of its implementation in raising the status of women from time to time.

COMMITMENTS OF THE NINTH PLAN (1997-2002)

Objective

- Empowering Women As The Agents Of Social Change And Development

Strategies

- To create an enabling environment for women to exercise their rights, both within and outside home, as equal partners along with men through early finalisation and adoption of "National Policy for Empowerment of Women"
- To expedite action to legislate reservation of not less than 1/3 seats for women in the Parliament and in the State Legislative Assemblies and thus ensure adequate representation of women in decision making
- To adopt an integrated approach towards empowering women through effective convergence of existing services, resources, infrastructure and manpower in both women specific and women related sectors
- To adopt a special strategy of "Women's Component Plan" to ensure that not less than 30 percent of funds/benefits flow to women from other developmental sectors
- To organise women into Self help group and thus mark the beginning of a major process of empowering women
- To accord high priority to reproductive child health care
- To universalise the on-going supplementary feeding programme- Special Nutrition Programme (SNP) and Mid Day Meals(MDM)
- To ensure easy and equal access to education for women and girls through the commitments of the Special Action Plan of 1998
- To initiate steps to eliminate gender bias in all educational programmes
- To institute plans for free education for girls upto college level, including professional courses
- To equip women with necessary skills in the modern upcoming trades which could keep them gainfully engaged besides making them economically independent and self-reliant
- To increase access to credit through setting up of a 'Development Bank for Women Entrepreneurs in small and tiny sectors

3.8.28 An integrated approach will be adopted towards empowering women through convergence of existing services, resources, infrastructure and manpower available in both women-specific and women-related sectors with the ultimate objective of achieving the set goal. To this effect, the Ninth Plan directs both the Centre and the States to adopt a special strategy of 'Women's Component Plan' through which, not less than 30 per cent of funds/benefits are earmarked in all the women-related sectors. It also suggests a special vigil to be kept on the flow of the earmarked funds/benefits through an effective mechanism to ensure that the proposed strategy brings forth a holistic approach towards empowering women.

3.8.29 While organising women into Self-Help Groups marks the beginning of a major process of empowering women, the institutions thus developed would provide a permanent forum for articulating their needs and contributing their perspectives to development. Recognising the fact that women have been socialised only to take a back seat in public life, affirmative action through deliberate strategies will be initiated to provide equal access to and control over factors contributing to such empowerment, particularly in the areas of health, education, information, life-long learning for self development, vocational skills, employment and income generating opportunities, land and other forms of property including through inheritance, common property, resources, credit, technology and markets etc. To this effect, the newly elected women members and the women Chairpersons of Panchayats and the Local Bodies will be sensitised through the recently launched special training package to take the lead in ensuring that adequate funds/benefits flow towards the empowerment of women and the girl child.

Health and Family Welfare

3.8.30 The Ninth Plan recognises the special health needs of women and the girl child and the importance of enhancing easy access to primary health care. There are many indicators to point out that the neglect of health needs of women especially that of the pregnant women, adolescent girls and girl-babies, is responsible for the present high rates of IMR/CMR/MMR. Therefore, a holistic approach with Reproductive Child Health (RCH) measures will be adopted in improving the health status of women by focussing on their age-specific needs.

3.8.31 Taking into account their multiple roles including the physical labour that women in the lower strata of the society living in the backward rural areas and urban slums have to carry on, efforts will be made to ensure that the health services become more responsive towards women-specific health problems. In this direction, the major strategy will be to increase women's access to appropriate, affordable and user-friendly health care services. Special attention will also be paid to occupational health hazards. The present strategy extending primary health care services for all through the Special Action Plan of 1998 is expected to fill the critical gaps in the existing primary health care infrastructure and make it more effective to reach 'Health Care Services for All' with a priority to the rural and urban poor living below the poverty line.

3.8.32 To achieve the expected level of 50/1000 of IMR and 3/1000 of MMR by 2002 AD, if current trend continues, the Ninth Plan accords high priority to reproductive child health care and proposes an integrated approach with ante-natal, natal and post-natal care and child health services. In this context, the Ninth Plan identifies the long-standing gap of non-availability of data on maternal mortality and suggests that the Office of the Registrar

General and Census Commissioner, New Delhi should initiate action in making the data on the maternal mortality available on a regular basis like that of IMR, as the same is a pre-requisite for planning both need-based and area-based strategies to reduce the existing high rate of maternal mortality.

3.8.33 The other effective measures proposed in this direction include identification and management of high-risk mothers, appropriate management of anaemia, hyper-tension disorders and provision for emergency obstetric care. Further, steps will also be taken to close the gender gaps in the existing rates of both mortality and morbidity. Also, considering the fact that more than 50 per cent of the deliveries and a large number of illegal abortions are being performed by unqualified persons, particularly in the rural areas, special efforts will be made to promote ready access to medical termination of pregnancy and intra-partum care at Primary Health Centres. In areas where institutional delivery rates are low, focussed TBA training will be undertaken.

3.8.34 Prevention/control of the misuse of medical technologies for commercial purposes will be taken up on a priority basis as the incidence of female foeticide has been on an increase due to misuse of the medical technology of Amniocentesis for sex determination, which is generally followed by illegal and harmful practices of female foeticide. Action in this direction will include effective enforcement of the Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994 with stringent measures of punishment of both the parties. Efforts will also be made to create an enabling environment for women to exercise their reproductive rights and choices freely, so as to contain the population growth.

3.8.35 Under RCH care, steps for prevention and treatment of gynaecological problems including infertility, menstrual disorders, screening and treatment of cancers especially that of breast and uterine cervix etc. will also be taken up. Also, the traditional health care, especially practised by women, will be encouraged through programmes of Indian Systems of Medicine. Gender-sensitive initiatives that address the sexually transmitted infections/diseases (STDs), HIV/AIDS and other sexual and reproductive health issues, will be attended to on a priority basis. The health education material, being brought out as part of IEC material for family planning, will be made gender sensitive for both men and women. Special efforts will be made to disseminate information to women, especially in rural and tribal areas on the available reproductive health services. Efforts to promote participation of men in planned parenthood in increasing acceptance of vasectomy and active co-operation of men in STD/RTI Prevention Control, will receive priority attention.

Nutrition

3.8.36 To tackle the problems of micro-nutrient deficiencies and protein energy malnutrition (PEM), the primary focus will be on the 'at-risk groups' who are living below the poverty line and also on those who are 'nutritionally vulnerable', particularly, the women/mothers and children. In this direction, special efforts will be made through the Special Action Plan of 1998 to universalise the on-going supplementary feeding programmes viz., Special Nutrition Programme (SNP) for pre-school children and expectant and nursing mothers and Mid-Day Meals (MDM) for school going children. These feeding programmes will also be reinforced with necessary support services like health check-up, immunisation, ante-natal care, health and nutrition education and awareness etc.

The Ninth Plan will also incorporate a special package of services to prevent/control the micro-nutrient deficiencies of Vitamin A, Iron and Iodine, which are extremely important from the point of view the health consequences on women/mothers and children. Further details are available under the Chapter on 'Food and Nutrition Security'.

Education and Training

3.8.37 Education, being the most powerful instrument for empowering women, assumes special priority in the Ninth Plan. Efforts in the Ninth Plan will, therefore, be target-oriented in fulfilling the goal of 'Education for Women's Equality' as laid down in the National Policy on Education (NPE), 1986 and revised in 1992. Towards this, special attention will be paid to the already identified low female literacy pockets and to the women and the girl children belonging to the socially disadvantaged groups viz. SC, STs, OBCs, Minorities, Disabled, etc. as they still lag behind the rest of the population with the lowest literacy rates ranging between 5 and 10 per cent, while the national average of female literacy stands at 39.3 per cent in 1991.

3.8.38 While the Universal Primary Education continues to be a priority area in the Ninth Plan, all out efforts will be made to ensure both easy and equal access to education for women and girls through the commitments of the Special Action Plan (1998) to achieve total eradication of illiteracy. Besides, steps will be initiated to eliminate gender discrimination in the admissions; remove gender bias and stereo-types in the curricula, text books and learning material; create a gender - sensitive educational system; promote gender sensitization of teachers on a regular basis; appoint more women teachers at primary level (at least 50%); reduce drop-out rates and increase enrolment and retention rates of girl children through special incentives like free supply of uniforms and text books, mid-day meals, scholarships, flexible school timings and attached hostels and creches; and improve the quality of education, facilitating life-long learning through the correspondence courses, distance learning and self-study programmes for women and girls who fall out of the formal system of schooling. The special package announced for the Girl Child on 15 August, 1997 also revolves around the very same theme of educating and empowering the girl child living below the poverty line with adequate financial support till she completes higher secondary education or gets equipped with necessary skills to earn her livelihood. More details are given in the later part of this Chapter under the section 'Child Development'.

3.8.39 Vocationalisation of secondary education and vocational training for women will receive high priority as one of the ultimate goals of empowering women is to make them economically independent and self-reliant. In this context, the existing network of National Vocational Training Centre (NVTC), Regional Vocational Training Centres (RVTCs), Pre-Vocational Training Centres (PVTCs), Industrial Training Institutes (ITIs) and Craft Training Centres (CTCs) will be further strengthened with necessary improvements in the infra-structural facilities for introduction of up-coming trades, hostels etc. Efforts will also be made to encourage eligible women/girls with suitable incentives to join vocational education/training so that the facilities available at these exclusive Training Institutions will be utilised optimally. Introduction of part-time and short-term courses will also be considered to meet the special needs and timings of working women/girls. Efforts will be made to encourage women and girls with necessary incentives to opt for the emerging areas of technical education such as electronics, computer systems and applications, bio-engineering, bio-technology, food processing, fabric designing, beauty culture, communications, media etc, which have high employment potential.

3.8.40 Further, to encourage more and more girls to enter into the mainstream of higher education and thus ensure fulfillment of the commitment of 'Education for Women's Equality', the Ninth Plan envisages to institute plans for providing free education for girls upto college levels, including professional courses, so as to better empower women.

Work and Employment

3.8.41 There is an urgent need to revive the special project of 'Gender Sensitization of 1991 Census' to capture women's work in the informal sector in a more substantial way in the coming Census of 2001 AD. In this regard, there is a need to consider redefining the concept of work' and provide conceptual clarity to the 'definition of work' by the Census and NSSO. The Ninth Plan also envisages the preparation of Satellite Accounts to highlight Women's Work through appropriate methodologies, consistent with the National Accounts.

3.8.42 Keeping in view the ultimate objective of fulfilling the 'Right to work for every citizen', special efforts will be made to generate gainful employment through promotion/expansion of both wage and self employment opportunities for women so as to make all potential women economically independent and self-reliant. In this context, the ongoing training- cum – employment – cum - income-generation programmes viz. Integrated Rural Development Programme (IRDP), Training of Rural Youth for Self-Employment (TRYSEM), Nehru Rozgar Yojana (NRY), Jawahar Rozgar Yojana (JRY), Prime Minister's Rozgar Yojana (PMRY), Development of Women and Children in Rural Areas (DWCRA), Indira Mahila Yojana (IMY), Support for Training and Employment (STEP), NORAD-assisted Training-cum-Production Centres (popularly known as NORAD), Socio-Economic Programme (SEP) etc. will be expanded to create more and more of employment-cum-income generation opportunities and cover as many women as possible living below the poverty line. In these efforts, priority will be given to female-headed households and women in extreme/abject poverty

3.8.43 As in the past, there will be a special focus on women in agriculture and its allied sectors as they are in majority (89.5%) and form the major stock of all the agricultural operations. The programmes for training women in soil conservation, social forestry, dairy development and other occupations allied to agriculture like horticulture, livestock including small animal husbandry, poultry, fisheries, etc. need to be expanded to reach the benefits to women workers in proportion to their number. Simultaneously, the extension services will be strengthened to cover a larger number of women, keeping in mind women's role as producers. The number of women extension workers, especially the Farm Extension Workers, will be increased to assist rural women to take advantage of various training programmes.

3.8.44 Efforts will also be made to identify the traditional sectors that are shrinking due to advancement of technology, market shifts and changes in the economic policies; introduce programmes to re-train/upgrade the skills of the displaced women to take up jobs in the new and expanding areas of employment and formulate appropriate policies and programmes to promote opportunities for wage/self-employment in traditional sectors like khadi and village industries, handicrafts, handlooms, sericulture, small scale and cottage industries and absorb those displaced women. Flexibility in the labour/employment market for women will be given adequate weightage through various Structural Adjustment Programmes (SAE).

3.8.45 Women in the Informal Sector, who account for more than 90 per cent, will receive special attention during the Ninth Plan especially with regard to their working conditions, as the same continued to be precarious without any legislative safeguards. Attempts will, therefore, be made to extend important labour legislations to the informal sector so as to ensure basic minimum working conditions for women. In this direction, special efforts will be made to ensure that laws relating to both minimum and 'equal pay for equal work' for women, shall be strictly implemented. While formulating policies and programmes for the betterment of women in the informal sector, the un-attended recommendations of the National Commission on Self-employed Women and Women in the Informal Sector (1988) and also the findings/results of the Fourth Economic Census (now in progress), revealing the latest trends and patterns of women's employment in the Informal Sector, will be taken into consideration.

3.8.46 The Ninth Plan recognises the need for a conducive Credit Policy to increase the access for women to credit through appropriate institutional mechanisms like Rashtriya Mahila Kosh (RMK), National Agricultural Bank for Rural Development (NABARD), Council for Advancement of People's Action and Rural Technology (CAPART), Women Co-operatives/SHGs and the other financial institutions. In this context, expansion of the activities of Rashtriya Mahila Kosh (RMK) needs special attention. Efforts will also be made to learn lessons from the success stories of various voluntary organisations who have already established their credentials in the field of credit and encourage them to expand their activities both within and outside their States. The Ninth Plan also envisages all States/UTs to be equipped with Women's Development Corporations (WDCs) to provide both 'forward' and 'backward' linkages of credit and marketing facilities to women entrepreneurs, besides being catalysts. In this context, the Ninth Plan also envisages to set up a 'Development Bank for Women Entrepreneurs' in the small scale and tiny sectors.

3.8.47 To increase the share of women in factories and industrial establishments, efforts will be made to remove the existing traditional bias that women are good only in stereotype/feminine jobs and encourage women to equip themselves with necessary professional/vocational skills and compete with men to make an entry into such areas. Simultaneously, efforts will be put into effect to ensure that the employers fulfil their legal obligations towards their women workers in extending child care facilities, maternity benefits, special leave, protection from occupational hazards, allowing formation of women workers' associations/unions, legal protection / aid etc. In this context, efforts will also be made to gender sensitize the Trade Unions to play the role of a watch-dog with regard to protection of women's rights/interests.

3.8.48 With regard to Women in Services, the Ninth Plan recognises the need to initiate affirmative action to ensure at least a minimum of 30 per cent of reservation for women in services in the Public Sector as against the present low representation of 13.8 per cent in 1997. Efforts will also be made to ensure up-ward mobility for women in services. To encourage women, special concessions and relaxations, like multiple entries, enhancement of upper age limit, need to be extended to ensure adequate representation of women in services in the public sector. For women to join the Services in a big way, support services like child care facilities viz. creches/day care centres at the work places/educational institutions and homes for the aged and the disabled will be expanded with improved facilities. Also, Hostels for Working women will be expanded to promote their mobility in the employment market.

Decision-Making

3.8.49 As the representation of women in the decision-making levels has a direct bearing on all the affirmative actions directed towards their well-being and empowerment, every effort will be made to ensure that women are in adequate numbers at the decision-making levels. To this effect, women will be encouraged with special coaching facilities to compete in the competitive examinations which provide them a direct entry into the path of decision-making levels. Similarly, there is also a need for women to be active in public life and take part in the political decision-making process, as political decisions/ political will in favour of women can influence a lot in creating an enabling environment for women to empower themselves. Towards this, efforts will be made to expedite action to legislate reservation of not less than 1/3 of the total seats for women both in Parliament and State Legislative Assemblies.

3.8.50 As economic empowerment of women is mainly related to their participation in decision-making with regard to raising and distribution of resources i.e. income, investments and expenditures at all levels, special efforts will be made to enhance their capacity to earn besides enlarging their access to and control/ ownership of family/community assets. With access to economic assets, women will be encouraged to take up self-employment through various entrepreneurial ventures which are more convenient and allow them to play their dual role, within and outside home, effectively.

Poverty Alleviation

3.8.51 As women are critical to the process of moving their families out of poverty, the present policies and programmes of poverty alleviation will be redesigned, if called for, to make them more responsive to the special needs of women in abject/extreme poverty. As a first step in this direction, the Ninth Plan proposes to revamp TRYSEM in its design, curriculum and method of training and thus improve the training and employment opportunities for women in poverty. Further, a special mechanism will be evolved to bring forth a closer integration amongst DWCRA, IRDP and TRYSEM to extend greater access to financial assistance and training to Women's Groups under DWCRA. Further, as the woman's capacity to work, her health, knowledge and skill endowment are often the only resources for the poor households to fall back upon for their survival, efforts will be made to ensure that a minimum of 30 to 40 per cent of the benefits flow to women from all the existing poverty alleviation programmes, both rural and urban. Further, the social security programmes launched in 1995 will give a special focus on women so that the social assistance thus received will form the survival base for women in extreme poverty.

Care and Protection

3.8.52 Welfare and rehabilitative services will continue to be extended for women in need of care and protection viz. the disabled/deserted/widowed/destitute and women in difficult circumstances etc. Special programmes will be designed for both social and economic rehabilitation of Devadasis, Basavis, Jogins, sex-workers, beggars etc. The plight of those young women and girls, who migrate to the cities in search of jobs and later become victims of various circumstances and social/moral danger, will receive special attention during the Ninth Plan.

Environment

3.8.53 Considering the strong impact of environmental factors on the sustenance and livelihood of women, special efforts will be made to ensure/encourage participation of women in the conservation of environment and the control of environmental degradation through programmes of social forestry, afforestation and wasteland development etc. Accordingly, necessary provisions will be made to reflect women's perspectives in the policies and programmes for the management of eco-system and natural resources. Further, emphasis will be laid on the use of science and technology to solve environment-related problems like energy and fuel conservation along with water conservation to ease women's work in and outside the home. Efforts will also be made for gender sensitization of forest staff and local communities to involve women's groups in the planning and management of forest conservation and utilisation of forest produce.

Science and Technology

3.8.54 Application of Science and Technology (S&T) is vital for the advancement of women as it reduces household drudgery and provides better working conditions for women, particularly, in rural areas. Therefore, participation of women/women scientists in S&T activities will be encouraged in the Ninth Plan at all stages viz. - design, development/ adaptation of alternative technologies, including upgradation of traditional technologies and identification of those activities for which improved technologies would be of greater benefit. The criteria for selection of technology for women will include relief from drudgery - associated tasks, time saving, increased output and productivity, improved hygiene, energy efficiency etc. The Ninth Plan, therefore, accords high priority to research and development (R&D) for exploitation of locally available indigenous alternative sources of energy for use in the women-related household activities. To undertake these types of R&D activities, more and more girl students will be encouraged to get into science streams with attractive incentives.

Media and Communication

3.8.55 The strategy for Media in the Ninth Plan will be a combination of efforts to confront/put an end to the negative and stereotyped portrayal and depiction of women and girls, besides using all types of mass media and communication resources to change the mindset of the people and the attitudes/behavioural patterns of people through information, advocacy and analysis. To this effect, there is an urgent need for adopting a Media Policy with laid down prescriptions of 'do's' and 'don'ts' in support of the constitutional guarantee of upholding women's dignity.

Violence against Women

3.8.56 To deal with the increasing problem of violence against women and the girl child within and outside the family, a comprehensive approach will be adopted through a review of all the existing women-specific legislations and remove the weak links through necessary amendments; effective implementation of the existing legislation with strong punitive measures; gender-sensitisation of the enforcement machinery to be prompt and strict in handling the perpetrators of such violence; involvement of community and the voluntary organisations to act as the informants; and rehabilitation of, and compensation for, the victims of such violence. Towards this, efforts will be made to

encourage all the States/UTs to initiate annual reviews on the situation of violence against women both at the State and District levels, on the lines of the annual reviews at the national level. Setting-up/strengthening of Women's Cells in the approved Police Stations, family courts, mahila courts, counselling centres, legal aid centres and nyaya panchayats, will be attempted as part of the intensive efforts to curb violence against women. Along with these, there will be widespread dissemination of information on women's rights, human rights and other legal entitlements for women, through the specially designed Legal Literacy Manuals brought out in 1992. Efforts will also be made to include legal literacy in the curriculum of schools, colleges, and other Training Institutes.

3.8.57 The other measures include strengthening of National/State level Commissions for Women; appointment of a Commissioner for Women's Rights who would act as a Public Defender on behalf of women; mobilisation of voluntary action for gathering public support for the victims of violence including counselling, relief and rehabilitation; and building up of such an environment where women and girls can come forward to report to the police about the acts of violence against them, without any fear of reprisal.

Gender Sensitization

3.8.58 Keeping in view the Ninth Plan commitment of empowering women, vigorous efforts will be made to accelerate the process of societal reorientation towards creating a gender-just society. The focus in this regard will be on both men and women within the family and within the community to change their negative attitudes and eliminate all types of discrimination against women and the girl child. In this process, both governmental and non-governmental organisations are expected to play a big role in utilising both mass media and other traditional means. Gender sensitization will be institutionalised within the government training systems through induction as well as refresher courses. Specially designed gender sensitization programmes will be conducted on a regular basis with special focus on the State functionaries viz. the executive, legislative, judicial and enforcement wings of all governmental agencies. Other initiatives in this direction include generating societal awareness to gender issues; review of curriculum and educational materials leading to the removal of all references derogatory to the dignity of women; use of different forms of mass media to communicate special messages relating to women's equality and empowerment.

Legislative Support

3.8.59 Special efforts will be made to enforce the existing legislations effectively to safeguard the interests of women and girls as the Ninth Plan identifies laxity in the implementation of various legislations, especially the women-specific, viz. - The Dowry Prohibition Act, 1961 (as amended upto 1986); The Immoral Traffic Prevention Act, 1956 (as amended and retitled in 1986); Indecent Representation of Women (Prevention) Act, 1986 etc. The findings of the recent review of all the existing legislations, both women-specific and women-related, undertaken by the National Commission for Women will be examined to plug the existing loopholes through necessary amendments and enact new legislations, if necessary, to make the legislations as effective instruments in safeguarding the rights of women and the girl-child and ensuring gender justice.

POLICIES AND PROGRAMMES : A REVIEW

3.8.60 Human development being the major thrust in the Eighth Five Year Plan (1992-97), it sought to ensure that the flow of benefits from other developmental sectors did not bypass women and the same was monitored with a special vigil in the three core sectors of health, education and employment. To this effect, the special mechanism of Monitoring the 27 Beneficiary oriented Programmes for Women was continued in the Eighth Plan. It envisaged that the women must be enabled to function as equal partners and participants in the country's developmental process. This approach of the Eighth Plan marked a shift from development to empowerment' of women. Achievements in both the women-related and the women-specific sectors during the Eighth Plan are listed below:

3.8.61 Improvement in the health status of women received high priority during the Eighth Plan. The erstwhile programme of Maternal and Child Health services was recast as the Child Survival and Safe Motherhood (CSSM) programme and launched in 72 districts during 1992-93. The same was further expanded to cover 466 districts by the end of the Eighth Plan. Under the Universal Immunisation Programme (UIP), the TT vaccination coverage of pregnant women increased from 40 per cent in 1985-86 to 76.4 per cent in 1996-97 and 80.93 percent in 1997-98. Under the Prophylaxis scheme, 119.59 lakh pregnant women were provided with Iron and Folic Acid (IFA) tablets during 1996-97 and 83.59 lakh women during 1997-98. Around 2.11 lakh Dais were trained during 1996-97. Under CSSM training, 22715 medical officers and 92365 para medical workers were trained till September, 1996. As many as 1022 First Referral Units (FRUs) were identified for Emergency Obstetric Care in 5 States viz. - Assam, Bihar, Madhya Pradesh, Uttar Pradesh and Rajasthan till 1997. These services of child survival and safe motherhood, as revealed by various evaluation studies, have contributed significantly to the reduction of Infant Mortality Rate from 79 to 72; Crude Birth Rate from 29.2 to 27.5 and Crude Death Rate from 10 to 9.0 during 1992 to 1996. An extensive network of 2424 Community Health Centres, 22,962 Primary Health Centres and 1,36,815 village level Sub-Centres was in actual operation by 1997 to extend primary health care services including safe motherhood and other family planning services to women in rural areas.

3.8.62 The National Nutrition Policy (NNP), adopted in 1993, made a commitment to reduce the iron deficiency anaemia amongst pregnant women, nutritional blindness due to Vitamin 'A' deficiency and iodine deficiency disorders. To reduce prevalence of anaemia in pregnancy, the National Anaemia Prophylaxis programmes of iron and folic acid tablets distribution to all the pregnant women was initiated in 1972. Alternative strategies to control anaemia in pregnancy are being taken up as part of the RCH initiative. To combat the problem of blindness due to Vitamin 'A' deficiency in children, administration of a massive dose of Vitamin 'A' once in 6 months to all children between 1-5 years of age was included in the National Prophylaxis Programmes against Nutritional Blindness. In order to achieve further improvement in Vitamin 'A' status of children, a two-pronged initiative of improving the coverage of massive dose of Vitamin 'A' administration and nutrition education for improving the intake of Vitamin 'A' rich foods, is being taken.

3.8.63 The National Goitre Control Programme, initiated in 1962, makes available good quality iodised salt in areas of high Iodine deficiency disorders (IDD). The implementation of the programme in the initial three decades was sub-optimal and IDD prevalence remained essentially unattended to. Further, supplementary nutrition to the expectant and nursing mothers continued through the universalised ICDS programme and about 3 million mothers were receiving supplementary nutrition by the end of the Eighth Plan. Special efforts were also made to impart nutrition education to mothers and women through the programmes of ICDS and Integrated Nutrition Education and thus create nutritional awareness amongst women/mothers. Above all, the emphasis has been on the removal of the inequitable distribution of food and discriminatory feeding practices against women and the girl child.

3.8.64 In the field of Education, emphasis was laid on increasing the participation of women in the educational process. Accordingly, efforts were made towards Universalisation of Elementary Education (UEE) which resulted in significant improvement in the enrolment of girls in schools and reduction in the drop-out rates at all levels.

3.8.65 Under the Total Literacy Campaign (TLC), 422 districts have been covered by the end of March, 1998 with a total coverage of 68.57 lakh beneficiaries, of whom 41.14 lakh were women. Another programme, viz., Non-formal Education (NFE), which provided education comparable to formal schooling to those who remained outside the formal schooling system, benefited 24.81 lakh girls at one lakh exclusive NFE Centres for girls by the end of 1995-96. The same has increased to 29.80 lakh girls by March, 1998.

3.8.66 Mahila Samakhyas, a programme for women's equality and empowerment, operated in 35 districts of 7 States viz Uttar Pradesh, Karnataka, Gujarat, Andhra Pradesh, Bihar, Madhya Pradesh and Assam. This programme addressed many issues like drinking water, health services, managing non-formal education, provision of pre-school centres/ creche facilities etc. The village women of Mahila Samakhyas were managing 529 NFE Centres and 241 ECCE Centres also.

3.8.67 The programme of Nutritional Support to Primary Education which was launched in 1995 in 40 Low Female Literacy Blocks, provided a special boost to enrolment, retention and attendance of girls besides leaving an impact on the nutritional status of the girl children in primary classes. To extend support for SC/ST girls to continue their education beyond the middle school level, the number and the intake capacity of the girls' hostels were increased during the Eighth Plan by opening 602 additional hostels for 51299 SC girls and 261 hostels for 10440 ST girls. During 1997-98, 78 more SC hostels for 12857 girls and 102 ST hostels for the benefit of 10200 girls were sanctioned.

3.8.68 In line with the Eighth Plan strategy of achieving near full employment, efforts were made to enhance employment and income generation activities for women under various sectors viz. agriculture, dairying, animal husbandry, khadi and village industries, small scale industries, handlooms, handicrafts etc. Since 89.5 per cent of rural women were engaged in the agriculture sector, efforts were made to enhance their skills in agricultural operations and extension work.

3.8.69 Special programmes like 'Women in Agriculture' were launched in 1993 to train women farmers having small and marginal holdings in agriculture and its allied programmes like animal husbandry, dairying, horticulture, fisheries, bee-keeping etc. Since inception of the scheme, 210 Farm Women's Groups were constituted and training was provided to 4200 Farm Women in 7 selected States. Another programme called Training of Women in Agriculture with DANIDA and DUTCH assistance imparted training to 1.89 lakh women. To assist women in agro-based industries, 6866 Women's Cooperatives were formed with 100 per cent financial assistance from the Government. Under the programme of Operation Flood, rural women involved in dairy development on cooperative lines were given training in various activities relating to milk production, preservation and cooperative group formation. By the end of the Eighth Five Year Plan, 74,300 Dairy Cooperative Societies were organised. The percentage of women members has risen from about 14 per cent, a decade ago, to about 20 per cent in 1997 (approx. 19 lakh women members). By the end of 1996, there were 8,171 exclusive Women Cooperative Societies (non-credit) with a total membership of 6.93 lakh women. Women Milk Co-operatives were leading in many States especially in Haryana, Punjab, Uttar Pradesh, Rajasthan and Karnataka.

3.8.70 The Khadi and Village Industries Commission (KVIC) took several measures to generate more employment opportunities for women and thus increase their capacity to earn. Of the total 60.75 lakh persons employed under various programmes of KVIC, 46 per cent beneficiaries were women. An exclusive national level Training Institute for Women was also set up at Pune during the Eighth Plan. Two schemes viz. Prime Minister's Rojgar Yojana (PMRY) and Entrepreneurship Development Programme (EDP) in the Small Scale Industries sector, were designed to help women to develop entrepreneurial skills and ventures of small scale enterprises for self-employment. Under PMRY, 85012 projects during the Eighth Plan period and 28,467 projects during 1997-98 were sanctioned exclusively for women. Under EDP, 8828 women during Eighth Plan and 3714 women during 1997-98 received training.

3.8.71 Training and upgradation of skills for women in the most modern and upcoming trades received high priority. The National Vocational Training Institute at NOIDA (UP) and the 10 Regional Vocational Training Institutes for women imparted basic and advanced level vocational training with an annual turnover of 1864 candidates. By February, 1998, there were 223 women's Industrial Training Institutes (ITIs) and

ECONOMIC EMPOWERMENT

In line with the Eight Plan Strategy of providing 'Near full – employment', the Government has reset its priorities to accord special emphasis to keep women gainfully engaged through employment cum income generation activities. The ultimate objective of all these efforts is to make women economically independent and self-reliant. Some of the important initiatives thus undertaken in this direction include launching of programmes viz., 'Work and Wage', 'Learn while you earn', 'Credit for Entrepreneurial / Self Employment Ventures', Employment Guaranty Schemes etc. both in rural and urban areas. While programmes like IMY (Indira Mahila Yojana), DWCRA (Development of Women and Children in Rural Areas), STEP (Support for Training and Employment), TEPC (Training cum Employment cum Production Centres) popularly known as NORAD are some of the important women-specific employment cum training programmes, there exist a few more programmes like, IRDP (Integrated Rural Development Programme), TRYSEM (Training of Rural Youth for Self Employment Programmes), JRY (Jawahar Rozgar Yojana), NRY((Nehru Rozgar Yojana), PMRY (Prime Minister's Rozgar Yojana) which extend 30 to 40 % reservation of benefits for women.

235 women's wings in general/private ITIs with a total sanctioned strength of 36,114 seats. This included the expansion of 66 women's ITIs and 102 Women's wings in General ITIs during the Eighth Plan. Accordingly, the number of women trainees also rose from 9316 in 1991 to 16,265 in 1998. During 1997-98, 93 additional ITIs for women were sanctioned with a total capacity of 15908 women.

3.8.72 To alleviate extreme poverty amongst rural women, programmes like Integrated Rural Development Programme (IRDP), Jawahar Rojgar Yojana (JRY), Training of Rural Youth for Self Employment (TRYSEM) and Development of Women and Children in Rural Areas (DWCRA), expanded their activities in the area of generating gainful wage and self-employment opportunities, with 30-40 per cent of benefits reserved for women. During the Eighth Plan, the coverage of women under IRDP remained at 33 per cent with the number of beneficiaries touching 32.57 lakh between 1992 and 1997. During 1997-98, the coverage of women under IRDP has reached 0.06 lakhs i.e. 34.3 per cent of total coverage. Of the total employment generated since inception under JRY during 1989 to 1997, the share of women was 14582.38 lakh man-days, which works out to 25.04 per cent of the total employment generated during that period. During 1997-98, the scheme of Women under JRY has gone up to 1116.71 lakh man-days representing 28.7 per cent of total employment. About 16.30 lakh women were covered under TRYSEM since the inception of the programme in 1979. DWCRA-an exclusive programme for the development of women and children in rural areas - was extended to all the districts in the country during the Plan period with the sole objective of bringing about a change in the socio-economic status of poor women in rural areas through income generating activities and improvement of their access to services like health, nutrition, education, safe drinking water etc. During the Eighth Plan, 1.36 lakh Women's Self-Help Groups (SHGs) were formed benefiting 21.82 lakh women. In 1997-98, 33032 additional SHGs were formed.

3.8.73 In the urban areas, poverty alleviation programmes like Nehru Rojgar Yojana (NRY), Urban Basic Services for the Poor (UBSP) and Prime Minister's Integrated Urban Poverty Eradication Programme (PMIUPEP), contributed a lot to improve the quality of life of women slum dwellers. Under NRY, women were given preferential treatment for skill upgradation and were provided assistance for setting up micro-enterprises, wage employment through construction of public assets and shelter upgradation.

3.8.74 Similarly, women and child beneficiaries received high priority under the programme of UBSP which sought to provide an integrated package of health care services for mother and child, supplementary nutrition, non-formal/pre-school/adult education; assistance to the handicapped and the destitute. By March, 1997, 5982 Neighbourhood Development Committees comprising primarily the urban poor women were set up in 360 towns for extending basic services to 82 lakh beneficiaries. Similarly, women also received benefits under the Prime Minister's Integrated Urban Poverty Eradication Programme (PMIUPEP) which envisaged a holistic approach to eradicate urban poverty by creating a conducive environment for improving the quality of life of the urban poor. During the Eighth Plan, 10528 cases of self-employment and 18004 cases of shelter upgradation were approved, besides setting up of 1362 Thrift and Credit Societies; 303 Community Kendras, 24698 Neighbouring Groups; 1280 Neighbourhood Committees and 208 Community Development Societies. This programme was replaced by Swarna Jayanti Shahari Rojgar Yojana in December, 1997.

3.8.75 Under the National Social Assistance Programmes, special recognition was given to woman-specific needs and a National Maternity Benefit Scheme (NMBS) was launched in August, 1995. The NMBS was exclusively aimed at extending financial assistance of Rs.300/- to pregnant women for the first two live births. Likewise, under the programme of National Old Age Pension Scheme (NOAPS), elderly women of 65 years and above with no regular means of subsistence also received the benefit of old age pension to the extent of Rs.75 per month. Under another scheme of National Family Benefit, women could receive financial assistance of Rs.5000/- to 10,000/- in the event of the death of the prime bread winner of the family.

3.8.76 The scheme of S&T Projects for Women, started in 1983, continued to promote Research and Development (R&D) and adoption of technology for reducing the household drudgery of women and thus improve their quality of life, working conditions and opportunities for gainful employment especially in the backward rural areas and urban slums. Of a total of 289 S&T projects, which received financial support during the Eighth Plan, 1137 projects were meant for women. During 1997-98, 30 additional projects were sanctioned exclusively for women.

3.8.77 A large number of innovative programmes to supplement and complement the general development programmes were implemented in the women and child development sector. They include training-cum-employment-cum-income generation

NATIONAL MACHINERY FOR EMPOWERING WOMEN

The Department of Women and Child Development being the National Machinery for Empowering Women in the country is made responsible for mainstreaming women into national development by raising their overall status on par with that of men. The Department, in its nodal capacity, formulates policies, plans and programmes, and enacts / amends legislations affecting women and guides/co-ordinates/streamlines the efforts of both Governmental and Non-Governmental Organisations working to improve the lot of women in the country. The programmes of the Department include – continuing education and training ; employment and income generation ; welfare and support services and gender sensitisation and awareness generation. These programmes of innovative nature play the role of being both supplementary and complementary to the other general development programmes in the sectors of health, education, labour and employment, rural and urban development etc.

programmes, welfare and support services and awareness generation/ gender sensitization programmes. Besides, several policy initiatives were also undertaken in empowering women. Under the programme of 'Support for Training and Employment', a total of 44 projects received financial assistance to extend training and employment on a sustainable basis to 2.59 lakh women during the Eighth Plan and 6 more

projects during 1997-98 to benefit 53335 women in the traditional sectors of dairying, animal husbandry, sericulture, handlooms, handicrafts etc. Under the programme of Training-cum-Production Centres with NORAD assistance, 693 projects during the Eighth Plan and 169 projects during 1997-98 were sanctioned to train 0.78 lakh and 0.30 lakh women/girls, respectively in the modern and newly emerging trades. Under the scheme of Condensed Courses of Education and Vocational Training, 5822 training courses were conducted to benefit 1.46 lakh women and girls during the Eighth Plan and 197 courses to benefit 0.15 lakh women/girls were conducted in 1997-98. Under the Socio- Economic Programme, more than 2452 Units were set up during the Eighth Plan to

undertake a wide variety of income generating activities for the benefit of 21000 needy women like widows, destitutes, disabled etc. during the Eighth Plan.

3.8.78 The schemes of - Hostels for Working Women, Creches for Children of Working/Ailing Mothers, National Creche Fund and Short Stay Homes for Women and Girls extend support services for women. The scheme of Hostels for Working Women provide safe and cheap accommodation to working women/girls who come to cities/towns in search of employment. During the Eighth Plan, 178 additional hostels were sanctioned benefiting 15532 women and their 15865 dependent children. In 1997-98, 23 more hostels were sanctioned benefiting 2269 women. This has brought the total number of hostels sanctioned since inception of the programme in 1973 to 811 benefiting about 57,000 working women. The scheme of Short-Stay Homes continued to provide temporary shelter and rehabilitation to the women and girls in social and moral danger. Upto March 1997, a total of 361 SSHs were sanctioned, benefiting 10830 women/girls, of which 199 new Homes were sanctioned during the Eighth Plan period. Details of the other two schemes viz., Creches and National Creche Fund, are given under the section dealing with 'Children'.

3.8.79 The setting up of Rashtriya Mahila Kosh (RMK) in 1993 fulfilled a long awaited initiative of having a national level mechanism to meet the credit needs of poor and assetless women in the informal sector. Till March 1997, a total credit worth of Rs.35.14 crore was sanctioned and a sum of Rs.20.51 crore disbursed to 1.91 lakh women through the medium of 170 NGOs. About 60000 women received credit during 1997-98. Right from its inception, RMK maintained a recovery rate of 92-95 per cent. The programme of Mahila Samridhi Yojana (MSY), launched in 1993, promoted self-reliance amongst rural women by encouraging thrift and savings. For a maximum deposit of Rs.300/- with a lock-in-period of one year, the Government provided an incentive of Rs.75/-. By the end of March 1997, a total of 2.46 crore MSY Accounts were opened with a total deposit of Rs. 265.10 crore.

RASHTRIYA MAHILA KOSH (RMK)

RMK, an innovative venture to facilitate credit support / micro-financing to poor and assetless women struggling in the informal sector, works through the medium of NGOs as its channelising agencies for identification of borrowers, delivery of credit support and also recovery. While the lending rate of RMK both for short and medium-term loans is 8% per annum to NGOs, the ultimate borrowers or their Self Help Groups pay 12% per annum. Till the end of Eighth Plan in 1997 RMK has extended credit worth Rs.35.14 crores through 170 NGOs benefiting about 1.91 lakh women all over the country. In addition RMK also supports its NGO partners, to form Women's Thrift and Credit Societies, which are popularly known as Self Help Groups

3.8.80 Yet another major initiative undertaken during the Eighth Plan was launching of Indira Mahila Yojana (IMY) advocating social empowerment through awareness generation and conscientisation programmes and economic empowerment through income generation activities on a sustained basis. The scheme was launched in 1995 in 200 ICDS blocks on a pilot basis. By July, 1998, 260 Indira Mahila Block Samities (IMBSs) had been registered out of which 140 IMBSs were registered during the year 1997-98. Till March, 1998, 28000 Self-Help Groups of women were formed with services of both income generation and awareness generation, of which 21,000 women's groups were formed in 1997-98.

3.8.81 An integrated media campaign projecting a positive image of both women and the girl child through electronic media was undertaken extensively through a large number of TV spots, quickies, documentary films etc. Radio programmes with positive messages about the girl child and women were also broadcast on a regular basis. The Central Social Welfare Board organised more than 6000 Awareness Generation camps during 1992-96 to make 2.10 lakh rural women conscious of their rights and privileges, besides imparting knowledge about community health and hygiene, technology application, environment, etc.

3.8.82 The National Commission for Women, a statutory body set up in 1992 to safeguard the rights and interests of women, reviewed both women-specific and women-related legislations, investigated into thousands of individual complaints/ atrocities and initiated remedial action wherever possible. It also set up Parivarik Mahila Lok Adalats and extended speedy justice to approximately 7000 women. The other issues taken up by the Commission during the Plan period included welfare of women prisoners and under-trials languishing in jails; women and children involved in the sex trade; reservation for women in Parliament and State Legislatures, Anti-Arrack movements etc.

NATIONAL COMMISSION FOR WOMEN (NCW)

NCW, set up in 1992, gained credentials of many success stories in the areas of – offering pre-litigated counselling to aggrieved women, attending to / investigating into the individual complaints received from all over the country, looking into the special problems of services, women / child sex workers, women in custody / jails, women in mental asylums, women with disabilities, deserted women etc. It also reviews both women-specific and women-related legislations and advises the Government to bring forth necessary amendments from time to time. It also moves around the whole country to enquire/investigate problems of women belonging to socially and economically disadvantaged groups, especially those belonging to Scheduled Castes and Scheduled Tribes. Open Adalats (Public Hearings) is the style adopted by the Commission to hear the individual grievances and to pay personal attention to the women in need. This special feature of the Commission has reached the judiciary to women at their door-step.

3.8.83 To sum up, the major policy initiatives undertaken in favour of women during the Eighth Plan included setting up of a National Commission for Women in 1992 to safeguard the interests of women; setting up of Rashtriya Mahila Kosh in 1993 for women to meet the credit needs of poor and assetless women; adoption of the National Nutrition Policy in 1993 to fulfil the Constitutional commitment of improving the nutritional status of the people; launching of the scheme of Mahila Samridhi Yojana in 1993 which sought to empower women by institutionalizing their savings so that they could have greater control over household resources; launching of Indira Mahila

SPECIAL INITIATIVES FOR THE WELL-BEING OF WOMEN DURING THE EIGHTH PLAN (1992-1997)

- Setting up of National Commission for Women in 1992 to safeguard the interests of women
- Setting up of Rashtriya Mahila Kosh in 1993 to meet the credit needs of poor and assetless women
- Adoption of the National Nutritional Policy in 1993 to fulfil the constitutional commitment of improving the nutritional status of people in general and in particular that of the children, adolescent girls, expectant and nursing mothers
- Launching of the scheme of Mahila Samridhi Yojana in 1993 which sought to empower women by institutionalizing their savings so that they could have greater control over household resources (now being revamped)
- Launching of Indira Mahila Yojana in 1995, advocating an integrated approach for women's empowerment through Self Help Groups
- Proposal for setting up of National Resource Centre of Women (in progress)
- Formulation of a draft of National Policy for the Empowerment of Women (1996)

Yojana in 1995 advocating an integrated approach for women's empowerment, a proposal to set up a National Resource Centre for Women which is in progress; and the formulation of a draft of National Policy for the Empowerment of Women (1996)

DEVELOPMENT OF CHILDREN

3.8.84 Children are our first priority not because they are the most vulnerable, but because the foundations for life-long learning and human development are laid in the most crucial years of early childhood. This is the time when, even a small positive change yields long-term social benefits and even a temporary deprivation inflicts life-long damage. Thus, the opportunities of early childhood development determine the present and the future human resource development of a nation.

3.8.85 The child population (0-14 years), as per the 1991 census, accounts for 319.6 million (37.8%), which include 153.85 million female children. Of the total child population, 18.9 million (5.9%) are below 1 year (infants); 38.1 million (11.9%) are in the age-group of 1-2 years (toddlers); 73.0 million (22.8%) are in the age-group of 3-5 years (pre-school); and another 189.6 million (59.4%) are in the age group of 6 - 14 years. While the children as a whole, require special attention of the Government, the three age-groups viz. the infants, toddlers and pre-school children require individual attention because of their age-specific needs.

3.8.86 Realising the fact that the children have neither a voice nor a political constituency, the Constitution of India laid down certain special safeguards to ensure their welfare, protection and development. While Article 15(3) empowers the State to make any special provision in favour of children, Article 24 prohibits employment of children below 14 years of age in any factory or mine or other hazardous occupations; Articles 39 (e) and (f) lay down that the State shall direct its policy in such a manner that the tender age of children is not abused and children are given opportunities and facilities to develop in a healthy manner and childhood is protected against exploitation and moral and material abandonment; and Article 45 provides for free and compulsory education for all children upto the age of 14 years.

3.8.87 The well-being of children has been a priority and also an integral part of the country's developmental planning, launched in 1951. In the initial years, the major responsibility of developing child care services had primarily rested with the voluntary sector, headed by the Central Social Welfare Board, set up in 1953. Later, the child welfare services were concentrated in the sectors of health, education, nutrition etc. Important measures include maternal and child health services (MCH), primary education, supplementary feeding for pre-school and school-going children etc. Just as in the case of women, the Seventies also marked a shift in approach in respect of children from 'welfare' to 'development'. It was during this period that a National Policy for Children was adopted (1974) and a programme called Integrated Child Development Services (ICDS) was launched in 1975 with an integrated approach to extend a package of six basic services viz. health check-up, immunisation, referral services, supplementary feeding, pre-school education and health and nutrition education for children upto 6 years and expectant and nursing mothers. The Eighties saw an effective consolidation and expansion of programmes started in the earlier Plans. The National Policy of Health adopted in 1983 set certain specific targets like bringing down the high rates of infant and child mortality and Universalisation of Immunisation etc. by the year 2002 A.D. The National Policy on

Education (1986) emphasised universal enrolment and retention of children, especially the girl children. The Juvenile Justice: Act (JJA) enacted in 1986 repealed the then existing Children Act, to deal effectively with the problem of juvenile delinquents/vagrants and provide a framework for handling such children. The Child Labour Prohibition and Regulation Act, enacted in 1986, was followed by the adoption of a National Policy on Child Labour in 1987.

3.8.88 The early Nineties continued with the major strategy of promoting early childhood development through convergence of available services in different sectors and the ICDS continued as the single major national programme to promote early childhood development services. Special programmes were also launched for the welfare and rehabilitation of the Working Children and for other children in need of care and protection. A programme of Universal Immunisation was also launched to protect children from six major vaccine preventable diseases viz. Diphtheria, whooping cough, tetanus, polio, measles and childhood tuberculosis. The same was further strengthened and expanded to provide universal coverage during this period.

THE CURRENT SITUATION

3.8.89 While crucial indicators like infant and child mortality rates, school enrolment ratios, drop-out rates and levels of mal-nutrition have shown significant improvement in the status of children as a result of the implementation of various developmental policies and programmes since 1950's. In the field of health, while the life expectancy at birth has gone up, as already discussed in the first part of this Chapter, the infant and the child mortality rates have declined sharply, with sex differentials almost bridged, as indicated in Table 3.8.12.

Table 3.8.12
Infant Mortality Rate (1978-1996)

Year	Females	Males	Persons
1978	131	123	127
1988	93	96	94
1992*	80	79	79
1996*	NA	NA	72

* Provisional

Source : Sample Registration System - Fertility and Mortality Indicators for respective years, RG&CC, New Delhi.

3.8.90 Despite the significant achievements in bringing down the female Infant Mortality Rate (IMR) from 131 in 1978 to 72 in 1996, yet there exists inter-state variations with the highest IMR of 97 in Madhya Pradesh and the lowest being 13 in Kerala during 1996. Like-wise, the rural and urban differentials also continue to be very high. While the IMR (All India) in urban areas was 46, it was 78 in rural areas during 1996. Similarly, the age specific death rate for 0-4 age group has declined from 56.2 to 23.9 between 1971 and 1994.

3.8.91 Like the IMR, the Child Mortality Rate for females in the age group 0-4 years, has also declined to less than half from 55.1 in 1970 to 24.2 in 1994, as compared to the decline from 51.7 to 23.6 in the case of males, as per the data given in Table 3.8.13. But, the regional variations continue to be very high even today, with the highest being 37 in Madhya Pradesh and the lowest 3.4 in Kerala.

Table 3.8.13

Child Mortality Rates by Age-Group

Year	Age Group	Female	Male
1970	0-4 yrs.	55.1	51.7
	All Ages	15.6	15.8
1985	0-4 yrs.	40.4	36.6
	All Ages	11.8	11.8
1992	0-4 yrs.	28.2	24.9
	All Ages	10.2	10.0
1994	0-4 yrs.	24.2	23.6
	All Ages	8.9	9.6

Source: Sample Registration System (SRS) Fertility and Mortality Indicators for respective years, RG&CC, New Delhi.

3.8.92 The high Infant and Child Mortality Rates, referred to above, can be attributable to a large extent to the following specific causes, which are preventable/treatable, especially 'Pre-maturity' which accounts for more than 50 per cent :

Table 3.8.14

Percentage distribution of Cause-Specific Infant Deaths - 1995

Cause	Percentage
- Pre-maturity	53.5
- Respiratory Infection of new born	17.0
- Diarrhea of new born	7.4
- Congenital Malformation	3.0
- Birth Injury	2.0
- Cord Infection	3.1
- Non classifiable	14.0
Total	100.0

Source : The Survey of the Causes of Death (Rural : 1995)
Office of the Registrar General of India, New Delhi

3.8.93 The ever-declining sex ratio, as already discussed in the first part of this Chapter, has been a cause for serious concern. Except in Kerala, where the sex ratio is in favour of females, the sex ratio maintained the very same declining trend in all the other States during the same period. The special studies on the 'Declining Sex Ratio and the Problem of Female Infanticide' sponsored in 1993 by the nodal Department of Women and Child Development, New Delhi have revealed that while the practice of Female Foeticide is a common phenomenon in urban areas, the problem of female infanticide is a localised phenomenon and limited only to certain communities in the States of Tamil Nadu, Bihar, Gujarat, Punjab, Haryana, Madhya Pradesh, Rajasthan.

3.8.94 Reports have also confirmed that the practice of these two social evils viz. Female foeticide and female infanticide is mainly due to the strong preference for son and as such, these are responsible to a large extent for the ever-declining sex-ratio. Misuse of the modern technique of Amniocentesis for sex determination is an added dimension to this problem. In fact, the present ban on the sex determination test through the enactment of the 'Pre-Natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994', could hardly change the situation. Adding to this, is the problem of ineffective implementation of the Act of Compulsory Registration of Births and Deaths, which fails to provide information on vital statistics.

3.8.95 Malnutrition constitutes a major threat to the development potential of young children. However, surveys conducted by the National Nutrition Monitoring Bureau, Hyderabad (1975-79 and 1988-90) have confirmed that there has been a declining trend in severe and moderate degrees of malnutrition amongst children, as per the details given in Table 3.8.15.

Grade	Percentage	
	1996-91	1988-90
- Normal ($\geq 90\%$)	5.9	9.9
- Mild (75-90%)	31.0	37.6
- Moderate (60-75%)	47.5	43.8
- Severe ($< 60\%$)	15.0	8.7

Source : NNMB Report of Repeat Surveys (1988-90), Hyderabad.

3.8.96 Further, surveys conducted by the National Institute of Nutrition (NIN) and other agencies reveal that the micro-nutrient deficiencies viz. Vitamin A deficiency, iron deficiency and iodine deficiency disorders have been affecting children in various degrees. The national data indicate that although the proportion of nutritional blindness has reduced drastically, yet the sub-clinical deficiency of vitamin A still continues to be prevalent. Similarly, Iron deficiency is also prevalent amongst pre-school and school going children. For details, refer 'Nutrition' under the Chapter 'Food and Nutrition Security'.

3.8.97 On the education front, there has been a substantial increase in the enrolment of children (provisional for 1997) at all levels of schooling. While the enrolment at the primary level has increased by about 6 times i.e. from 19.2 million in 1951 to 110.4 million in 1997, it has risen by 13 times at the middle level from 3.1 million in 1951 to 41.0 million in 1997, and by 18 times from 1.5 million in 1951 to 27.0 million in 1997 at high/higher secondary level, as could be seen from the Table 3.8.16.

Table 3.8.16
School Enrolment by Stages/Classes for Boys and Girls (1951-1997)
(In Millions)

Year	Primary (I-V)			Middle (VI-VIII)			High/H.Sec (IX-XII)		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
1950-51	5.4	13.8	19.2	0.5	2.6	3.1	0.2	1.3	1.5
1960-61	11.4	23.6	35.0	1.6	5.1	6.7	0.7	2.7	3.4
1970-71	21.3	35.7	57.0	3.9	9.4	13.3	1.7	4.9	6.6
1980-81	28.5	45.3	73.8	6.8	13.9	20.7	3.2	7.6	10.8
1990-91	41.0	58.1	99.1	12.4	20.9	33.3	6.9	14.0	20.9
1992-93*	44.9	60.5	105.4	15.0	23.7	38.7	7.7	15.0	22.7
1996-97*	47.9	62.5	110.4	16.3	24.7	41.0	9.8	17.2	27.0

* Provisional
Source: Department of Education, M/HRD(GOI), New Delhi.

3.8.98 Indicative of the positive effect of increasing rates of enrolment, there is a visible decline in the drop-out rates between 1981 and 1997 from 58.7 per cent to 38.9 per cent at the primary level, from 72.7 per cent to 52.3 per cent at the middle level and from 82.5 per cent to 68.4 per cent at the high school level (I-X), as given below :

Table 3.8.17
Drop-out Rates Amongst Girls and Boys (1980-1997)

Year	Primary (I-V)			Middle (VI-VIII)		
	Girls	Boys	Total	Girls	Boys	Total
1980-81	62.5	56.2	58.7	79.4	88.0	72.7
1990-91*	46.0	40.1	42.6	65.1	59.1	60.9
1992-93*	43.0	40.1	41.3	60.1	54.0	56.5
1996-97*	38.4	39.4	38.9	52.8	51.9	52.3

* Provisional
Source: Department of Education, GOI, New Delhi

3.8.99 Despite all these gains, the total female literacy rate still continues to be very low at 39.3 per cent in 1991. While the slow pace of educational development of women is a cause for concern, the large inter-State variations, urban-rural and the gender differentials, high drop-out rates, especially those of the girls and other socially disadvantaged groups like SCs, STs, OBCs and Minorities magnify the problem.

3.8.100 The problem of child labour, despite effective policies, programmes and legislative support, continues to persist particularly in the unorganised and home-based industries and domestic services. The population of the child workers has, no doubt, come down from 13.6 million in 1981 to 11.3 million in 1991, but the magnitude of the problem still continues to be very high as the child workers constitute 3.5 per cent of the total child population. In certain industries like carpet weaving, beedi-making, match box, fireworks, bangles-making etc, children are subjected to long working hours, poor working conditions, low wages, and occupational hazards which affect them adversely.

3.8.101 Child prostitution is an emerging problem with serious social consequences. According to a study on the problem of Prostitution conducted by the Central Social Welfare Board (CSWB) in 1991, the estimated number of prostitutes in six metropolitan cities of Bangalore, Mumbai, Calcutta, Delhi, Hyderabad and Chennai ranged from 70,000 to 1,00,000. Of this, the number of child prostitutes has been estimated as 12 to 15 per cent. The religious practices of offering young girls to temples in the name of Devadasi, Basavi, Yellamma, Jogin etc. are prevalent in certain parts of the country.

3.8.102 The increasing number of Street Children, who are estimated to be 4.15 lakh in 8 major cities of Bangalore, Mumbai, Calcutta, Delhi, Hyderabad, Indore, Kanpur and Chennai, is another serious problem.. Efforts to meet the needs of Street Children viz. education, health, shelter, counselling etc. through voluntary organisations have been too recent to have any appreciable impact on their status. Juvenile crimes, though declining, are still very high (17,203 in 1994) and the rehabilitation of juvenile delinquents/vagrants requires priority attention. More details on Street Children are available under the Chapter 'Social Welfare'.

THE NINTH PLAN STRATEGY'

3.8.103 As in the past, the young child will continue to be placed first on the country's developmental agenda with a special focus on the Girl Child. To this effect, the Ninth Plan reaffirms its priority for the development of early childhood as an investment in country's human resource development. While the first six years are acknowledged as critical for the development of children, greater stress will be laid on reaching the younger children below 2 years.

3.8.104 The two National Plans of Action - one for Children and the other exclusively for the Girl Child adopted in 1992, also fall very much within the guiding principles underlining the importance of 'Survival, Protection and Development'. Efforts in the Ninth Plan will, therefore, be made to expedite effective implementation and achievement of the goals set in the two Plans of Action besides instituting a 'National Charter for Children' to ensure that no child remains illiterate, hungry or lacks medical care. The UN Convention on the Rights of the Child, ratified by our country in 1992, also provides a strong base for initiating necessary - legal and other developmental measures for protection of the rights of the child.

NINTH PLAN COMMITTS

Objective

- To place the Young Child at the top of the Country's Developmental Agenda with a Special Focus on the Girl Child
- To re-affirm its priority for the development of early childhood services as an investment in Country's Human Resource Development

Strategy

- To institute a National Charter for Children ensuring that no Child remains illiterate, hungry or lacks medical care
- Acknowledge that the first six years as critical for the development of children therefore, greater stress will be laid on reaching the younger children below 2 years
- To arrest the declining sex ratio and curb its related problems of female foeticide and female infanticide and thus ensure 'Survival, Protection and Development of Children'
- To ensure 'Survival, Protection and Development' through the effective implementation of the two National Plans of Action -one for the Children and the other for the Girl Child
- To continue to lay a special thrust on the three major areas of child development viz., health, nutrition and education
- To bring down the IMR to less than 60 and the CMR to below 10 by 2002 A.D. through providing easy access to health care services including RCH services and 100% coverage of immunisation in respect of all vaccine preventable diseases
- To universalise the Nutrition Supplementary Feeding Programmes to fill the existing gaps in respect of both pre-school and school children and expectant and nursing mothers with a special focus on the Girl Child and the Adolescent Girl
- To view girl's education as a major intervention for breaking the vicious inter-generational cycle of gender and socio-economic disadvantages
- To expand the support services of creche / daycare services and to develop linkages between the primary schools and of the child care services to promote educational opportunities for the Girl Child
- To widen the scope and the spectrum of child development services with necessary interventions related to empowerment of women and children, families and communities through effective convergence and coordination of various sectoral efforts and services
- To universalise ICDS as the main-stay of the Ninth Plan for promoting the over-all development of the young children especially the Girl Child and the mothers all over the country
- To expand the scheme of Adolescent Girls in preparation for their productive and re-productive roles as confident individuals not only in family building but also in nation building
- To promote the nutritional status of the mother and the child by improving the dietary intake through a change in the feeding practices and intra-family food distribution
- To strengthen the early joyful period of play and learning in the young child's life and to ensure a harmonious transition from the family environment to the primary school.

3.8.105 To ensure 'survival and protection' of children especially that of the girl-child, the major strategy of the Ninth Plan will be to arrest the declining sex ratio and curb its related problems of female foeticide and female infanticide. These problems will be attacked through a two-pronged strategy of both direct and indirect measures. While the direct measures include effective implementation of the existing legislation, the indirect measures will be to change the mindset of the people in favour of the girl child, besides empowering women to exercise their reproductive rights and choices. Towards this, collaborative efforts of all concerned to prevent/control/eradicate these two social evils will be initiated. In these efforts, both medical and para-medical staff viz. doctors, auxiliary nurse midwives/trained dais and the front-line workers of ICDS and the local voluntary organisations are going to play a major role. Special efforts will be made to ensure effective enforcement of the Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994 and of the Indian Penal Code, 1860 with a close and continuous vigil, surveillance and severe punishment for the guilty.

3.8.106 The next priority will be to fulfil the birth right of every child to 'development', especially those belonging to the disadvantaged and deprived groups with special needs and disabilities. In this regard, the present thrust will continue to be laid on the three major areas of child development viz. health, nutrition and education. While the most critical period, from conception to two years of age, will be addressed through key interventions to promote health, nutritional and psycho-social development of the mother and the young child through the programmes of Reproductive Child Health (RCH) and the

Integrated Child Development Services (ICDS), the pre-school age will be taken care of exclusively by the ICDS through a six-service package and the school going age through various health, nutrition and educational programmes.

3.8.107 The Ninth Plan identifies the urgent need to review and synthesise all the existing policies and programmes, both child-specific and child-related. In this context, the National Policy for Children adopted in 1974 needs to be revised, in view of various developments that have taken place between 1974 and 1997, including the ratification of the UN Convention on the Rights of the Child and the adoption of the National Plans of Action for Children and the Girl child (1992). Accordingly, action will also be initiated to reconstitute the National Children's Board. It is also time to consider instituting a mechanism both at the national and State levels to safeguard the rights and interests of children along with the services of a Public Defender to take up the cases on behalf of children and to investigate/redress the individual complaints and grievances.

Health

3.8.108 Efforts will continue in the Ninth Plan to bring down the IMR to less than 60 and the CMR to below 10 by 2002 A.D. through effective interventions of providing easy access to primary health care services and 100 per cent coverage of immunization in respect of vaccine-preventable diseases viz. Diphtheria, Pertussis, Neo-natal Tetanus, Tuberculosis, Poliomyelitis and Measles. The special drives of Pulse Polio launched during 1995-96 will be continued till the complete elimination of the problem of Poliomyelitis. In all these efforts, special attention will be paid to improve the health and the nutritional status of the girl child and the adolescent girls as they both enjoy a lower status, when compared to their counterparts, due to vulnerability and discrimination.

3.8.109 Under the Reproductive and Child Health Care programme, attempts will be made to assess the health needs of children, adolescents and women belonging to all age groups at the PHC level and to undertake area-specific micro-planning to meet their needs through high quality integrated RCH services. The services for 'Child Survival' under the RCH will include universal screening of women during pregnancy and identification and management of 'at-risk' individuals to achieve reduction in the peri-natal and neo-natal mortality and morbidity. (More details are available under the Chapter on 'Health and Family Welfare').

3.8.110 In line with the commitments of the National Nutrition Policy (1993), priority will be accorded to promote the nutritional status of the mother and the child by improving the dietary intake through a change in the feeding practices and intra-family food distribution and preventing the deficiency diseases. The quality and effectiveness of health and nutrition interventions for mother and the child will be further strengthened with a special focus on early diagnosis and prevention of malnutrition during pregnancy and lactation for mothers and children before and after birth with a special focus on the most crucial age of 0-23 months.

3.8.111 In view of the importance accorded to nutrition adequacy in the Ninth Plan, all States/UTs will be encouraged to ensure the availability of adequate funds for supplementary nutrition component of ICDS, by listing the same as one of the first three priorities under Basic Minimum Services, for which additional Central assistance is being extended to States/UTs. Decentralised funding, community contribution and procurement of local nutritious foods for the supplementary feeding programmes will be promoted to ensure that the food distributed is adaptable/palatable for the young children and also rich in the micro-nutrients viz. Vitamin A, Iron and Iodine. In this context, the role of the Food and Nutrition Board will be redefined and strengthened in view of the mother and child-related commitments of the National Nutrition Policy and its Plan of Action. Efforts are being made for the development of new tools for Nutrition Monitoring and Surveillance to assess the nutritional status of children and mothers from time to time facilitating early detection of deficiencies and diseases and necessary interventions are taken to that effect. The specific strategies on this subject are detailed in the Chapter on 'Food and Nutrition Security'.

Education

3.8.112 In the Ninth Plan, the thrust will be on strengthening the early joyful period of play and learning in the young child's life to ensure a harmonious transition from the family environment to the primary school. Towards this, special efforts will be made to develop linkages between ICDS and primary education. These "operational linkages" will seek to reinforce coordination of timings and location based on community appraisal and micro-planning at grass-roots levels. Girls' education will be viewed as a major intervention for breaking the vicious inter-generational cycle of gender and socio-economic disadvantages. The effective expansion of day care services and linkages of child care services and primary schools will be a major input to promote developmental opportunities for the girl child for participation in primary education and support services for women. More details are available under the Chapter on 'Education'.

Development

3.8.113 The scope and the spectrum of child development services will be further widened with necessary interventions related to empowerment of women and children, families and communities through effective convergence and co-ordination of all sectoral efforts and services. To this effect, the ongoing approach of converging the basic services of health, nutrition and pre-school education to promote holistic development of the young child, as embodied in ICDS, will be further strengthened with community participation and action to 'Reach the Unreached' that is, children below 2 years. Thus, ICDS will continue to be the mainstay of the Ninth Plan promoting the overall development of the young children all over the country through its universalisation. For Further Strengthening and expansion of ICDS the Programme has been under the Special Action Plan with additional financial support of Rs. 450 Crores in the Ninth Plan. In the expansion/universalisation of the outreach delivery systems of ICDS and RCH, emphasis will be on consolidation and enrichment of content to improve the quality sustenance of services. In this process, the role of an Anganwadi Worker will be that of a mobiliser of community participation and community contribution, apart from that of a service provider.

3.8.114 The Ninth Plan recognises the impending need for the support services of creches and day care centres for the children of working/ailing mothers in the present day situation where more and more women, coming out for employment/in search of employment both in the organised and unorganised sectors. In this context, there is an urgent need to strengthen the National Creche Fund to develop a network of creches all over the country.

3.8.115 The scheme for the adolescent girls will be expanded to promote their self-development, in preparation for their future productive and reproductive roles as confident individuals not only in family-building but also in nation-building. The programme for adolescent girls during the Ninth Plan will embrace the whole range of activities like health, nutrition, education, health and nutrition awareness and equip them with home-based entrepreneurial skills, vocational training and decision-making capabilities etc. **Capacity Building** In the field of child development, the major challenge in the Ninth Plan will be to achieve increased community ownership and qualitative improvement of child development programmes. Towards this, efforts will be made to re-orient the ongoing training/capacity building programmes. Priority will be accorded to strengthen the knowledge, skills and capabilities of front-line workers as mobilisers of convergent action. This entails a major change in the training process so as to equip the front-line workers to understand community perceptions, practices and emerging situations/demands. Thus, the major thrust would be to develop decentralised training strategies with innovative ground-based approaches. In consonance with the above, new approaches for mobilising assistance both in kind and cash for the sustenance of child development programmes will be experimented with community participation/contribution to ICDS. The principles enunciated above and the envisaged role of the Panchayati Raj Institutions and Urban Local Bodies will have major implications not only in planning but also in the control of the flow of funds for the programmes of child development.

Elimination of Discrimination Against the Girl Child

3.8.116 While taking note of the persistent discrimination against the girl child, concerted efforts will be put into action to eliminate all forms of discrimination and violation of the rights of the girl child by undertaking strong measures including punitive ones. These relate to strict enforcement of laws against pre-natal sex selection and the practice of harmful practices of female foeticide/female infanticide; child marriage; child abuse; child labour; and child prostitution etc. Long-term measures will also be initiated to put an end to all forms of discrimination against the girl child through providing special incentives to the mother and the girl child so that the birth of a girl child is welcomed and the family is assured of State's support for the future of the Girl Child. To this effect, a special package for the girl children belonging to the families living below the poverty line was launched on 2 October, 1997 with special incentives namely - Rs.500/- to the mother on the delivery of a girl child (limited to 2 girl children); an annual scholarship of Rs.500/- for a girl child in I-V Classes; and Rs.1000/- from VI-X Classes and special permits to enjoy the benefits under all development programmes till she becomes a confident and self-reliant individual. Lessons learnt from the implementation of this Special Package for the Girl Child and similar initiatives launched by some of the State Governments viz. Haryana, Tamil Nadu, Andhra Pradesh, Rajasthan, Punjab and Madhya Pradesh will be put to use in expanding/replicating these special packages throughout the country.

SPECIAL MEASURES FOR CHILDREN IN DIFFICULT CIRCUMSTANCES

Working Children (Child Labour)

- To enforce the ongoing legal (The Child Labour (Prohibition and Regulation) Act, 1986) and other remedial cum rehabilitative measures to eliminate Child Labour not only by strengthening various instruments that prevent / combat the problem of Child Labour but also ensuring their effective implementation
- To organize suitable functional literacy/vocational training programmes and recreational facilities after working hours for the overall development of the working children

Child Sex Workers (Child Prostitution)

- To contain the social evil of child prostitution, action will be initiated to bring forth specific amendments in the Immoral Traffic (Prevention) Act, 1956 (as amended in 1986) with stringent punishment for those involved in it
- To introduce a Rehabilitation Package for those weaned out / withdrawn from the profession not only to keep them away from profession but also to keep them tied with alternative developmental avenues

Street Children

- To curb the growing problem of Street Children, the Juvenile Justice Act, 1986 will be enforced more effectively
- Special priority to non-institutional services so as to restore the children either back to their own families or place them with Foster Families
- Non-institutional services for those who are destitute, parentless or whose parents are suffering from infectious/communicable diseases

Child Labour

3.8.117 Towards fulfilling the national commitment of eliminating child labour, the Ninth Plan commits to enforce the on-going legal as well as remedial/rehabilitative measures to eliminate child labour not only by strengthening various instruments that prevent/combat the problem of child labour but also by ensuring their effective implementation. To this effect, strong regulatory and administrative measures to prevent exploitation of child labour will also be taken up. In the areas where child labour exists on a large scale, special preventive-cum-developmental measures will be put into action with the strength and support of legal/punitive measures.

Simultaneously, efforts will also be made to organise suitable functional literacy/vocational training programmes and recreative facilities, after working hours for the overall development of these working children. The enforcement measures of Child Labour Prohibition and Regulation Act, 1986 will be further strengthened at all levels. Also, the enforcement of the National Policy on Child Labour (1987) will be given a fresh look to make it more effective. Public opinion against the social evil like child labour will also be mobilised through the print and electronic media and the support of the pressure/activist groups.

Child Prostitution

3.8.118 To contain the social evil of child prostitution, action will be initiated to make the Immoral Traffic (Prevention) Act, 1956 (as amended in 1986) more specific, through amendments, to the problem of child prostitution and also make the punishment more stringent. The Central Advisory Committee on Child Prostitution, set up in 1994 at the instance of the Supreme Court, will be activated to review the situation from time to time and suggest effective steps in eradicating this social evil. A rehabilitation package for those weaned out/ withdrawn from the profession will also be put into action not only to keep the children away from prostitution but also to keep them tied up with alternative education-cum-income generation programmes. The other problem groups, namely, juvenile delinquents, street children and children in difficult circumstances are dealt with under the Chapter on 'Social Welfare'.

Legislation

3.8.119 A thorough review of all the existing child-specific and child-related legislations will be undertaken to plug the loopholes in their implementation. Every effort will be made to protect children from all forms of exploitation through strict enforcement of the existing legislations viz. the Immoral Traffic (Prevention) Act, 1956 to check child prostitution; the Juvenile Justice Act, 1986 to remove maladjustment and ensure rehabilitation of juvenile delinquents in the family and in the society; the Child Labour (Prohibition and Regulation) Act, 1986 to eliminate child labour; the Hindu Succession Act, 1956 as amended in 1993 to ensure equal rights to the girl child in the property of parents; Compulsory Registration of Marriages and Minimum Age of Marriage to avoid child marriages etc. Similarly, to promote breast-feeding and protect children from milk substitutes, the Infant Foods (Regulation of Production, Supply and Distribution) Act, 1992, will need to be enforced with a ban on the promotion of milk substitutes and baby foods through media. Enforcement of the Pre-natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994 and the Indian Penal Code, 1860 will receive special thrust to arrest the increasing incidence of Female Foeticide and Female Infanticide.

POLICIES AND PROGRAMMES : A REVIEW

3.8.120 The Eighth Plan viewed development of children as an investment in the country's future, besides improving the quality of life of future generations. It, therefore, accorded high priority to family/community-based preventive services in combating the problems of infant and child mortality and morbidity. Efforts were also made to enhance the capabilities of families, especially those of the mothers to look after the basic health, nutritional and emotional needs of children in the age-group 0-6 years. In this process, the Eighth Plan recognised the 'Girl Child' as an important target group, demanding attention of the Government for her development and to fight against the prevailing gender discrimination. Development of children, being inter-sectoral in nature, cuts across various sectors like Health, Nutrition, Education, Labour, Welfare and Women and Child Development. Contribution of these sectors towards the overall growth and development of children has been detailed in the following paragraphs.

3.8.121 The National Health Policy (1983) accords highest priority to launching of special programmes for the improvement of maternal and child health. The MCH services were further strengthened by launching the programme of Child Survival and Safe Motherhood (CSSM) in 1992-93. The CSSM was being implemented in a phased manner, so as to cover all the districts in the country by 1996-97. The other ongoing interventions include expansion of the programme for Control of Acute Respiratory Infections for children below five years of age. Special efforts to eradicate poliomyelitis were made in 1995-96 by observing nation-wide immunization days on 9 December, 1995 and 20 January, 1996 when over 93 million children under 3 years were given Oral Polio Vaccine (OPV) twice. Mass communication with two doses of OPV vaccine per year would be continued for the next three to four years with a view to eradicating poliomyelitis. In the case of measles, compared to the incidence in 1987, 80 per cent decline was achieved in 1995. The Government had also launched a special health check-up scheme for the primary school students during 22-27 July, 1996 in the country. The school health programme essentially aims at screening all primary school children for common ailments, referrals for children with problems to health institutions for full check-up and treatment and creating awareness among the community and teachers about the health problems among children. To maximise the reach of health services, the number of PHCs was increased from 20,719 to 21,854 and sub-

centres from 1,31,464 to 1,32,730 during the Eighth Plan. In 1997-98, the number of PHC's in actual operation increased to 22,962 and sub-centres to 1,36,815.

3.8.122 In line with the policy prescriptions of the National Nutrition Policy (1993) and the directions of NPAN (1995), some impressive achievements were made on the nutrition scene in the country during the Eighth Plan period. Blindness due to Vitamin 'A' deficiency had come down from 0.3 to 0.04 per cent between 1971 and 1989. The number of children with 'normal' nutritional status has increased from 5.9% (1975-79) to 9.9% (1988-90) as per the NIN report titled 'National Trends in India 1993'. Further, to tackle the problem of malnutrition amongst pre-school children (3-5 years), the Balwadi Nutrition Programme continued to provide nutritional supplement in a healthy environment, besides preparing children for formal schooling. At the end of the Eighth Plan, there were 5641 Balwadis catering to 2.25 lakh children.

3.8.123 In pursuance of the National Policy on Education (1986) and the Programme of Action (1992), various steps were taken during the Eighth Plan to universalise elementary education and expand Early Child Care Education (ECCE). This included a step-up of various programmes such as Operation Black-board, Minimum Levels of Learning and Non-formal Education. As a distinct strategy to reduce the drop-out rates and improve the school retention rates, a special programme called Early Childhood Education (ECE) has been in operation since 1983. It aimed at improving children's communication and cognitive skills as a preparation for their entry into formal schooling. At the end of the Eighth Plan period there were 4365 ECE Centres, which were being run by 180 voluntary organisations benefiting about 1.09 lakh children in the age group 3-6 years in nine educationally backward States. Further, to give a boost to universalization of primary education, a nation-wide programme of Nutrition Support to Primary Education was launched in 1995. By March, 1998, this programme covered 9.11 crore primary class children in 5440 blocks in 507 districts with a special focus on the Low Female Literacy (LFL) Blocks.

3.8.124 In the field of Women and Child Development, the Integrated Child Development Services (ICDS) continues to be the major intervention for the overall development of children. It caters to the pre-school children below 6 years and expectant and nursing mothers with a package of services viz. immunization, health check-ups, referral services, supplementary nutrition, pre-school education and health and nutrition education. The Eighth Plan contemplated universalization of ICDS by the end of 1995-96 by expanding the services to all over the country. Out of the 5614 ICDS Projects sanctioned till 1996, 4200 became operationalised during the Eighth Plan. The process of universalisation will continue during the Ninth Plan till all the 5614 ICDS Projects become operationalised. With the operationalisation of 4200 ICDS Projects, the total number of beneficiaries has risen from 16.6 million in 1991-92 to 23.3 million in 1997-98, which included 19.8 million children and 3.5 million expectant and nursing mothers. Of the 19.8 million child beneficiaries about 11.0 million received the services of pre-school education. The scheme of Adolescent Girls, an off-shoot of ICDS, aimed at providing a supportive environment for self-development, economic independence and self reliance. This scheme was in operation in 507 blocks benefiting 3.51 lakh beneficiaries, spread all over the country.

3.8.125 The ICDS Programme also receives assistance from the World Bank. The World Bank assisted Project of ICDS - I (1990-97) has been under implementation in the predominantly tribal and drought-prone rural areas covering 110 blocks in Andhra Pradesh and 191 blocks in Orissa. Simultaneously, the World Bank Project of ICDS-II (1993-2000) has also been under implementation in 210 blocks of Bihar and 244 blocks of Madhya Pradesh. The project envisaged coverage of all the tribal blocks in both the States. To cover another five States, viz. Uttar Pradesh, Rajasthan, Tamil Nadu, Kerala and Maharashtra, the World Bank assisted ICDS- III project is under formulation. The additional inputs in the World Bank assisted ICDS Projects include - construction of Anganwadi buildings and CDPO's office-cum-godowns; community mobilisation and women's income generation activities; Women's Integrated Learning for Life (WILL); strengthening of the health and nutrition components and experimentation for nutritional rehabilitation and enhanced inputs in the spheres of communication, training, project management, equipment, monitoring and evaluation.

3.8.126 The programme of ICDS, which has completed 20 years of its implementation in 1995, was evaluated by a number of individual experts and various research organisations, since 1979. Of these, the national evaluation of ICDS conducted by the National Institute

NETWORKING OF CHILD DEVELOPMENT SERVICES THROUGH UNIVERSALISATION OF ICDS

ICDS - launched in 1975 is a nation-wide single programme for the over all development of children below 6 years and of the expectant and nursing mothers. It provides a Package of 6 services viz., Supplementary Feeding, Immunization, Health check-ups, Referral Services, Pre-school Education and Health and Nutrition Education for its beneficiaries. The Eight Plan contemplated universalisation of ICDS by 1995-96 by expanding the services to all the 4571 CD blocks in rural areas, 733 blocks in tribal areas and 310 municipal wards in urban slums. However, the programme has been in effective operation in 4200 ICDS blocks all over the country benefiting 20 million children and 3.5 million mothers by 1997-98. Special Services for 3.51 lakh Adolescent Girls in 507 ICDS blocks are also being extended. ICDS also receives assistance from the World Bank to add some additional inputs like construction of project buildings, income generation activities for women / mothers, experimentation of nutritional rehabilitation services, training and project management, equipment, monitoring and evaluation etc.

The Programme of ICDS, which completed 20 years of its implementation in 1995, was evaluated by the National Institute of Public Co-operation and Child Development, New Delhi in 1992. The findings of the study indicated a very definite positive impact of ICDS services delivered through a single-window on the health and nutritional status of the pre-school children and of the mothers. Universalisation of ICDS is, therefore, the ultimate objective of the Ninth Plan.

of Public Co-operation and Child Development (NIPCCD), New Delhi in 1992 and the Mid-term Evaluation of World Bank assisted ICDS need a special mention. The findings of the Study by NIPCCD indicated a very positive impact of ICDS on the health and nutrition status of pre-school children. To quote the findings of the Study, the IMR was significantly lower at 71, compared to SRS national average of 80. The immunization coverage of mothers and children was 46 and 49 per cent, respectively in ICDS areas, compared to 33 and 32 per cent in non-ICDS areas. The nutritional status of children in ICDS areas was found to be better than that of the children in non-ICDS areas. The percentage of normal children was 35 in ICDS areas and 31 in non- ICDS areas. Non-ICDS areas also recorded 3 per cent more children in Grade III and IV malnutrition, as compared to ICDS areas (ICDS - 10.8 per cent, Non-ICDS - 13.11 per cent). The prophylaxis programmes of both vitamin A and iron had better coverage among women and children in ICDS areas, as compared

to non-ICDS areas. Higher percentage of babies had low birth weight in non-ICDS areas as compared to ICDS areas. In tribal areas, the difference was almost double (ICDS - 43.3 per cent and Non - ICDS - 80 per cent). The support for pre-school

education of children in the age group of 3-6 years was also significant. As much as 89 per cent of children with pre-school education experience were found to be continuing their education in primary school as compared to 52 to 60 per cent without pre-school education in both ICDS and non-ICDS areas.

3.8.127 The Mid-term evaluation of the World Bank assisted ICDS (Project-I) conducted in Andhra Pradesh during 1995-96 revealed that the Project interventions had brought down the IMR to 62 per 1000 live births which was in consonance with the project objective of 60 per 1000 live births. The incidence of severe malnutrition amongst children of 0-3 years was reduced to about 5 per cent and that of 3-6 years to 3 per cent. The proportion of low birth weight babies also came down to 20 per cent as against the project goal of 24 per cent. Similarly, in Orissa, the IMR had come down to 93.6 and the incidence of low birth weight of babies to 23 per cent.

3.8.128 Training of ICDS functionaries is yet another important programme funded by the Department of Women and Child Development and implemented by the National Institute of Public Co-operation and Child Development (NIPCCD), New Delhi with its nation-wide network of 3 Regional Centres, 18 Middle Level Training Centres (MLTCS) and 300 Anganwadi Workers Training Centres (AWTCS). During the Eighth Plan period, 1521 CDPOs/ACDPOs, 3839 Supervisors and 153184 AWWs were trained. During 1997-98, the first year of the Ninth Five Year Plan, 386 CDPO's, 921 Supervisors and 41,000 AWW were trained. Despite a busy schedule throughout the year, there remained a huge backlog in the training of ICDS functionaries. To clear the backlog the special drives initiated during the Eighth Plan will continue during the Ninth Plan along with some innovative measures to improve the components of ICDS training.

3.8.129 Creche and Day Care services for children of working/ailing mothers, continued without any expansion during the Eighth Plan. There were 12470 creches benefiting 3.12 lakh children functioning under this programme by 1990-91. However, to meet the growing demand for more creches, a National Creche Fund (NCF) was set up in 1994 with a corpus of Rs.19.90 crore received under Social Safety Net. The NCF extended financial assistance for the opening of creches besides conversion of the existing Anganwadis into Anganwadi-cum-Creches. Under the NCF, 1803 creches were added benefiting about 0.44 lakh more children. A wider expansion of creche/day-care services is envisaged during the Ninth Plan.

3.8.130 The Eighth Plan marked the adoption of two National Plans of Action in 1992 - one for children and the other exclusively for the girl child. These Plans of Action committed themselves to achieve the goals of the World Summit viz. 'Survival, Protection and Development' of Children. In line with these National Plans, 15 States viz. Andhra Pradesh, Bihar, Goa, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Manipur, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal had already prepared their own State Plans of Action for Children/the Girl Child. Other States were being pursued to expedite action for finalising their draft Plans of Action. Two separate Inter- Departmental Co-ordination Committees review the progress of the implementation of these two Plans of Action at regular intervals. The first initiative under these Plans of Action was to get gender disaggregated data from all the child-related developmental sectors to assess the progress made in improving the status of children and the girl child since 1951.

3.8.131 In the State sector, most of the States/UTs were implementing a number of programmes for welfare and development of women and children in addition to those being implemented by the Centre. The important programmes for women in the State sector include various developmental programmes like employment and income generation programmes, training-cum-production centres for destitute women; mahila mandals/mahila sangams; awareness generation/gender sensitization programmes; special campaigns against dowry, prostitution, child marriages etc.; rehabilitation of women in distress; welfare services for women in need of care and protection etc. In addition to these, they also have a major responsibility for implementing various women-specific/women-related legislations, besides setting up/maintaining the mandatory institutions under these Acts. The other major contribution of the States and UTs relates to their coordinating role between the Centre and the NGO sector in implementing the various grant-in-aid programmes, as almost all the women development programmes in the Central sector are being implemented only through NGOs. Along with the Centre, most of the State Governments have initiated action in formulating their own State Policies for Empowering Women. The child development programmes include supplementary nutrition feeding under ICDS, Children Homes, Bal Bhawans, Remand Homes, Observation Homes, services to destitute children and children in need of care and protection etc. Some States have adopted State Plans of Action for Children/Girl Child. A few States like Haryana (Apna Beti Apna Dhan), Tamil Nadu (Cradle Scheme), Andhra Pradesh (Girl Child Protection Scheme), Punjab (Kanya Jagriti Jyoti), Rajasthan (Raj Lakshmi Scheme) and Madhya Pradesh (Bhagyalakshmi) have launched specific schemes to improve the lot of the girl child.

RESEARCH, EVALUATION AND MONITORING

3.8.132 Conducting research/action research on specific problems relating to women and children and evaluation of the ongoing programmes for the welfare and development of women and children leading to mid-term corrections in the content, scope and coverage of the programmes has been a part of the planning process in the women and child development sector. Research on the application of science and technology for the improvement of the quality of life of women will be directed to specific areas e.g. fuel, water, environmental degradation etc. which affect the lives of women along with other social problems. In the recent past, the scope of research and evaluation was widened to include special studies to assess the impact of various programmes, being implemented for women's development and empowerment.

3.8.133 Efforts will also be made to develop a national level 'Information Network System' for women and children with emphasis on collection of gender-specific data with the objective of preparing a Gender Development Index so as to assess the socio-economic status of women and children on a continuing basis. In this context, a special mention needs to be made about the action already initiated in developing an 'Integrated Monitoring System' during the Ninth Plan as a part of the national machinery of women and child development. In these efforts, the National Institute of Public Cooperation and Child Development (NIPCCD), New Delhi, and the National Resource Centre for Women (NRCW), which is in the process of being set up, along with their Regional Centres, are going to play a major role.

IMPLEMENTING MECHANISMS

3.8.134 At the Centre, the nodal Department of Women and Child Development acts as the national machinery to guide, co-ordinate and review the efforts of both governmental and non-governmental organisations working for the welfare and development of women and children. The support structures to the nodal Department include the Central Social Welfare Board, an apex organisation at national level, which acts as an umbrella organisation by networking through State Welfare Boards and through them thousands of voluntary organisations working for the welfare and development of women and children in the country; the National Institute of Public Cooperation and Child Development (NIPCCD), New Delhi which assists the Department in the areas of research and training relating to women and children; and the National Commission for Women which was set up in 1992 as the highest statutory body to safeguard and protect the women's rights and privileges. Similar Commissions are being set up at State level also. Rashtriya Mahila Kosh is yet another support structure at the national level for extending both 'forward' and 'backward' linkages for women in the informal sector in their entrepreneurial ventures. The Women's Cells set up in the Central Ministries/Departments of Labour, Industry, Rural Development and Science and Technology are expected to develop strong linkages between the national machinery and the women-related Ministries/ Departments. At the State level, development of women and children continues to be a part of the Department of Social Welfare in almost all the States/UTs except Andhra Pradesh, Karnataka, Tamil Nadu, Kerala, Maharashtra, Madhya Pradesh, Rajasthan, where exclusive Departments/Directorates have been set up to handle the programmes relating to women and children. Unlike the other sectors viz. - education and rural development, no exclusive machinery exists at the District/Block levels for women and child development. Non-existence of an exclusive implementing machinery at the State/District/Block levels has been affecting the implementation, supervision and monitoring of various policies and programmes for women and children. This situation also leads to excessive dependence on other governmental and non-governmental agencies. The problem is further aggravated in States where the presence of NGOs is minimal. Therefore, there is an urgent need to expedite the setting up of exclusive Departments/ Directorates for women and child development in those State Governments where no such set-up is now available. Special efforts will also need to be made to strengthen/streamline the existing institutional mechanisms both at the Central and State levels with adequate resources, both human and financial, so that the system could gear up to meet the challenging task of empowering women and children during the Ninth Plan.

CONTRIBUTIONS OF THE VOLUNTARY ORGANISATIONS

The Women and Child Development Sector has a rich tradition of selfless voluntary action. While the governmental interventions in this sector are operationalised mainly through the NGOs, the initiative that the latter have themselves developed are rich and diverse. These efforts have often demonstrated the success of alternative models of development and empowerment of women – be it in the field of providing credit for poor women or women's health or women's awareness generation or women's literacy or running self-employment programs in traditional and non-traditional sectors of the economy or organising women into Self-Help Groups to initiate the process of empowering/advancing women.

VOLUNTARY ACTION

3.8.135 While the governmental interventions in this sector are operationalised largely through voluntary organisations, the innovative initiatives, experiments and alternative models that the latter have developed are rich and diverse. These efforts have often demonstrated the success of alternative models of development of children and empowerment of women in the areas of credit, awareness generation, organising women into Self-Help Groups, self-employment, participatory rural appraisal etc. The Rashtriya Mahila Kosh (RMK) is another success story of reaching credit to the poor and assetless women in the informal sector, through the medium of NGOs. The RMK has been networking with 170 NGOs to reach about 2 lakh women. It has also established the credentials of attaining a recovery rate as high as 96 per cent. The other two important areas where the voluntary sector has been contributing their best relate to fighting against the atrocities/violence against women and girl children and creating a positive image about women and children through various awareness generation and gender sensitization programmes. The Central Social Welfare Board which is a national level Apex organisation promotes voluntary action through its country-wide network of 12,000 voluntary organisations. Besides, there are many other national and State level voluntary organisations working for the development of children and empowerment of women.

PLAN OUTLAYS

An outlay of Rs. 7810.42 crore (which includes Rs. 450 crores for ICDS under Special Action Plan (SAP)) has been earmarked in the Central Sector for Women and Child Development in the Ninth Five Year Plan (1997-2002). Outlays for women and child development programmes in the State Sector are included as part of outlays for 'Social Welfare (See Chapter 3.10)'

3.9 EMPOWERMENT OF THE SOCIALLY DISADVANTAGED GROUPS

INTRODUCTION

3.9.1 The Government has special concern and commitment for the well-being of the Socially Disadvantaged Groups viz., the Scheduled Castes (SCs), the Scheduled Tribes (STs), the Other Backward Classes (OBCs) and the Minorities, as they still continue to lag behind the rest of the society due to their social and economic backwardness. These Groups, which have passed through the processes of welfare and development during the past four and a half developmental decades, will now be empowered to act as agents of socio-economic change and development.

3.9.2 According to the 1991 Census, the Scheduled Castes account for 138.22 million, representing 16.48 per cent of the country's total population. Of these, 81 per cent live in rural areas. There has been an increase in the percentage of SC population to the total population from 15.28 in 1981 to 16.48 in 1991, with a decadal growth rate of 3.20 per cent during 1981-91. They are dispersed all over the country, except in one State and two UTs viz., Nagaland, Andaman and Nicobar Islands and Lakshadweep. Uttar Pradesh alone, being the largest State, accounts for 21.05 per cent of the total SC population. Nearly 84 per cent of the country's total SC population live in 10 States viz., Andhra Pradesh (7.66%), Bihar (9.09%), Karnataka (5.33%), Kerala (2.09%), Madhya Pradesh (6.96%), Maharashtra (6.34%), Rajasthan (5.50%), Tamil Nadu (7.75%), Uttar Pradesh (21.18%) and West Bengal (11.63%). In a few States, the SCs constitute more than 20 per cent of the total of their respective population. These include - Punjab (28.31%), Himachal Pradesh (25.34%), West Bengal (23.62%) and Uttar Pradesh (21.05%).

3.9.3. The Scheduled Tribes account for 67.76 million or 8.08 per cent of country's total population. Of these, 1.32 million (1.95%) are primitive tribes. The STs too, have shown a decadal growth rate of 3.12 per cent during the period 1981-91. The actual increase in the percentage of ST population was from 7.53 in 1981 to 8.08 in 1991. The STs inhabit in all the States except Haryana, Punjab, Chandigarh, Delhi and Pondicherry. The highest concentration of ST population is found in the north-eastern States of Mizoram (94.75%), Nagaland (87.70%), Meghalaya (85.53%) and Arunachal Pradesh (63.66%) and in the UTs of Lakshadweep (93.15%) and Dadra and Nagar Haveli (78.99%), while there are high concentrations in the States of Madhya Pradesh (23.27%), Orissa (22.21%), Gujarat (14.92%), Maharashtra (9.27%) and Bihar (7.66%).

3.9.4 The Other Backward Classes, as per the Government of India's Notification dated 8th September 1993, would comprise Castes and Communities which are found common in the List of the Mandal Commission and in the Lists of the individual State Governments. In the absence of specific Census data, it is not possible to quote the exact figure of their population. However, the Mandal Commission made a rough estimate of OBCs constituting 52 per cent of the country's total population.

3.9.5 The Minorities, who constitute 145.31 million (17.17%), as per 1991 Census, represent Muslim, Christian, Sikh, Buddhist and Zoroastrian communities. While the Muslims are mainly concentrated in Jammu and Kashmir (J&K), Lakshadweep, West Bengal, Uttar Pradesh and Bihar, the Christians are predominantly inhabited in the north-eastern States of Nagaland, Mizoram, Meghalaya and Manipur, besides Goa, Andaman and Nicobar Islands and Daman and Diu. The Sikhs are mainly found in the northern States/UTs of Punjab, Haryana, Delhi and Chandigarh. The Buddhist population is mainly found in Sikkim, Maharashtra, West Bengal, Jammu and Kashmir and Himachal Pradesh. Although Zoroastrians are numerically negligible, they are found in sizeable numbers in Maharashtra, Gujarat, West Bengal and Andhra Pradesh, besides Delhi and Daman and Diu.

3.9.6. Recognising the special needs of these weaker sections, the Constitution of India not only guarantees them equality before the law (Article 14) but also enjoins the State to make special provisions of affirmative discrimination for the advancement of any socially and educationally backward classes or for Scheduled Castes and Scheduled Tribes (Article 15(4)). It also empowers the State to make provision for reservation in appointments or posts in favour of any backward class citizens (Article 16(4)).

3.9.7 The Constitution of India also states categorically that 'untouchability' is abolished and its practice in any form is forbidden (Article 17). Further, it enjoins the State to promote with special care the educational and economic interests of the weaker sections of the people and, in particular, of the Scheduled Castes

and the Scheduled Tribes and promises to protect them from social injustice and all forms of exploitation (Article 46). For promoting the welfare of STs and for raising the level of administration of the Scheduled Areas to that of the rest of the State (Article 244), special financial assistance is ensured under Constitution (Article 275(1)). Reservation of seats for the Scheduled Castes and the Scheduled Tribes in the democratic institutions (Article 330 and 332), educational institutions and in services (Article 335) is another measure of positive discrimination in favour of these Groups. It empowers the State to appoint a Commission to investigate the conditions of socially and educationally backward classes (Article 340) and to specify the Castes and Tribes to be deemed as Scheduled Castes and Scheduled Tribes (Articles 341 and 342). With regard to the welfare and development of Minorities, the Constitution incorporated certain safeguards to recognise their rights in conserving their culture and establish and administer educational institutions of their choice (Articles 29 and 30). Like-wise, a number of constitutional provisions exist for protection and promotion of the interests of these Socially Disadvantaged Groups.

3.9.8 The constitutional commitments made in favour of these Socially Disadvantaged Groups prompted the policy makers and the planners to accord high priority for the welfare and development of these groups right from the beginning of the country's developmental planning, launched in 1951. During the Fifties, the general developmental programmes were so designed as to cater adequately to the backward classes. Efforts were also made to ensure that the benefits of economic development accrued more and more to

CONSTITUTION OF INDIA GUARANTEES

Social

- Equality before the law (Article 14)
- Special provision for the advancement of any socially and educationally backward classes including SCs and STs (Article 15 (4))
- Abolition of 'untouchability' and its practice in any form is forbidden (Article 17)
- Appointment of commission to investigate the conditions of socially and educationally backward classes (Article 340)
- The right for all minorities to establish and administer educational institutions of their own choice (Article 30)
- To specify the castes and tribal communities deemed to be SCs and STs (Article 341 and 342)

Economic

- To promote with special care the educational and economic interests of the weaker sections and in particular of SCs and STs and protect them from any social injustice and all forms of exploitation (Article 46)
- Special Financial Assistance is charged from the Consolidated Fund of India each year as grant-in-aid for promoting the welfare of the STs and development of Scheduled Areas. (Article 275(1))
- The Claims of SCs and STs to appointments in services (Article 335)

Political

- Administration and control of the Scheduled Areas and Scheduled Tribes in any State (Article 244 and 339)
- Reservation of seats for SCs and STs in the House of the People and in the Legislative Assemblies of the States (Article 330 and 332)

Like-wise a number of Constitutional provisions exist for protection and promotion of the interests of these Socially Disadvantaged Groups

the relatively less privileged classes of the society in order to reduce inequalities. Keeping in view the five principles of the 'Panchsheel', the process of tribal development was also initiated on the basis of respect and understanding of tribal culture and traditions, besides appreciation of their social, psychological and economic problems. Opening of the 43 Special Multi-Purpose Tribal Blocks during the Fifties which, were renamed later as Tribal Development Blocks, marked the beginning of the concerted efforts in the field of tribal development. During the Sixties, attempts were made to bring about greater equality of opportunities, reduction in disparities in income and wealth and a more even distribution of economic power amongst these backward sections. The developmental programmes were gradually diverted towards the basic goal of achieving a rapid increase in the standard of living of these people through measures which promoted equality and social justice.

3.9.9 During the Seventies, the expectation that the general development programmes would cater to the needs of these weaker sections and the innovative programmes of the Backward Classes Sector would provide the much needed thrust as an additive to the general efforts was belied. Further, the special provisions for the welfare and development of the backward classes, instead of supplementing, began to supplant the general sector provisions. It was in this context that the two innovative strategies of the Tribal Sub-Plan (TSP) for STs and the Special Component Plan (SCP) for SCs, were launched during 1974 and 1979 respectively. These two special strategies were expected to ensure that all the general development sectors, both at the Central and State levels, earmark funds for SCs and STs in proportion to their population so that adequate benefits from all the concerned sectors flow to these two disadvantaged groups.

3.9.10 In support of these two special strategies of SCP and TSP, the Government of India has also been extending Special Central Assistance (SCA) to the States and the UTs, as an additive to fill up the gaps, especially in the family-based income generating programmes. As a result, there has been a substantial increase in the flow of funds for the development of SCs and STs besides enlargement of the share of benefits for SCs and STs under all the development programmes. However, to ensure a focussed attention in improving the lot of these Groups, an exclusive Ministry of Social Justice and Empowerment was set up in 1985. Consequently, all the hitherto scattered programmes of SCs, STs, OBCs and Minorities were brought under one single umbrella during the Nineties and were put into effective operation with the ultimate objective of achieving the constitutional commitment of raising the status of these disadvantaged groups on par with the rest of the society.

CURRENT SITUATION

3.9.11 The impact of various developmental plans, policies and programmes has brought forth a perceptible improvement in the socio-economic status of SCs and STs. A review of the important achievements quantified through various developmental Indicators and the serious gaps that exist till today under the three core sectors of education, employment and economic development, projects the current status of SCs and STs, as detailed in Table 3.9.1.

Educational Development

3.9.12 Although, there has been a visible increase in the literacy rates of SCs and STs during the last three developmental decades, the gap between the literacy rates of SCs/STs and those of the general population still persists. Further, the gap between the general population and STs, when compared to the gap between SCs and other general categories was found to be widening, decade after decade. Adding to this are the problems of intra and inter-State and intra and inter-community variations in the literacy rates amongst SCs and STs.

Table 3.9.1
Literacy Rates of SCs and STs - The Gains and the Gaps

Category	1971	1981	1991	% age Increase of 1991 over 1971
- General Population including SC/ST)	29.45	36.23	52.21	77.28
- Scheduled Castes	14.67	21.38	37.41	155.01
- Scheduled Tribes	11.30	16.35	29.60	161.95
- Gap between SCs and the General Population.	14.78	14.85	14.80	0.14
- Gap between STs and the General Population	18.15	19.88	22.61	24.57

* Excludes 0-6 age group.

Source : Educational Development of SCs and STs, Department of Education, 1995.

3.9.13 Similarly, 'Female Literacy', which is an important indicator in the field of education, has also shown a progressive trend in respect of both SCs and STs, as given in Table 3.9.2.

Table 3.9.2
Female Literacy Rates of SCs, STs and General Population

Category	1971	1981	1991*
Female Literacy Rates			
All Communities including SC/ST	21.97	29.85	39.29
Scheduled Castes	6.44	10.93	23.76
Scheduled Tribes	4.85	8.04	18.19
GAP			
Gap between female literacy rate of SCs and of All communities	15.53	18.92	15.53
Gap between female literacy rate of STs and of All communities	17.12	21.81	21.10

* Excludes 0-6 age group.

Source : Educational Development of SCs and STs, Department of Education, 1995

3.9.14 The data reveals that the female illiteracy rates in respect of SCs and STs have increased substantially from 6.44 per cent and 4.85 per cent in 1971 to 23.76 per cent and 18.19 per cent in 1991, respectively. Besides, the most encouraging sign was the increase in the female literacy rate amongst SCs and STs and the reducing gap between the female literacy rates of SCs and of the general population during 1981 to 1991. However, the female literacy rates of these communities as a whole continued to be very low requiring focussed attention.

3.9.15 The enrolment ratios of SC and ST girls and boys have continued to show a progressive trend along with the rest of the population. The other revealing factor was the better pace of progress maintained by STs at primary level (43.0%) over SCs (29.7%), especially that of ST girls (49.0%) over SC girls (37.3%) during 1981 to 1996. Above all, the overall progress made by SCs and STs in terms of enrolment ratios at primary and middle levels between 1980-81 and 1995-96 has been impressive, as they could prove much better than the general population.

Table 3.9.3

Gross Enrolment Ratios of SCs & STs and General Population

Levels/ Years	Gen. Population			Scheduled Castes			Scheduled Tribes		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1980-81									
I-V (6-11 Yrs)	95.8	64.1	80.5	105.4	57.8	82.2	94.2	45.9	70.0
VI-VIII (11-14 Yrs)	54.3	28.6	41.9	41.4	16.2	29.1	28.2	10.8	19.5
1990-91									
I-V (6-11 Yrs)	114.0	85.5	100.1	122.7	80.6	102.2	126.8	78.6	103.4
VI-VIII (11-14 Yrs)	76.6	47.0	62.1	61.4	33.3	47.7	51.3	27.5	39.7
1995-96									
I-V (6-11 Yrs)	114.5	93.3	104.3	127.6	95.1	111.9	130.0	94.9	113.0
VI-VIII (11-14 Yrs)	79.5	54.9	67.6	74.9	46.8	61.3	61.6	37.6	50.0
Pace of Progress									
I-V (Primary level)	18.7	29.2	23.8	22.2	37.3	29.7	35.8	49.0	43.0
VI-VIII (Middle level)	25.2	26.3	25.7	33.5	30.6	32.2	33.4	26.8	30.5

Source : Selected Education Statistics, 1995-96, Department of Education, New Delhi.

3.9.16 The drop-out rate, which is a crucial indicator in the field of education also reveals that there has been a steady decline in the drop-out rates of SCs and STs as given in Table 3.9.4.

Table 3.9.4

Drop-Out Rates amongst SCs and STs at various stages of Education

Category	(Classes I-V)		(Classes I-VIII)		(Classes I-X)	
	1980-81	1989-90	1980-81	1990-91	1980-81	1990-91
GENERAL	58.70	48.08	72.70	63.40	82.46	71.34
SC	60.16	49.03	76.84	72.09	86.91	80.58
ST	75.66	63.81	86.71	80.10	91.18	86.00

Source: Educational Development of SCs and STs (1995) and Unpublished Data of the Department of Education.

Note : 1. Since the latest data on the drop-out rates of SCs and STs is available only for 1990-91, data for General Population was also used for the same year For effective comparison.

2. Figures for 1990-91 in respect of SCs and STs are not available for primary level.

3.9.17 The problem of drop-outs, as the above data reveal, happens to be a common feature amongst SCs, STs and other general category also. While all the three categories have been showing a decreasing trend during the decade 1981-91, the problem appears to be the worst with regard to STs with a very high drop-out rate of 86 per cent for classes I to X during 1990-91. The gap between the general population and these two categories also appears to be on an increase, while the same is comparatively wider in respect of STs.

3.9.18 The health and nutrition status of the socially disadvantaged groups, especially that of the SCs and STs continues to be one of the major concerns of the Government, as these communities live mostly in such areas which are neglected, remote, inaccessible and are endemic with diseases like malaria, tuberculosis, Yaws etc. Keeping their special and specific needs, the Government has been paying special attention by setting up Primary Health Care institutions with relaxed norms. However, a review of the existing situation reveals that the health and nutrition status of these special groups needs priority attention in the Ninth Plan.

Economic Development

3.9.19 The major strategy of creating employment-cum-income generating activities to alleviate poverty amongst the SCs and the STs has proved its impact in raising a large number of SC and ST families from the level of 'Below Poverty Line' during the decade between 1983-84 and 1993-94, as quantified in Table 3.9.5.

Table 3.9.5**Percentage of Population Living Below Poverty Line**

Category	1983-84	1993-94	Percentage Decrease.
General	44.48	35.97	(-) 8.51
SCs	57.60	48.37	(-) 9.23
STs	63.14	51.14	(-) 12.00

Source : Perspective Planning Division, Planning Commission, New Delhi.

Note : The aggregate poverty ratio of SC and ST population 1983-84 has been worked out as a weighted average of rural and urban poverty ratio using 1981 Census population of the respective Groups in rural and urban areas as weights. In a similar way, 1991 Census population is used to obtain aggregate poverty ratio for these two groups in 1993-94.

3.9.20 In respect of both SCs and STs, besides the general population, the percentage of the number of families living below the poverty line has shown a declining trend over the decade 1983-84 to 1993-94. Despite a reduction in the percentage of the population living below poverty line, the incidence of poverty amongst SCs and STs continues to be very high, when compared to the general population, the reasons being that a majority of the Scheduled Castes (77.11%) and Scheduled Tribes (90.03%) are landless with no productive assets and are devoid of sustainable employment and minimum wages, and women belonging to these Groups who live not only below the poverty line, but in abject/extreme poverty, are denied of both minimum and equal wages.

Participation of SCs and STs in Administration and Decision Making

3.9.21 Participation of SCs and STs in the administration and decision-making is yet another indicator of the positive impact of developmental planning on the status of SCs and STs. The same can be seen from their representation in the Government especially at the senior level of Group A posts, where decisions are taken.

3.9.22 The total representation of SCs in services covering A to D Groups has risen from 13.66 per cent in 1974 to 16.9 per cent in 1994, which, in fact, is more than their legitimate share of 16.5 per cent. In the case of STs, although their participation in administration has increased from 2.81 per cent in 1974 to 5.48 per cent in 1994, they are yet to reach their proportionate representation of 8.08 per cent. The increasing participation of SCs and STs in Group 'A' Services, that is - SCs from 3.25 per cent in 1974 to 10.25 per cent in 1994 and STs from a mere 0.57 per cent in 1974 to 2.92 per cent in 1994, directly reflects the impact of various affirmative measures taken in bringing them into the mainstream. At the same time, the data also reveal the gaps that need to be bridged with effective interventions, if these groups have to be brought on par with the general population, especially in respect of Group A Posts, the level at which the decision-making takes place.

Table 3.9.6

Representation of SCs and STs in Services (1974 to 1994)

Category	Group of Service				Total
	A	B	C	D	
(As on 1.1.1974)					
Total	33672	52343	1566796	1242548	2895359
SC	1094 (3.25)	2401 (4.59)	161775 (10.33)	230203 (18.53)	395473 (13.66)
ST	155 (0.57)	258 (0.49)	33383 (2.13)	47679 (3.84)	81475 (2.81)
(As on 1.1.84)					
Total	-	-	-	-	3303342
SC	-	-	-	-	527573 (15.97)
ST	-	-	-	-	149391 (4.52)
(As on 1.1.94)					
Total	59016	103198	2381613	1023285	3567112
SC	6046 (10.25)	12442 (12.06)	374758 (15.73)	209423 (20.46)	602670 (16.90)
ST	1727 (2.92)	2902 (2.81)	128228 (5.38)	62945 (6.15)	195802 (5.48)

Source : Department of Administrative Reforms & Public Grievances, Annual Report, 1994.

Note : Figures in parenthesis indicate percentage of SCs and STs to the total population.

3.9.23 Affirmative discrimination through reservation for SCs and STs in the Lok Sabha and the State Legislative Assemblies evidently establishes the growing strength of SCs and STs not only in terms of their participation in the democratic processes of the country since independence, but also their representation in the political decision-making institutions of Parliament, Legislative Assemblies, local bodies, Panchayats etc. In the 1996 elections, their representation in the Lok Sabha accounted for 19.52 per cent (13.01% for SCs + 6.51% for STs).

Implementation of SCP, TSP and SCA to SCP and TSP

3.9.24 The implementation of the special strategies of the Special Component Plan (SCP) for SCs, Tribal Sub-Plan (TSP) for STs and the Special Central Assistance (SCA) to SCP and TSP, has been receiving special attention, since their inception, as these are effective instruments to ensure proportionate flow of funds for SCs and STs from the other general development sectors. In respect of the Special Plan Component Plan(SCP), the situation at the Central level was not found to be very encouraging as the earmarking

**SPECIAL MECHANISMS FOR
EARMARKING OF FUNDS FOR SCs and STs**

During 1970's, the Government instituted, three special mechanisms viz., Special Component Plan (SCP) for SCs, Tribal Sub-Plan (TSP) for STs and Special Central Assistance (SCA) to SCP and TSP. While the major objective of SCP and TSP is to ensure the much needed flow of funds and benefits for the welfare and development of these two categories in proportion to their population, which is now 16.5% in respect of SCs and 8.1% in respect of STs, as per the 1991 Census, SCA to SCP and TSP extends financial assistance to States and UTs as an additive to their SCP and TSP for filling up of the critical gaps in the family-based employment-cum-income generation programmes. The flow of funds during the Eighth Plan for SCP under Central and State sectors was to the tune of 27.8 % and 10.8% respectively against the target of 16.8%, while the flow of funds to TSP under Central and State sectors were 8% and 9.8%, respectively against the target of 8.1% .

of funds was adhered to only by 13 Ministries/Departments viz. Labour, Education, Science & Technology, Industry, Textiles, Petroleum and Natural Gas, Women and Child Development, Health and Family Welfare, Commerce, Fertilisers, Rural Development, Non-conventional Energy Sources and Agriculture and Cooperation. At the State level, 21 States viz., Andhra Pradesh, Bihar, Assam, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal; and 3 UTs viz. Chandigarh, Delhi and Pondicherry were earmarking funds for SCP. Of these, 18 States/UTs have been maintaining separate Budget Heads for SCP to ensure proper quantification of funds and their effective utilisation for the purpose they were meant for. The rest were being pursued to emulate the same

system as it helps prevent the diversion of funds. During the Eighth Plan, the flow of funds for SCP under the Central and State sectors by the end of 1996-97 was estimated to be 27.8 per cent and 10.8 per cent respectively, against the total SC population proportion of 16.48 per cent.

3.9.25 Under the Tribal Sub-Plan (TSP)), 17 Central Ministries/ Departments viz., Agriculture, Cooperation, Education, Health, Petroleum and Natural Gas, Food, Women and Child Development, Youth Affairs, Commerce, Textiles, Labour, Environment and Forest, Science and Technology, Rural Development, Non-conventional Energy Sources, Information and Broadcasting, Industry and Communications, have been earmarking the funds. At the State level, earmarking of funds for TSP has been in operation in respect of 18 States viz., Andhra Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Orissa, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal; and 2 UTs viz., Andaman and Nicobar Islands and Daman and Diu. The flow of funds under TSP from the Central and State sectors during the Eighth Plan was around 8.0 per cent and 9.79 per cent, respectively against the population proportion of 8.08 per cent.

3.9.26 The Special Central Assistance (SCA) to States/UTs, as an additive to SCP and TSP, was enhanced during the Eighth Plan so as to strengthen the efforts of States in filling up the gaps under the family-based income generation projects. The SCA to SCP was enhanced from Rs.930 crore in the Seventh Plan to Rs.1125 crore in the Eighth Plan, indicating 21 per cent increase. Similarly, the SCA to TSP was also enhanced from Rs.756 crore in the Seventh Plan to Rs.1250 crore in the Eighth Plan, showing a rise by 65 per cent. The details of the flow of funds from the Central and the State Sectors to SCP for SCs, TSP for STs and the SCA to SCP and TSP, during the Seventh and the Eighth Five Year Plans, are given in Table 3.9.7.

Table 3.9.7

Flow of Funds through SCP, TSP and SCA during Seventh and Eighth Plans

(Rs. in Crore)

Sl. Items No.	Seventh Plan (1985-90)		Eighth Plan (1992-97)		Percentage over Col.4
	Flow of funds		Outlay*	Flow of funds	
(1)	(2)	(3)	(4)	(5)	(6)
A. Special Component Plan (SCP) for SCs.					
- Flow from Central Plan (in respect of 13 Ministries/ Departments)	6225.09	37687	10471.00	27.78	
- Flow from State Plan (in respect of 24 States/UTs)	73885.42	202850.19	21921.53	10.81	
B. Tribal Sub-Plan (TSP) for STs					
- Flow from Central Plan (in respect of 17 Ministries/ Departments)	N/A.	68924.14	5516.56	8.00	
- Flow from State Plan (in respect of 20 States/UTs)	62216.76	174245.02	17061.93	9.79	
C. Special Central Assistance (SCA) to SCP and TSP					
- SCA to SCP	9930.00	-	1125.00	-	
- SCA to TSP	7756.00	-	1250.00	-	

Source : Ministry of Social Justice and Empowerment.

* Includes the outlays of the Eighth Plan in respect of only those Ministries/Departments and States/UTs which were earmarking funds under SCP and TSP.

3.9.27 Despite the fact that both the strategies of SCP and TSP have been in operation for more than fifteen years, they could not influence all those concerned towards the right perspective. Further, lack of effective monitoring to ensure that all these concerned earmark funds under SCP and TSP and that the funds received under SCP, TSP and SCA are utilised both effectively and purposefully is another area of concern in this regard.

Crimes/Atrocities against SCs and STs

3.9.28 Besides the IPC, the Protection of Civil Rights (PCR) Act of 1955 and the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act of 1989, are the two major legal instruments which help prevent/control the atrocities against SCs and STs. Under these Acts, as many as 434 Special Courts/Mobile Courts were set up in 7 States. In addition, Special Cells/Squads/Officers have also been appointed in 19 States to ensure effective implementation of the Act. In accordance with the PCR Act of 1955, special legal aid was also extended to the victims of untouchability and other crimes through Special Officers who ensured effective implementation of the Act, besides extending support for social and economic rehabilitation of the SC/ST victims. The crimes

committed against SCs and STs vis-a-vis the general population as reported by the National Crimes Record Bureau, New Delhi, are indicated in Table 3.9.8.

Table 3.9.8
Crimes Against SCs and STs during 1994 to 1996

(Figures in '000)

Year	Total Crime In India	Crimes against Scheduled Castes		and Scheduled Tribes		Total	
		S.L	Total*	S.L	Total**	S.L (Col.3+5)	Total* (Col.4+6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1994	5510	16.67	33.91 (0.62)	1.38	5.02 (0.09)	18.05	38.93 (0.71)
1995	6000	15.45	33.00 (0.55)	1.55	5.50 (0.09)	17.00	38.50 (0.64)
1996 (Prov.)	5630	11.04	31.44 (0.56)	0.83	4.97 (0.09)	11.87	36.41 (0.64)

Source : The Crime in India : 1994 and 1995; 1996: Provisional National Crime Records Bureau, Govt. of India, New Delhi.
(Prov.) : Provisional
SL : Refers to crimes registered under the Special Laws (SL), viz. PCR Act, 1955 and the SC and ST (Prevention of Atrocities) Act, 1989.
* : Figures in parenthesis (Col.4, 6 and 8) indicate the percentage of total crime against SCs and STs in the total number of crimes in India (Col.2).

3.9.29 As per the data given above, the number of crimes against SCs and STs, has started declining from 38,927 in 1994 to 36,413 in 1996. However, the share of the crime against SCs and STs in the total crime in the country between 1995 and 1996 remained the same. The number of crimes committed which are covered under the Special Laws viz., PCR Act of 1955 and the Prevention of Atrocities Act of 1989, have also shown a declining trend as they have come down from 18,048 in 1994 to 11,863 in 1996. This can no doubt, be attributed to the effective implementation of the two Special Legislations under which Mobile Courts/Special Courts, Special Squads were set up and Special Officers were appointed. Amongst the various types of crimes committed against SCs and STs, those covered under PCR Act in respect of SCs and those under POA Act in respect of STs continued to be on a high side, besides rape, murder, arson and kidnap and abduction between 1994 and 1996.

3.9.30 The OBCs and the Minorities have emerged as distinct target groups in the recent past seeking definite developmental interventions. In the case of the OBCs, the schemes introduced in the Eighth Plan include the National Backward Classes Finance and Development Corporation (NBCFDC) and Pre-Examination Coaching Centres. Since these measures were recently introduced, their impact could not be assessed at this stage. Although no specific information is available on the status of OBCs, it is apparent that a majority of them live below the poverty line, possess no assets and are engaged in low-income traditional occupations like handloom weaving, pottery, fishing, blacksmithy etc.

Unless the harsh conditions in which the OBCs live and work are altered, it would not be possible for them to secure economic self-reliance either in their traditional activities or in other diverse activities.

3.9.31 Just as in the case of the OBCs, the impact of various developmental measures in respect of the Minorities also could not be assessed in view of the short span that they have been in operation. However, the general conditions reveal that the Minorities, especially the Muslims, their women and girl children, remain educationally very backward and their traditional institutions like Madarsas are yet to adopt the modern syllabus to get integrated into the mainstream education. A large number of the Minorities and the OBCs continue to depend upon the low-income traditional artisanship and other similar occupations.

NINTH PLAN COMMITS TO

Objective

- Empower the Socially Disadvantaged Groups viz., the Scheduled Castes (SCs), the Scheduled Tribes (STs), the Other Backward Classes (OBCs) and Minorities as the Agents of Social Change and Development

Strategies

- Create an enabling environment that is conducive for the SCs, STs, OBCs and Minorities to exercise their rights freely, enjoy their privileges and be able to lead a life with confidence and dignity
- Adopt a three-pronged strategy of – i) Social Empowerment; ii) Economic Empowerment; and iii) Social Justice, in empowering these disadvantaged groups
- Ensure removal of disparities; eliminate exploitation and suppression and provide protection to the disadvantaged groups
- Ensure the developmental benefits to 'Reach the Unreached' through equitable distribution and with social justice
- Ensure participation of the Socially Disadvantaged Groups in the process of planning not merely as the beneficiaries but to take part effectively in the formulation of the need-based programmes / projects, their implementation, supervision and monitoring
- Accelerate the on-going process of improving the socio-economic status of the disadvantaged groups through effective implementation of various policies and programmes and thus bring them on par with the rest of the society

STRATEGY FOR THE NINTH PLAN

3.9.32 The Ninth Plan commits to empower the SCs, STs, OBCs and Minorities as the agents of socio-economic change and development. Therefore, a major shift is visualised in the approach as it envisages advancement of these socially disadvantaged groups through a process of 'empowerment', wherein efforts will be made to create an enabling environment that is conducive for them to exercise their rights freely, enjoy their privileges and be able to lead a life of self confidence and dignity along with the other citizens of the country. Thus, the empowerment of these Groups, as envisaged, will be a long-drawn process, with support policies and programmes directed towards empowering the Socially Disadvantaged Groups to be the active partners and partakers of the country's development rather than continuing as passive recipients of various developmental benefits.

3.9.33 The approach towards empowering these Groups in the Ninth Plan will be holistic in nature so as to accomplish all-round development of these weaker sections with an inter-sectoral approach and inputs from both the governmental and the non-

governmental agencies. In the Ninth Plan, efforts will be made to extend all assistance to SCs, STs and OBCs to ensure speedy socio-economic development through qualitative concern and quantitative substance in every measure undertaken, especially in removing the disparities, eliminating exploitation and suppression. Thus, these vulnerable groups,

particularly the SCs and the STs will not only be protected, but will be ensured of the developmental benefits reaching the unreached, bringing about equitable distribution and growth with social justice.

3.9.34 For this, the most effective instrument which provides a special cushion for these categories in meeting their basic needs is the Special Plan of Action of 1998. In this direction, efforts are being initiated to fill the critical gaps in providing the basic minimum services to those living below the poverty line. These special efforts are expected to ensure that every habitation with concentration of these Groups will have access to potable drinking water, nutrition supplements with both macro and micro nutrients, primary health care services, primary education facilities, sanitation and housing for the shelterless poor.

3.9.35 While formulating/implementing programmes for these Groups, the Ninth Plan will strive to ensure 'People-Centred Development' and 'People's Participation' with effective involvement of Panchayati Raj Institutions, in pursuance of the recent Constitutional (73rd and 74th) Amendments. Immediate steps will also be taken for the devolution of financial as well as administrative powers to the local self-governments, so that the marginalised groups will also get the opportunities to participate not only in formulating the need-based programmes but also in their effective implementation, supervision and monitoring. This will not only go a long way in empowering these Groups but will also ensure that the implementation of various developmental programmes is carried out in the true sense of co-operative federalism.

3.9.36 In the context of adopting the special strategy of 'Women's Component Plan' in the Ninth Plan, action will be taken by the nodal Ministry of Social Justice and Empowerment to earmark funds/benefits under all its programmes exclusively for women belonging to these socially disadvantaged groups who are the worst affected as they are generally living in extreme poverty.

3.9.37 In the Ninth Plan, the vital ongoing programmes for the advancement of these socially disadvantaged groups will be streamlined, strengthened and enriched to accomplish the unfinished task of bringing these sections on par with the rest of the society. Simultaneously, new measures, wherever necessary, will be initiated to accelerate the process of empowering these weaker sections. Empowerment of these groups will, therefore, be attempted in an integrated manner, essentially encompassing the three vital and inter-related components viz., i) Social Empowerment; ii) Economic Empowerment; and iii) Social Justice.

I. Social Empowerment

Scheduled Castes and Scheduled Tribes

3.9.38 The National Agenda of Governance clearly spells out the commitment of the Government to safeguard adequately the interests of SCs, STs and OBCs through appropriate legal, executive and societal efforts and by large scale education and empowerment.

3.9.39 Education, being the most effective instrument for socio-economic empowerment, high priority will be accorded to improving the educational status of SCs and STs, particularly that of the women and the girl children. In fact, the educational backwardness, prevalent amongst these Groups, necessitates an added thrust on their education, training and skill upgradation as it will bring forth not only social empowerment but also economic empowerment. Therefore, the endeavour in the Ninth Plan will be to provide suitable education keeping in view, their cultural milieu, their genius and their special needs. The need for a time-bound programme to improve the educational status of the Socially Disadvantaged Groups has been identified as one of the immediate tasks to be fulfilled during the Ninth Plan as part of the total commitment of

SOCIAL EMPOWERMENT THROUGH

Education being the most effective instrument of empowering the Socially Disadvantaged Groups, all-out efforts will be made to improve the educational status of these Groups, especially that of the Women and the Girl Child, through :

- Universalisation of primary education by 2005 A.D. with a special focus on low-literacy pockets and on the educationally backward communities like SC, ST, OBCs and Minorities
- ' Reaching the Unreached ' through removal of the existing problem of inaccessibility by providing residential schools in the remote and the far-flung tribal areas, hostel facilities etc.
- Extending special concessions like free education; free supply of books; uniforms / stationery ; scholarships / fellowships for both within and outside country
- Special efforts to vocationalise education both at the middle / high school levels which can equip the Disadvantaged Groups either for wage / self-employment
- Encouraging higher and technical / professional education amongst these, through effective implementation of Post-Matric Scholarships with an added thrust and wider coverage
- Promoting education amongst children whose parents are engaged in unclean occupation and thus divert the future generation away from the practice of scavenging through incentives like Pre-Matric Scholarships
- Providing more opportunities for these Groups to appear in the competitive examinations and get into the stream of planning and decision making process through expansion of pre-examination coaching services
- Complete eradication of the practice of Untouchability and thus provide a rightful place and status for these socially disadvantaged groups
- Achieving complete eradication of the practice of Manual Scavenging by the end of the Ninth Plan (2002) and thus liberate and rehabilitate the Scavengers and those engaged in Unclean Occupations through a time-bound programme
- Developing special health packages to combat diseases that are endemic in nature and affecting the lives of the tribal population
- Initiating integrated action plan towards allround development of Primitive Tribal Groups
- Introducing the concept of Mini-Anganwadis with relaxed norms in the remote areas and thus ensure children and mothers belonging to these Groups are taken care of with basic health and nutrition services through National Programmes like Integrated Child Development Services (ICDS), Special Nutrition Programme (SNP) and Nutrition Support to Primary Education popularly known as Mid-day Meals Programme
- Encouraging the participation of the disadvantaged groups / in the planning and developmental process at every level through ensuring their adequate representation in various Democratic / decision making Institutions like Panchayati Raj / Local Bodies, State Assemblies / Parliament etc.

making the country fully literate by the year 2005 A.D. Efforts will, therefore, be made to fulfil this commitment through universalisation of primary education with a special focus on low literacy pockets and on the SCs, STs, OBCs and Minorities whose literacy rates are very low compared to the rest of the population.

3.9.40 In view of the low enrolment/retention rates and high drop-out rates amongst these groups, special measures will be taken not only to strengthen the ongoing programmes but also to launch new initiatives for ensuring easy access through residential schools; minimum standards with trained teachers, preferably local women; appropriate and adequate support services like hostels and creches; other infra-structural facilities and special incentives to poor students and their families through scholarships/financial assistance, free books, free uniforms etc. In this context, the earlier initiative of the Government to start creche facilities within the school campus or nearer to the school will be revived/intensified to ensure that the girl children are not deprived of education as they have to play the role of a mother-substitute in many respects, when the mothers go out for work to supplement the family income. Also, the much-needed nutritional support through the national feeding programme of ' Mid-Day Meals (MDM) will be expanded/universalised to reach the most interior and inaccessible rural, tribal and hill areas.

3.9.41 The spread of literacy through the efforts of the National Literacy Mission will be ensured so as to reach the backward rural, tribal and urban slums where the incidence of illiteracy especially amongst women and girl children belonging to these weaker sections is very high. Residential schools and schools with attached hostel facilities right upto the block-level will be encouraged in the Ninth Plan to solve the present problem of inaccessibility of schools being faced by the girls in the backward rural and tribal areas. The recent launching of Kasturba Gandhi Swatantrata Vidyalayas in 1997 is one of such initiatives exclusively meant for the educational improvement of girl children belonging to SCs, STs, OBCs and Minorities.

3.9.42 Employment-oriented education and diversified vocational training, which has been recognised as the need of the day, will be given top priority. Special efforts will be made to vocationalise education both at the middle/high school levels, depending upon the need and demand. Also, job-oriented condensed courses will be accorded priority in the Ninth Plan to extend functionally viable and productive education to these Groups, especially in tribal areas. Monitoring of the working of these institutions will be taken up through PRIs to ensure un-interrupted and smooth imparting of education to the target population, especially those living below the poverty line.

3.9.43 To ensure educational development amongst the SCs and the STs, the vital ongoing programme of Post-Matric Scholarships, which was modified in 1995-96 by lifting all the restrictive clauses during the Eighth Plan, will be implemented with added thrust and wider coverage to encourage these groups to enter into higher/technical streams of education. To promote school education amongst children whose parents are engaged in unclean occupations and to divert the future generations away from the practice of scavenging, the recently revised scheme of Pre-Matric Scholarships will be expanded to reach these facilities to all those who are in need. The scheme of Pre-examination Coaching Centres will be further expanded to benefit the rural candidates also. Intensified efforts will be made through effective expansion of Education Complexes in low literacy pockets for development of SC and ST women and girls as they lag much behind their counterparts. Hostels for SC and ST Girls and Boys will also be strengthened/expanded to ensure that the demand for these hostels is completely met as the hostels solve the problem of inaccessibility. Also, other programmes like Book Banks, Merit Scholarships and Fellowships for studies abroad, will be put into action effectively to act as special incentives.

3.9.44 Elimination of the most inhuman practice of manual carrying of night-soil is yet to be accomplished. During the Ninth Plan, complete eradication of this practice of manual scavenging will be achieved as a time-bound commitment by ensuring occupational mobility and breaking the nexus between the traditional occupations and social and economic disabilities. Total liberation and full rehabilitation of the scavengers, especially focussing on the women and girl children, will be taken up intensively in the Ninth Plan after accomplishing the total identification of the scavengers.

3.9.45 Rehabilitation programmes with vocational training for alternative jobs with sustainable income will be taken up. Loans and other financial and technical assistance will be extended to the scavengers to start self-employment with income generating activities to keep themselves gainfully engaged. Simultaneous efforts, in close collaboration with the agencies of Local Self Governments, will be put into action to ensure that all the dry latrines are changed into wet latrines so as to wipe off this inhuman practice completely from the present day list of professions. With a view to freeing the future generations from the traditional occupation of scavenging, all encouragement for promotion of education by providing hostel facilities, scholarships, mid-day meals, free books and uniforms etc. will be given, on priority basis, to the children belonging to these communities. To keep a close vigil on the progress of this programme with national commitment, the term of the National Safai Karamchari Commission has also been extended till the end of the Ninth Plan period. The National Safai Karamcharis Finance and Development Corporation will be strengthened/activated to act as a catalytic agent in rehabilitating the scavengers on a time-bound basis through extending alternative jobs/employment for those who want to start self-employment-cum-entrepreneurial ventures.

3.9.46 A large number of families belonging to the Socially Disadvantaged Groups live below the poverty line and dwell in the most backward and inaccessible areas that are devoid of even basic minimum services. Therefore, they have been always subjected to several deficiencies, diseases and disabilities due to malnutrition/under-nutrition, compounded with inaccessibility/non-availability of primary health care and drinking water etc. While food security in the tribal areas will be ensured through the expansion of the

Revamped Public Distribution System (RPDS) simultaneous efforts will also be made for raising the purchasing power of the tribals through employment and income generation activities, especially under the Poverty Alleviation programmes. Efforts will be made to expand the scheme of 'Village Gramin Banks' to make sure that adequate food is available in the remote tribal villages which remain cut-off from the mainland during the major part of the year.

3.9.47 While the all-round development of STs in general will be addressed through the continuing programmes but with added thrust and support, the Primitive Tribal Groups (PTGs), who are leading an extremely precarious life and some of whom are on the verge of extinction due to hunger, starvation and diseases, will be attended to, on a priority basis, in the Ninth Plan. As the ongoing programmes have not been able to alleviate the conditions of the PTGs, direct programmes for the welfare and development of PTGs will be launched in the Ninth Plan through an integrated action plan incorporating supply of safe drinking water, food and nutrition security, health coverage, educational facilities etc. The proposed Action Plan for PTGs will have an in-built flexibility to cater to the specific needs of each tribe and its environment.

3.9.48 To attend to the varied and specific health problems of the tribal communities in different States/UTs, efforts will be made to develop appropriate health infrastructure with much needed inputs so as to enable these Groups to have easy access and availability of services within their reach. Also, special health packages will be developed to combat diseases that are endemic in nature and affecting the lives of the tribal population. In these efforts, priority will be given to the Primitive Tribal Groups as some of them are getting extinct due to endemic diseases. Indigenous systems of medicine will also be promoted with all the necessary support to cater to the needs of the tribal population as the ingredients of this system of medicine are easily available at a much lower cost within the tribal areas. The tribal women and girl children, being the deprived lot and the worst affected, will receive special attention in meeting their health and nutritional needs. The concept of 'Mini-Anganwadis' with relaxed norms to bring all the remote and the neglected pockets of the country under the Universalisation of ICDS, will be the main strategy to ensure that the children below 6 years and the expectant and nursing mothers, belonging to these communities, will receive supplementary nutrition, immunization, health-check-up etc.. The provision of safe drinking water will be given top priority in the Ninth Plan as part of BMS.

3.9.49 The Ninth Plan acknowledges the need for a National Tribal Policy. Accordingly, efforts will be made to formulate a comprehensive Tribal Policy during the Ninth Plan with a special focus on the primitive tribes and displaced tribals and their rehabilitation.

Other Backward Classes (OBCs)

3.9.50 Empowerment of the OBCs during the Ninth Plan has been visualised as an effective instrument to ensure social justice in the country. To make this more realistic, efforts will be made to get enumeration of the OBC population done by the Registrar General and Census Commissioner in the forthcoming Population Census of 2001. In the meantime, efforts will also be made to ensure that the National and the State Commissions, in pursuance of the directives of the Supreme Court, will bring out their final Lists of OBCs.

3.9.51 Development of the OBCs, which made a beginning in the Eighth Plan, will continue to receive more attention during the Ninth Plan with many new initiatives in the field of education and economic development. The success stories related to the development of the SCs have prompted the Government to adopt a similar approach towards the development of OBCs, as the needs and problems of OBCs are more or less similar to those of SCs. Thus, for ensuring educational development amongst OBCs, schemes for providing scholarships for pursuing pre-matric, post-matric, and other higher

education, supported with hostel facilities, will be introduced. Alternatively, children belonging to the OBCs will also be given opportunities to enjoy the existing hostel facilities meant for SC and ST boys and girls.

3.9.52 For OBC students to participate effectively in the competitive examinations, Pre-Examination Coaching Centres will also be set up in the Ninth Plan. In order to provide housing and other settlement facilities to the assetless migratory communities amongst the OBCs, a new scheme of Shelter for Nomadic Groups amongst the Backward Classes, will be introduced in the Ninth Plan.

Minorities

3.9.53 The emphasis during the Ninth Plan will be on the overall socio-economic development of Minorities with special focus on their education. The existing scheme of Maulana Azad Education Foundation, New Delhi will be further strengthened and supported to enable the expansion of its activities and promotion of education amongst women by providing additional facilities of schools, colleges and hostels, offering remedial coaching, upgrading the existing institutions and networking with vocational and technical education. In order to promote higher and technical education amongst the Minorities, support will be extended to provide scholarships/ fellowships.

3.9.54 Educational backwardness, especially amongst the Muslim women and girl children will be addressed on a priority basis in the Ninth Plan. To this effect, efforts will be made to provide educational facilities with appropriate infrastructural support in those areas/habitations where their population is concentrated, facilitating easy access to educational institutions/facilities for the Muslim women and the Muslim girl children. Steps will also be taken to motivate and involve parents and community/religious leaders to play a catalytic role in promoting education amongst Muslim women and girl children. To tackle the educational backwardness, modernisation of the existing traditional institutions like Madaras, will be accorded a high priority in the Ninth Plan as these have been instrumental in arresting drop-outs and inculcating discipline amongst their students. The modernisation of Madaras will be effected through amendments to their traditional syllabi and introduction of subjects like Mathematics, Sciences, General Studies, English etc. to mainstream them.

3.9.55 The other crucial areas, which will be paid special attention for empowerment of the Minorities in the Ninth Plan include special attention to the health, nutrition and education problems of girls and women; expansion of Multi Sectoral Developmental Plans and Pre-examination Coaching Centres in the Minority concentrated Districts to extend the much-needed support to the students studying in the secondary and post-matric classes; and conservation and promotion of the languages and culture of the Minorities etc. with effective involvement of the NGOs.

II. Economic Empowerment

Scheduled Castes and Scheduled Tribes

3.9.56 As there exists a sizeable population belonging to the Socially Disadvantaged Groups of SCs, STs, OBCs and Minorities living under extreme conditions of poverty, mobilisation of adequate financial and social support to free them from the clutches of poverty, will be taken up on a priority basis. To this effect, economic empowerment through employment and income generation programmes will be given special emphasis in the Ninth Plan to ensure that at least their basic needs are met.

ECONOMIC EMPOWERMENT

As there exists a sizeable population belonging to the Socially Disadvantaged Groups of SCs, STs, OBCs and Minorities living under extreme poverty, mobilisation of adequate financial and social support to free them from the clutches of poverty will be taken up on a priority basis through :

SCs and STs

- A special thrust will be given on employment and income generation programmes with an ultimate objective of making these groups economically independent and self-reliant and thus raise them above the poverty line
- All the 5 National and other State Level Finance and Development Corporations will be strengthened to play a catalytic role in promoting employment-cum-income generation activities 'through' 'Backward' and 'Forward' linkages
- Special efforts through various training programmes to upgrade the traditional skills, equip them with modern technology so as to meet the market demands
- To enforce special legislative measures to ensure payment of minimum wages and equal wages, with no gender discrimination in the informal/unorganised sector
- The private and the corporate sectors will be motivated to invest on the welfare and development of the weaker sections as they form a potential force in the country's human resources
- To endow every landless SC and ST family with a minimum piece of land; restoration / preservation of land ownership and effective implementation of protective legislation
- Involvement of NGOs in the promotion of small and lift irrigation projects, especially in the drought prone, dry and hilly areas to ensure food security at the village level
- To sensitise/motivate the Financial Institutions to pay special attention to these priority groups and extend loans on differential rates of interest
- To commercialise of the tribal economy and confer ownership rights in respect of minor forest produce (MFP) to persons who work in the forests
- To provide the much needed boost to the tribal economy, the existing supporting mechanisms of TRIFED and its related agencies will be merged and upgraded into an Apex Body at the national level

OBCS

- The NBCFDC will be activated to extend necessary support for financially viable schemes/projects and to upgrade the technical self-reliant
- Steps will be taken to support self-employment and income generating ventures, especially for nomadic and semi-nomadic communities with a view to settling them permanently at one place
- The NBCFDC will be strengthened besides encouraging the Voluntary Organisations in the social and economic upliftment of OBCs:
- Traditional weavers, who are going through hardships at present, will be supported with necessary financial and material support to revive the languishing industry as a sustainable venture
- The much-needed modernisation of handloom operations through appropriate apprenticeship, training, and supply of raw materials will be ensured

Minorities

The National Minorities Development and Finance Corporation (NMFDC) will be encouraged to promote self-employment and income-generation activities amongst the minorities by extending financial and other technical support

3.9.57 In this direction, all the national and State level Apex bodies viz., the National SC and the ST Finance Development Corporations (NSFDC), National Minorities Finance and Development Corporation (NMFDC) and National Backward Classes Finance and Development Corporation (NBCDC) and the State Scheduled Castes Development Corporations (SCDCs) will be strengthened to play a leading and a catalytic role in promoting employment-cum-income generation opportunities. As most of the SCs, STs, OBCs and Minorities living in rural areas, continue to depend upon the low-income and less-productive informal/unorganised sectors of agriculture, dairying, animal husbandry, fisheries, handlooms, handicrafts including other craftsmanship/artisanship, special efforts will be made through various training programmes to upgrade their traditional skills, equip them with modern technology and extend both 'backward' and 'forward' linkages of credit

and marketing facilities with the ultimate objective of making them economically independent and self-reliant. Special legislative measures will also be taken to ensure payment of minimum wages and equal wages, with no gender discrimination in the informal/unorganised sector.

3.9.58 The adoption and implementation of the New Economic Policies warrant watchful and protective attention towards the weaker sections so that the commitment to bring about comprehensive improvement in their living conditions does not get diluted and more importantly they are neither displaced nor marginalised. Therefore, the efforts in the Ninth Plan will be to synchronise the empowerment of these weaker sections with the national developmental policies and programmes. The private and the corporate sectors will be motivated to invest on the welfare and development of the weaker sections as they form a potential force in the country's human resources.

3.9.59 Prominent amongst the various Action Points to be taken up in the Ninth Plan are endowing every landless SC and ST family with a minimum piece of land, restoration and preservation of land ownership and effective implementation of the protective legislation. As most of the SC and ST families depend upon the cultivation of small land holdings, steps will be taken to ensure revision of irrigation facilities. Involvement of NGOs in the promotion of small and lift irrigation projects especially in the drought prone, dry and hilly areas will go a long way in ensuring food security at the village level.

3.9.60 Special measures will also be taken to sensitise and motivate the financial institutions to pay special attention to these priority groups and extend loans to them on differential rates of interest. Sensitisation programmes to inculcate a positive attitude towards these disadvantaged and neglected sections will also form part of the economic development package. The youth and women amongst these Groups will be given special attention as they are the most important potential and productive 'human resource', by setting up small scale and cottage industries, village crafts, weaving and other occupations/enterprises with effective market linkages. Exploitation of vulnerable groups, especially the tribals, will be prevented with stringent measures.

3.9.61 Efforts will also be made to simplify the lending and other procedures of banks and other financial institutions as the procedures followed by them appear to be too complicated for the poor illiterate, ignorant and desperate weaker sections to avail of the loan. Since the majority of the population belonging to these Groups depend upon agriculture and allied activities for their livelihood, steps will be taken to ensure that loans are given on a priority basis to these Groups for agricultural purposes viz., purchase of seeds, fertilisers, pesticides and training in farming and application of advanced technology.

3.9.62 With the shrinking of the forest land, privatisation of common property resources and the down-trend in the forest-based subsistence economy, the tribals are facing hardships leading to displacement and vulnerability to exploitation by external forces/agencies. These problems of the tribals are further compounded by land alienation and deprivation of rights on minor forest produce, leading to tribal unrest due to feeling of insecurity. Therefore, effective steps will be taken to thwart the recently emerging phase of industrialisation and commercialisation of the tribal economy. The common approach to ownership rights in respect of minor forest produce (MFP) to persons who work in the forests, will be realised in the Ninth Plan.

3.9.63 In order to provide the much needed boost to the tribal economy, the existing supporting mechanisms of TRIFED and its related agencies will be merged and upgraded into an Apex Body at the national level during the Ninth Plan. The existing State level Tribal Development Corporations (TDCs) will act as support structures to the Apex body at the State level and are expected to involve themselves effectively in the marketing of MFP and surplus agricultural items, both inside and outside the country. The States with sizeable tribal population but without TDCs, will be encouraged to set up such exclusive Corporations.

3.9.64 Measures will be initiated to ensure effective implementation including earmarking and utilisation of funds under the special strategies of Special Component Plan (SCP), the Tribal Sub-Plan (TSP) both at the Central and State levels, and the Special Central Assistance (SCA) to SCP and TSP to States/UTs. Special efforts will be made to impress upon those Ministries/ Departments, who are not earmarking funds, so far, under SCP and TSP in the name of non-divisibility of the programmes of their Ministries/Departments. The Centre will also pursue with the State Governments for developing effective mechanisms on the lines of the Maharashtra Model to pool the funds of SCP/TSP from all the concerned Ministries/Departments and authorise the State nodal Departments in charge of the welfare of SCs and STs to take the responsibility in allocating the funds as per the local needs of both the target areas and the target population. This system is expected to prevent/control diversion of SCP, TSP and SCA funds and ensure effective utilisation of the same for the purpose they are meant for. While a close vigil, in close collaboration with all the concerned, will be kept at various levels for effective monitoring of the utilisation of these special funds, the ongoing regular reviews at the Central level will continue to assess as to how effective are these instruments in supplementing/ complementing the efforts of the nodal Ministry of Social Justice and Empowerment in empowering these Socially Disadvantaged Groups. To this effect, efforts will be made to install an effective monitoring mechanism with adequate manpower at various levels starting from the Centre to the Block levels.

Other Backward Classes

3.9.65 To ensure that the OBCs are able to achieve economic development and self-reliance through promoting entrepreneurship amongst themselves in diverse fields, steps will be taken to support self-employment and income generating ventures, especially for nomadic and semi-nomadic communities with a view to settling them permanently at one place. To attend to this special task, not only the existing National Backward Classes Finance and Development Corporation (NBCFDC) will be strengthened but a new scheme of Grant-in-aid to Voluntary Organisations will also be launched to encourage the voluntary effort in the social and economic upliftment of OBCs. The functioning of the existing NBCFDC will be further activated to extend necessary support for financially viable schemes/projects and to upgrade the technical and entrepreneurial skills of individuals and groups belonging to OBCs to enable them initiate self-employment/entrepreneurial ventures.

3.9.66 As majority of OBCs has been traditionally engaged in the occupations like handloom weaving, pottery, metal work, artisanship, fishing, stone-cutting etc., a special trust will be laid on upgrading their traditional skills especially those of women and to provide financial support and marketing facilities in developing entrepreneurship, either in groups or as individuals. Efforts will also be made to encourage occupational mobility for those OBCs, especially the youth, who intend to discontinue their traditional industries, by providing facilities for appropriate educational and vocational training in modern and upcoming technologies, supplemented with financial and other assistance to enable them to enter successfully into new ventures.

Minorities

3.9.67 Priority will be given to economic development amongst the Minorities through strengthening the institutional set-up at various levels to support self-employment and income generation activities, especially amongst women and occupational groups by supporting micro and small-scale enterprises. The National Minorities Development and Finance Corporation will be encouraged to promote self-employment activities among the minorities and to provide upgraded entrepreneurial and technical skills, specially focussing on the development of the backward sections viz., women, traditional artisans and occupational groups.

3.9.68 While planning for the economic betterment of the Minorities, the Ninth Plan accords special recognition to the traditional craftsmen and artisans' skills vested in them for generations. A large number of families belonging to the Minorities especially women still continue to be dependent upon the household/traditional industry of handicrafts such as embroidery like chikan-kaari, Zari work, lace-making and tailoring, dyeing etc. In order to promote the handicraft sector as a viable and sustainable self-employment and income generation source for these families, efforts will be made to provide apprenticeship training, revive the dying arts and crafts, extend modern technological support, upgrade the skills to meet the changing fashions and the marketing demands both within and outside the country. In fact, special efforts will be made to encourage export-oriented handicrafts in view of the increasing demand outside the country. The Minority Finance Development Corporations both at the Central and the State levels will be encouraged to extend financial and other technical support like provision of machinery, expertise, training, market linkages etc.

3.9.69 Handloom is another sector which has been an important traditional occupation for a large segment of the Minorities. Those traditional weavers, who are going through hardship at present, will be supported with necessary financial and material support to revive the languishing industry as a sustainable venture. To this effect, the much-needed modernisation of handloom operations through appropriate apprenticeship and training, will be attended to in the Ninth Plan. Flow of credit and raw materials to this sector will also be ensured. To preserve their rare traditional skills, they will be encouraged to form into self-help groups/co-operatives for which financial assistance will be extended along with managerial and marketing services.

III. Social Justice

3.9.70 Affirmative action and legislative measures being the most powerful instruments to ensure social justice to the Socially Disadvantaged Groups, the Government commits to bring forth into action a 'National Charter for Social Justice' based on the principle of social harmony, besides extending legal protection to existing percentages of reservation in educational institutions at the State level. To this effect, implementation of the reservation policy in both educational institutions and services for SCs and STs and for OBCs in the Services will be strictly adhered to by filling up all the reserved posts promptly, arrangement will also be made simultaneously for quick judicial adjudication of complaints and grievances in the matters related thereto.

3.9.71 To prevent/curb the persistent problems of social discrimination, prevalence of social evils like untouchability, and the increasing exploitation and atrocities against these disadvantaged groups, collaborative efforts by all concerned will be made towards effective implementation of the Indian Penal Code and the other two special legislations viz., The Protection of Civil Rights Act, 1955 and the SC and ST (Prevention of Atrocities) Act, 1989. To remove the last vestiges of untouchability, special efforts with commitment will be put into action to change the mind-set of the people through societal re-orientation. In this context, immediate measures will be undertaken to ensure that adequate number of Special/Mobile Courts are set up with adequate staff in each district to provide both speedy and on-the-spot settlement/redressal of grievances. As an important measure of social justice, special efforts will be made to extend timely and adequate financial support, as per the provisions, to compensate/rehabilitate the SC/ST victims and make them self-reliant. In this direction, efforts will also be made to enhance the compensation through necessary amendments in the Act. Simultaneously, efforts will be made to develop a community-based defence mechanism by empowering the institutions of local governance and NGOs. As part of these measures, a few selected local NGOs will be identified to act as authorised informants to the enforcement authorities or file papers on behalf of the victims or assist them in the legal proceedings.

TOWARDS SOCIAL JUSTICE

- To institute a 'National Charter for Social Justice' for ensuring equity and social justice to the socially disadvantaged groups viz., SCs, STs, OBCs and Minorities
- To implement Reservation Policy strictly in educational institutions and in services for SCs, STs and OBCs
- To curb social discrimination, untouchability, exploitation and atrocities on these Groups through effective implementation of :
 - The Indian Penal Code
 - The Protection of Civil Rights Act, 1955
 - The SCs and STs (Prevention of Atrocities) Act, 1989
- To set up adequate number of Special / Mobile Courts in each district for speedy settlement/redressal of grievances of the SCs/STs
- To extend timely and adequate financial support, as a measure of social justice, to compensate/rehabilitate the SC/ST victims
- To develop a community-based defence mechanism by empowering the institutions of local governance and NGOs
- To change the mind-set and attitudes of the people towards these Groups through awareness generation campaigns and media, both print and electronic
- To equip these Groups with necessary information and thus conscientise them to exercise their rights, privileges and also make the best use of the Governmental support to overcome various social disabilities
- To sensitise all those working for the well-being of these Disadvantaged Groups through special training programmes for ensuring social justice to them
- To make all the three existing National Commissions as effective instruments to ensure that the rights and interests of these Disadvantaged Groups are well protected

3.1.72 Awareness generation, conscientization and sensitization programmes are yet other means to work towards social justice. Special efforts will be made to put this three-pronged approach into action simultaneously for holistic effect. The first being awareness generation, efforts will be made to change the mindset and the attitudes of the people towards these Groups as the same is very crucial in creating an enabling environment for empowering these Groups. To this effect, awareness generation programmes/special campaigns will be taken up on a continuing basis all over the country especially in rural areas involving effectively both the governmental and the non-governmental organisations and the media towards erasing the long-standing social biases/stigmas like untouchability and thus create the feeling of all being equal. The second being, conscientization of the target groups, simultaneous efforts will be made to make the target groups conscious of their own rights, privileges and the governmental support available for them besides making them realise their own potentials to be self-confident and self-reliant. The third being, sensitizing both officials and non-officials, special training programmes, both pre-service and in-service, will be undertaken from time to time to sensitise all those working for these Groups so that they can work with right perspectives in meeting/handling the special needs and problems of these marginalised groups and thus ensure social justice. To encourage/reward those officials and non-officials, who are working for the good of these deprived lot by living in the most backward and difficult tribal areas, efforts will be made to impress upon the State Governments to revive the earlier practice of extending incentives, both in kind and cash.

POLICIES AND PROGRAMMES : A REVIEW

3.9.73 The major objective of the Eighth Plan was to intensify the efforts to bridge the gap between the levels of development of SCs, STs, OBCs and Minorities and the rest of the population so that by the turn of the century, they are brought on par with the rest of the society. The elimination of exploitation of SCs and STs and the removal of all forms of oppression of SCs and STs were identified as the areas of priority. Besides, action was taken for the complete removal of untouchability, suppression of rights, usurious money lending, land alienation, non-payment of minimum wages and restrictions on the right to collect minor forest produce etc.

3.9.74 Education for the SCs and STs, especially women and girl children belonging to these communities, received a special thrust during the Eighth Plan in accordance with the National Policy on Education of 1992 (revised). The scheme of Post-Matric Scholarships (PMS) for SC/ST students continued to be the torch-bearer of various governmental efforts in the field of education. To ensure better coverage, this scheme was modified in October, 1995 by incorporating provisions for i) complete relaxation of the restrictive clause in the number of scholarships for girls and upto two males in a family; ii) increase in the rate of scholarships from the existing range of Rs.65/125 to Rs.90/190 per month for the day scholars and from Rs.115/280 to Rs.150/425 in respect of hostlers; iii) increase in the upper income ceiling of parents from Rs.18,000 to Rs.33,400 per annum for full maintenance allowance and fees and from Rs.24,000 to Rs.44,500 with full/half maintenance allowances and full fees; iv) increase in the study tour allowances from Rs.100 to Rs.500 per annum; and v) provision of Rs.500 per annum as allowance for books in the correspondence courses including distance and continuing education. Consequently, as many as 17.12 lakh SC/ST students (provisional) received the benefit of PMS by the end of the Eighth Plan (1996-97), as compared to the record achievement of 15 lakh scholarships by 1991-92 and 99.75 lakh scholarships by 1985-86. By the end of 1997-98, as many as 20.88 lakh beneficiaries were provided with PMS. Guidelines for streamlining the sanction and disbursement procedures under the Scheme were also issued to all States/UTs in April, 1995.

3.9.75 In view of the ever increasing demand and the importance of the scheme, the financial allocations for PMS were increased from Rs.54.05 crore in the Seventh Plan (1985-90) to Rs.300.00 crore during the Eighth Plan. In fact, the cumulative level of expenditure at the end of the Eighth Plan (1992-97) was as high as Rs.508.75 crore and during 1996-97 itself it was Rs.179.93 crore. The scheme, which made a modest beginning with the award of 114 scholarships in 1944, reached the level of 21.48 lakh students by the end of 1996-97. During 1997-98, as many as 21.777 lakh SC/ST students were awarded with PMS. The scheme of Pre-Matric Scholarships for the Children of those who engaged in Unclean Occupations was also revised in February, 1994 to bring about the removal of the restrictive clause of one child per family upto Class VIII, subject to the condition that if a third child is born after 1.4.93, a total of only two children in the family would be eligible for these scholarships, extension of the benefits to day-scholars studying in Class III to X, removal of the income ceiling of Rs.1500/- per month of parents/guardians; and relaxation of the restrictive clause on two children in Class IX and X. These positive amendments gave a boost to the coverage, leading to the award of 3.26 lakh (provisional) Pre-Matric Scholarships in 1996-97, the end of the Eighth Plan and the Central assistance released also increased from Rs.6.39 crore in 1992-95 to Rs.14.04 crore in 1996-97. In 1997-98, about 3.80 lakh students whose parents were engaged in unclean occupation were provided with Pre-Matric Scholarships.

3.9.76 As a support service to reduce the high drop-out rates and increase the retention rates at the middle/higher level education amongst SCs and STs, around 1503 hostels were built to benefit 1.22 lakh SC boys and girls and 553 hostels to benefit 22,120 ST boys and girls by the end of the Eighth Plan. During 1997-98, 114.3 SC/ST Girls and 86 SC/ST Boys Hostels were sanctioned. To promote education amongst STs with focussed

attention, educational facilities like Ashram Schools (residential schools) for ST students had been set up in the tribal areas in an environment conducive to their learning. As many as 353 Ashram Schools in TSP Areas were envisaged by the end of Eighth Plan (1996-97). During 1997-98, construction of 101 Ashram Schools were taken up to accommodate 1270 ST inmates/students. The Scheme of 'Book Banks for SC/ST Students', envisage easy/ready availability of text books to SC/ST students pursuing medicine, engineering, veterinary and agricultural and polytechnic courses and around 1,27,073 SC/ST students were benefited under this scheme during the Eighth Plan. A total of 16,482 SC/ST students were benefited through the scheme of Book Banks, during 1997-98.

3.9.77 Further, special coaching facilities for the SSC and ST candidates were extended through Pre-Examination Coaching Centres to enable them compete in the Civil Services Examinations of A and B Group of posts of State/Central Governments and Public Sector Undertakings. The coaching and training to SC/ST candidates were provided through the Central assistance to 10 States viz., Assam, Andhra Pradesh, Bihar, Gujarat, Karnataka, Kerala, Maharashtra, Punjab and Delhi. Ten universities and 4 private institutions were supported during 1995-96. Nearly 30,000 SC/ST students received coaching under the scheme during the Eighth Plan. A scheme of 'Upgradation of Merit Scholarships', which provides remedial coaching in English, Mathematics and Science subjects to help SC/ST students appear in medical and engineering examinations, is also being implemented by the Ministry of Social Justice and Empowerment, since its transfer in 1993 from the Department of Education to the Ministry of Welfare (now Ministry of Social Justice and Empowerment).

3.9.78 In addition to the major programmes discussed above, there are some more educational programmes which are under implementation to provide the necessary inputs to help SC and ST students excel in the field of education. These include : Special Education Development Programmes to SC/ST Girls belonging to Low Literacy Areas; Programmes to extend financial assistance to NGOs for setting educational complexes to promote education among SC/ST and most primitive tribal girls; National scholarships to meritorious SC/ST students to pursue higher studies abroad etc. All these schemes, as stated earlier, supplement the major efforts that are being implemented to improve exclusively the educational status of SC and ST population.

3.9.79 The National Health Policy (1993) while recognising the heterogeneous tribal population and their varied health problems, accorded a high priority for extending the health services to those residing in the backward rural areas, with a concentration of SCs and to those hilly and remote tribal areas with tribal population. It laid special attention on the endemic diseases like Malaria, Tuberculosis, Yaws etc. The strategy adopted for meeting the health care needs during the Eighth Plan period include provision of preventive, as well as curative services through the primary health care institutions and at the village level through Health Guides and Trained Dais.

3.9.80 As the tribal population concentrations and habitations are located in difficult and isolated hill/forest areas and terrains, the Government has adopted relaxed norms for PHCs viz., one PHC for every 20,000 population and one Sub-Centre for every 3,000 population. In order to give focussed attention to the SCs, the State Governments were advised to set up at least 15 per cent of the sub-centres in villages and habitations having 20 per cent or more of SC population and to direct 7.5 per cent of their annual targets to tribal areas. To the same effect, Mobile Dispensaries and Medical Camps were organised to provide health facilities in States and UTs.

3.9.81 In the sphere of economic development, various employment-cum-income generation programmes have been under implementation through both governmental and non-governmental organisations with the ultimate objective of lifting the weaker sections from the 'Below Poverty Line'. To network/coordinate various economic activities spread all over the country, apex organisations viz. National SC/ST Finance and Development Corporation (NSFDC), Tribal Cooperative Marketing Development Federation of India Ltd. (TRIFED) and State Scheduled Castes Development Corporations (SCDCs) have been functioning as catalytic agents, both at the national and the State levels. The NSFDC financed 997 self-employment projects, which were expected to benefit 95,494 SC/ST beneficiaries during the five year period from 1992 to 1997. The TRIFED continues to offer remunerative prices for the minor forest produce and surplus agricultural items produced and collected by the tribals, besides protecting them from exploitation by middlemen. Similarly, the SCDCs were engaged in identifying eligible families and extending financial and other assistance to them to undertake income-generation projects through credit support. During the Eighth Plan, 24.42 lakh SCs were benefited with the support and assistance received from the 23 SCDCs. During 1997-98, a total of 4.62 lakh SCs were benefited through 21 SCDCs.

SPECIAL FINANCIAL INSTRUMENTS

The five National Finance Development Corporations viz., National SC and ST Finance and Development Corporation (NSFDC), New Delhi, Tribal Cooperative Market Development Federation of India Ltd. (TRIFED), Mumbai, National Safai Karamchari Finance and Development Corporation (NSKFDC), New Delhi, National Minorities Development and Finance Corporation (NMDFC), New Delhi, National Backward Classes Finance and Development Corporation (NBCFDC), New Delhi, act as the major national-level apex agencies for networking, co-ordinating and streamlining various employment, credit and income generation activities to better the economic status of the disadvantaged groups viz., SCs, STs, OBCs and Minorities. In fact, they are the major catalytic agents which transact the business on behalf of the Government. While these apex agencies work through their State-level Channelising Agencies which would help / identify the beneficiaries; finance the projects through credit / subsidies; extend technical advice and operate / control the activities, TRIFED continues to purchase the Minor Forest Produce and the Agricultural Surplus Produce by offering remunerative prices to the tribals and thus avoid the exploitation by middle-men.

3.9.82 Amongst the various poverty alleviation programmes, the Integrated Rural Development Programme (IRDP) received special emphasis during the Eighth Plan period for extending the employment-cum-income generating activities. By the end of the Eighth Plan (1996-97), about 36 lakh SC and ST families, representing 98 per cent of the target, were covered under Rural Poverty Alleviation and Employment Programme. In the year 1997-98, about 7.86 lakh SC/ST families were covered under IRDP. The Training of Rural Youth for Self-Employment (TRYSEM), which is a support component of IRDP, has so far provided training to 7.20 lakh SCs and STs (46.6% of the beneficiaries) during the Eighth Plan. Under Jawahar Rozgar Yojana (JRY), which provides employment opportunities to the rural poor, about 1.00 lakh man-days of employment were generated for SCs and STs accounting for nearly 66 per cent of the total achievement. Similarly, under the Employment Assurance Scheme (EAS) in 1778 blocks in 261 districts (in 1992), about 2940 lakh man-days of employment were generated for SCs and STs. Thus, by the end of the Eighth Plan, a total of 24.82 lakh (96.9%) SC families, against the target of 25.62 lakh, and 11.07 lakh (101.0%) ST families against the target of 10.96 lakh, were assisted under various poverty alleviation programmes.

3.9.83 Besides the above, there are other schemes under the nodal Ministry of Social Justice and Empowerment which contribute to the economic development of SCs/STs. These include : Vocational Training in the Tribal Areas under which financial assistance is extended for setting up of Vocational Training Centres in Tribal Areas and Grant-in-aid to State Tribal Development Cooperatives/Corporations for Minor Forest Produces (MFP) to ensure remunerative prices to the tribals for MFP

3.9.84 The issue regarding the eradication of the most obnoxious and inhuman practice of carrying night-soil manually received high priority in the Eighth Plan. The National Scheme of 'Liberation and Rehabilitation of Scavengers and their Dependents' was launched in 1992 with the ultimate objective of eliminating scavenging by the end of the Eighth Plan (1992-97) on a time-bound programme. So far, 8.25 lakh scavengers were identified, of whom 1.22 lakh were targeted for rehabilitation during 1995-96 and of these, 44,000 were trained to take up alternative employment. During 1997-98, about 77,000 scavengers were targeted for rehabilitation and 43,000 were expected to be trained. In order to accelerate and intensify the efforts, the scheme was modified in April, 1996 to provide for adopting the TRYSEM norm for training, releasing Central Assistance direct to SCDCs and introducing cluster approach for training and rehabilitation. To play the role of a watch-dog in the elimination/rehabilitation of scavengers, a National Commission for Safai Karamcharis was set up in pursuance of the National Commission for Safai Karamcharis Act, 1993. The National Commission for Safai Karamcharis continued to evaluate the schemes for the welfare and development of the scavengers and recommend specific measures for eliminating inequalities in status, facilities and opportunities, besides investigating specific grievances of Safai Karamcharis and providing necessary guidelines for mitigating their hardships. On the economic front, an apex agency called National Safai Karamcharis Finance and Development Corporation (NSKFDC) was set up in 1997 to promote self-employment and income generating ventures by the liberated Safai Karamcharis. In all these efforts, women scavengers, being in majority, received special focus and attention.

3.9.85 The welfare and development of the Other Backward Classes (OBCs) started receiving special attention during the Eighth Plan with a definite percentage of reservation in the Government employment, besides a definite share in the assistance for both educational and economic development programmes. The setting up of the National Backward Classes Finance and Development Corporation (NBCFDC) in 1992 was a major achievement towards the development of OBCs. The Corporation, with a share capital of Rs.200 crore seeks to promote self-employment activities among socially and educationally backward classes. The NBCFDC continued to promote economic development of the OBCs by generating/extending financial assistance for viable self-employment ventures and simultaneously upgrading their technical and entrepreneurial skills. The Corporation has sanctioned loans to the tune of Rs.415.30 crore during the Eighth Plan, benefiting a total of 2,29,341 persons belonging to OBCs. Of these, about 1.46 lakh persons received wage employment through various economic development projects under agriculture, artisans and traditional occupations, small-scale and tiny industries, small business, transport services etc. In the year 1997-98, through NBCFDC, a total of 47,932 OBCs were benefited and 17,000 were extended with wage-employment.

3.9.86 During 1993, a National Commission for OBCs (NCBC), which is a permanent body at the Centre to look into the complaints and requests, besides recommending inclusion of certain communities in the lists of OBCs, was set up. So far, on the basis of this Commission's recommendation, the Central list of OBCs in respect of 21 States and 4 UTs have been notified by the Central Government. The Government has also extended to the OBC candidates the benefit of the relaxed standards in respect of written examinations and interviews, with effect from October, 1994. Under the scheme of Pre-Examination Coaching Centres for weaker sections, candidates belonging to the OBCs receive coaching to compete with other general candidates in various competitive examinations.

3.9.87 The Minorities constitute yet another target group, which has come up with various developmental demands during the Eighth Plan. Responding to the initial demands, some developmental measures were put into operation, not only to bring about socio-economic development amongst them but also to integrate them in the mainstream through a 15-Point Programme. This programme advocates protection of life and property, adequate representation in jobs under both Central and State Governments and programmes of educational development. The Department of Education has introduced

a scheme to extend financial assistance for modernisation of Madarsa education and for teaching of Science, Mathematics, Social Studies and languages at traditional educational institutions viz., Madarsas and Maktabas, on a voluntary basis.

3.9.88 Recognising the fact that the minority communities, especially the Muslims remained educationally backward, the Maulana Azad Education Foundation was set up in 1989 with a Corpus of Rs.30.01 crore to promote education amongst the educationally backward minorities. To enable the Minorities to take part in the competitive examinations, Pre-Examination Coaching Centres were set up in 21 Universities and 32 Colleges. In order to give a focussed attention, 41 Minority Concentration Districts have been identified by the Department of Education to extend support under the Multi-sectoral plans. An Area-intensive scheme is being implemented at the block level in all the 41 districts to provide basic education and related infrastructural facilities. For this, 100 per cent assistance is given by the Central Government.

3.9.89 The scheme of Pre-Examination Coaching, launched in 1992-93, has covered 188 institutions where 9480 candidates have received coaching for various competitive examinations. The Department of Personnel made it mandatory for all the recruiting authorities of Central Government and PSUs to have atleast one member belonging to the Minority Communities in the Selection Boards/Committees constituted for the recruitment of Group C and D posts/services.

3.9.90 The 41 Minority concentrated districts have also been brought under the scheme of Community Polytechnics to impart technical skills to eligible persons belonging to the minority communities. The Ministry of Labour has set up Industrial Training Institutes (ITIs) in 19 out of the 41 districts and introduced trades, relevant for the minority artisans and workers. Instructions were also issued to States/UTs to sponsor candidates belonging to the minority communities for vocational training courses.

3.9.91 To ensure socio-economic development amongst the Minorities, a National Minorities Development and Finance Corporation (NMDFC) was set up in 1994. The activities of NMDFC was directed towards assisting self-employment ventures by the Minorities and help them through upgradation of entrepreneurial skills. In all its ventures, the most backward people among minorities living below the poverty line or below double the poverty line received priority. To promote various economic activities that benefit the Minorities, efforts were being made to extend credit at concessional rates of interest, technological support, market linkages etc. Preference was also given to women's occupational groups and self-employment units. Further, to safeguard the secular interests and promote communal harmony, the erstwhile Minority Commission, set up in 1978, was given a statutory status through the enactment of the National Commission for Minorities Act, 1992 and was reconstituted in 1996.

3.9.92 Towards empowering the Socially Disadvantaged Groups, the State Governments have also been sharing the responsibility with the Centre by contributing their due share in terms of both financial and human resources in line with the guiding principles of 'Co-operative Federalism'. In the area of educational development, the State Governments have been implementing schemes to extend scholarships/merit-scholarships, stipends, supply uniforms and provide hostels, residential schools, coaching centres, mid-day-meals etc. Towards their economic development, special interventions, like formation of cooperatives, cottage and small scale industries, land distribution, minor irrigation, wage/self-employment etc., have been under implementation in the State sector, ensuring that no one among these Groups is deprived of the benefits. The State Governments, like the Centre, have also been implementing the special strategies of Special Component Plan (SCP) and Tribal Sub-Plan (TSP) through earmarking of funds by various Line-Ministries / Departments concerned with the welfare and development of SCs and STs. The Special Central Assistance (SCA), provided to States/UTs as an additive to support the family-based income generation programmes, is being utilised by the State Governments in realising the economic upliftment of SCs and STs, especially those who are living below

the poverty-line. In addition to this, the State Governments have been shouldering the most important responsibility of implementing the two legislations, viz., the PCR Act, 1955 and the POA Act, 1989, to protect these vulnerable Groups from the exploitation as well as from atrocities committed against them and thus ensure social justice.

RESEARCH, EVALUATION AND MONITORING

3.9.93 The ongoing efforts in the sphere of research and evaluation under the scheme of Grants-in-aid for Research and Publications at the Central level will be re-oriented towards diagnostic and evaluative studies so as to identify the problems both existing and emerging, the problem areas, the problem groups, the gaps etc. Increased financial support will be extended to conduct research studies on : crucial and emerging problems related to these Disadvantaged Groups, particularly the most vulnerable viz., the Primitive Tribal Groups (PTGs), indigenous medicines, special problems related to frontiers/forest dwelling tribals; malnutrition and alcoholism amongst SCs and STs; the emerging problems like the drug abuse/drug addiction; and other issues related to administrative machinery, people's participation in the process of planning and development etc. Evaluation studies will also be given adequate weightage as their findings will be of immense value for mid-term corrections. In these activities, all the 14 existing Tribal Research Institutes (TRIs) will be fully involved.

3.9.94 So far as monitoring is concerned, action will be initiated to streamline the existing monitoring mechanisms and strengthen them wherever necessary so as to develop effective monitoring and information systems both at the Centre and State levels with adequate manpower. Efforts will also be made to link up the Central and the State information systems through the existing NICNET and DISNIC systems of NIC, facilitating smooth flow of information for effective monitoring. The system thus developed is expected to take care of the much-needed monitoring of earmarking/utilisation of funds under SCP, TSP and SCA for SCP and TSP, besides monitoring of other important programmes.

IMPLEMENTING MECHANISMS

STATUTORY INSTITUTIONS TO SAFEGUARD

The three Statutory Institutions viz., the National Commission for SCs and STs (1990), the National Commission for Minorities (1992) and the National Commission for Backward Classes (1993) were set-up under the Acts of Parliament, with a specific responsibility of safeguarding the rights and the interests of the Socially Disadvantaged Groups viz., SCs, STs, OBCs and Minorities. These Commissions are vested with the special powers for investigating the individual complaints and grievances received from all over the country. They also review all the related legislations and suggest necessary amendments from time to time to meet the emerging situations and problems. Besides these primary responsibilities, the Commissions also advise the Government with regard to - allocation of funds ; formulation of need-based policies and programmes and review of the progress of their implementation so as to ensure that adequate attention is paid towards the welfare and development of these disadvantaged groups.

3.9.95 The exclusive Ministry of Social Justice and Empowerment (the then Ministry of Welfare set up in 1985), at the Centre, continues to look after the interests of the Socially Disadvantaged Groups. In executing this special task, the Ministry is assisted by various support structures viz., the National Commission for SCs and STs, the National Commission for BCs and the National Commission for Minorities. These Commissions will be further empowered/encouraged to act as watch-dogs and keep a close vigil on the protection of the rights and interests of these disadvantaged groups besides investigating into individual complaints. Similarly, the National level Financial and Development Corporations along with the State level SCDCs and the Tribal Development Corporations will

continue to assist the Ministry with a special thrust on implementing various programmes for economic betterment of these Groups besides providing them better opportunities to contribute to the national economy.

3.9.96 At the State level, while 18 States and one UT have separate Departments / Directorates for Scheduled Castes (SCs), Scheduled Tribes (STs) and Other Backward Classes, the rest have Social Welfare Directorates to take care of these Socially Disadvantaged Groups along with the other Social Welfare groups. As a result of this administrative segregation, the focus on the development of these target groups has been getting lost. Further, most of the State Directorates are not equipped with professional competence to ensure effective implementation of various policies and programmes. Therefore, the Welfare Administration needs to be reoriented in the Ninth Plan, either through inducting professionally trained persons or by extending in-service training/professional orientation and sensitisation towards the upliftment of these Groups. Also, the capacity building of the welfare personnel in specific areas of planning, project formulation and monitoring will be strengthened. Structural re-organisation of the existing exclusive State level Departments/Directorates will be attempted so as to ensure effective implementation, co-ordination and supervision of all the activities. At present, the weakest link in the entire process happens to be supervision. To overcome this, the responsibility of supervision and monitoring will be entrusted to the grass-root level democratic institutions viz., Panchayati Raj Institutions and Local Bodies. The setting up of exclusive Departments and Directorates for Backward Classes in all the States will be contemplated in the Ninth Plan as the same will further strengthen the administrative machinery to work effectively for the empowerment of these Groups.

VOLUNTARY ACTION

3.9.97 Services and the contribution of the voluntary sector for the welfare and development of the Socially Disadvantaged Groups have been known even before Independence. They have established their credentials as effective agents of social change and development by virtue of their direct contacts/ linkages with the target groups in the implementation of various developmental programmes in the most difficult areas occupied by these Groups. In order to accomplish the Ninth Plan objective of empowering these Disadvantaged Groups, the voluntary organisations will be playing a key role in promoting people's initiative and participation in the process of empowering of these Groups. Another area where they can play a significant role is to act as authorised agents to assist both the Government and the target Groups to fight against the social evils like untouchability, crimes/atrocities against SCs/STs, and economic and social exploitation and thus help ensure social justice to these Groups.

IN PARTNERSHIP WITH NGOs

The NGOs /VOs (Voluntary Organisations), being the major partners with the Government in ensuring the well-being of the disadvantaged groups, act as the major link between the Government and the target groups. In fact, they have been playing the role of effective agents to bring-forth the most desired social change and development by virtue of their direct contact and linkages with the disadvantaged. Besides, they are the major contributors in help reduce/remove the social evils like untouchability, crimes/atrocities against SCs /STs and other forms of economic and social exploitation. Above all, they have been extending support to the Government in formulating need-based policies, plans and programmes for the welfare and development of these disadvantaged groups besides implementing/supervising and monitoring them. Through these contributions, they become the most effective partners in achieving the common cause i.e. well-being of the disadvantaged.

3.9.98 Further, the voluntary organisations will be encouraged to play the crucial role as motivators, in bringing the people and the administration to effective closeness ensuring optimum results. Thus, the NGOs working in the grass-root level will further intensify their activities related to conscientisation and awareness generation towards health, education, nutrition, legal literacy etc. As the NGOs are instrumental in motivating the tribals to participate in the implementation of various developmental programmes, they will be encouraged not only to mobilize individual tribal leaders but also the local institutions and organisations towards effective synchronisation of the cultural milieu and the modern developmental process. Special thrust will be given to promote voluntary action in the low profile areas of the country where the voluntary sector is yet to make their effective presence.

3.9.99 Constant and continuous interaction between the governmental and non-governmental agencies for implementing the developmental programmes and the tribals will be intensified amicably in order to minimise the feeling of distance and alienation amongst these disadvantaged groups through effective coordination and confidence building measures.

PLAN OUTLAYS

3.9.100 While a total outlay of Rs.5399.50 crore has been earmarked for both Central and Centrally Sponsored Schemes including Special Central Assistance (SCA) to Special Component Plan (SCP) for SCs, an amount of Rs. 9568.68 crore (Provisional) has been allocated for State Sector Schemes for empowering the Socially Disadvantaged Groups viz, SCs, STs, OBCs and Minorities in the Ninth Five Year Plan (1997-2002). In addition to these, Plan allocations are also earmarked through Special Central Assistance (SCA) to Tribal Sub-Plan (TSP) and under Article 275 (1) for the development of the Schedule Tribes and Schedule Areas.

3.10 SOCIAL WELFARE

INTRODUCTION

3.10.1 The social scenario in the country has been fast changing due to rapid urbanisation and industrialisation. The unending flow of rural population to the already crowded cities and towns in search of employment has resulted in serious problems like overcrowding, emergence of pavement/slum dwellings, breakdown of joint family system, unemployment, poverty etc. In this process, certain categories of population, who failed to cope with these rapid changes, have started lagging behind the rest of the society due to their vulnerability. They include Persons with Disabilities viz. - locomotor, visual, hearing, speech and mental; the Social Deviants, who come in conflict with law viz. - juvenile delinquents/vagrants, drug addicts, alcoholics, sex-workers, beggars etc.; and the Other Disadvantaged viz. - the elderly, the destitutes, the deserted, street children etc. All these categories need special attention of the State because of the vulnerabilities and the disabilities, they suffer from.

3.10.2 To safeguard the interests of the disadvantaged sections of the Society, the Constitution of India guarantees that no person will be denied 'equality' before the law (Article 14). It also promises 'right to education' and 'public assistance' in the old age and disablement (Article 41). To safeguard the interests of these groups, some important legislations were also enacted. They include - the Immoral Traffic (Prevention) Act, 1956 (as amended and retitled in 1986); the Probation of Offenders Act, 1958; Juvenile Justice Act, 1986; the Prevention of Illicit Traffic in Narcotic Drugs and Psychotropic Substances Act, 1985; the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995; Prevention of Beggary Acts (State Acts) etc. Simultaneously, the Government has also undertaken many welfare-cum-developmental measures right from the First Five Year Plan with the major objective of extending preventive-cum-curative-cum-rehabilitative services to meet the special needs of these vulnerable groups. Thus, the developmental planning has been made responsive right from the beginning not only to attend to the existing problems but also to address the situations emerging from time to time.

THE CURRENT SITUATION

Persons with Disabilities

3.10.3 No Census, except for 1981, has ever enumerated the population of the Persons with Disabilities since Independence. However, the National Sample Survey Organisation (NSSO) conducted two country-wide Sample Surveys in 1981 and 1991. According to these Surveys, there were 136.74 lakh disabled persons in 1981 and 163.62 lakh in 1991 who were having at least one or the other of the four types of disabilities viz. - locomotor, visual, hearing and speech. The magnitude and the size of various disabilities, as revealed by the two Surveys, is given in Table 3.10.1.

Table 3.10.1
Type and Magnitude of various Disabilities as per the
Nation-wide Sample Surveys of NSSO in 1981 and 1991

(Figure in lakhs)

Type of Disability	1981		1991	
	Actual Number	%	Actual Number	%
1. Locomotor (with or without other disability)	54.27	39.7	80.44	49.2
2. Visual (with or without other disability)	34.74	25.4	36.26	22.2
3. Hearing (with or without other disability - 5 years and above)	30.19	22.1	29.24	17.8
4. Speech (with or without other disability - 5 years and above)	17.54	12.8	17.68	10.8
T o t a l	136.74	100.0	163.62	100.0
- Disabled (with more than one of the 4 disabilities mentioned above)	-	14.5%	-	12.4%

Note : As the data of Census and NSSO are non-comparable, data of NSSO for both 1981 and 1991 have been made use of for the comparison above.

3.10.4 A comparison of the data of NSSO Surveys of 1981 and 1991 on the magnitude of the problem of disability indicates that the actual number of the disabled has also increased from 136.74 lakhs to 163.62 lakhs and their percentage to the total population in the corresponding years has marginally increased from 1.8 per cent in 1981 to 1.9 per cent in 1991. Amongst the total population of the disabled, persons with locomotor disability had the highest share of 49.2 per cent and the lowest being the victims of speech disability. While the actual number of persons with locomotor disability and visual disability have shown an increasing trend during the last decade (1981-91), persons with hearing disability have shown a decreasing trend; and the persons with speech disability remained more or less the same during the same period. But, when the percentage of their share in the total population of the disabled is considered, all the three categories except for the locomotor disability, have shown a declining trend. The high rate of 49.2 per cent in respect of the persons with locomotor disability was largely

attributed to the automobile and road accidents and other industrial hazards, indicating a greater need for strict observation of road and industrial safety measures and traffic regulations. However, the major cause of polio-related locomotor disability has been brought under control by effective nation-wide immunization campaigns.

3.10.5 Although, the NSSO excluded Persons with Mental Disabilities from both the national surveys of 1981 and 1991, it, however, conducted a sample survey in 1991 on the 'Persons with Delayed Mental Development'. According to the Survey, about 3 per cent of the child population (1-14 years) were estimated to have mental retardation. Amongst the adults, rough estimates indicate that while 1 per cent of them were suffering from various forms of mental disorders, 10 to 15 per cent were suffering from various mental health problems.

3.10.6 The number of leprosy affected disabled persons was estimated to be about 4 million, of whom, about one fifth were children and about 15 to 20 per cent were left with deformities. The prevalence rate was more than 5 per thousand in the 196 high endemic districts in the country.

3.10.7 As revealed by the NSSO Survey of 1991, although 80 per cent of the disabled population live in rural areas, services and institutional/infrastructural facilities available to them were mainly confined to urban areas, and the villages remained mainly unattended to/neglected. Only 10 per cent of villages had the privilege of having Integrated Education Centres for the Disabled within a distance of less than 10 kms. The situation was much worse in respect of special schools, vocational training and other welfare institutions. Further, 97 per cent of villages did not have the facility of having special schools within a distance of 10 kms and about 96 per cent of villages did not have any facility for vocational training within that distance. Only 6 per cent of villages received rehabilitation services through mobile vans or camps. The services available for the Spastics and persons suffering from Cerebral Palsy were not only inadequate but were mainly urban centred. In the rural areas, these services were virtually absent.

3.10.8 To ensure social justice to the disabled on equitable terms, the Government of India enacted in 1995 a comprehensive legislation viz., the Persons with Disabilities (Equal Opportunity, Protection of Rights and Full Participation) Act (PDA), 1995. The Act empowers the disabled with a right to demand for an enabling environment wherein they can enjoy protection of rights, equal opportunities and full participation in various developmental activities of the country. Effective implementation of this innovative legislation, which has made a beginning at the end of the Eighth Plan, is going to be a challenge in the Ninth Plan as it promises to fulfil certain rights in favour of the persons with disabilities.

The Social Deviants

3.10.9 According to the Ministry of Social Justice and Empowerment, about 3.05 lakh persons were reported to have been subjected to various addictions during 1996-97. Data on the prevailing situation of addiction to toxic substances indicate that the traditional problems of alcoholism and opium addiction continue to be very high with 42 per cent and 20.5 per cent, respectively. While the problem of traditional addictions persists with a higher magnitude, the emergence and the increasing free flow of narcotics has become a cause for concern. The drug addiction especially in the North-

Eastern Region of the country has reached an alarming situation and continues to be unabated. The Drug abuse in this Region, especially in the State of Manipur, has been contributing to a very bad spread of HIV/AIDS due to the unsafe practices of drug injecting. All these have become a big threat to the society at large, as the drug addiction and HIV/AIDS got into a big nexus.

3.10.10 Realising the ill-effects of alcoholism on the family and other social institutions, a few States have enforced Prohibition laws. Social movements like that of the Anti-Arrack movement led by women of Andhra Pradesh, Haryana and Himachal Pradesh holds testimony to other States for action against alcoholism. No doubt, voluntary organisations have a significant role to play in this direction, as they can mobilise mass movements not only to abhor the practice of alcoholic consumption through various preventive, curative and rehabilitative services, but also by creating awareness through constant propaganda about the ill-effects of alcoholism and other addictions.

3.10.11 The problem of beggary persists even today with its socio-cultural and economic ramifications. But, unfortunately, there is no information about the size and magnitude of the problem. The most disturbing feature is begging under various kinds of compulsions and the worst are those who are inducted into begging by force by anti-social elements. Despite the enforcement of Anti-Beggary legislations by 16 States and 2 Union Territories, the problem still continues to exist in its worst form as begging has become a profession for many, as they find it as an easy means of livelihood. The other problems related to begging include : ineffective enforcement of legislation; non-existence/inadequate number of Reception Homes/Beggars' Homes; and lack of standards in the services provided in the mandatory institutions owing to the existing variations in their respective legal provisions and administrative procedures. Presently, the approach for tackling this problem is based primarily on punitive devices with very little scope for any diversified programmes of treatment and rehabilitation, neither for the able-bodied nor for the disabled beggars. These problems, therefore, need special attention in the Ninth Plan as they can leave the most damaging effects on the otherwise healthy growth of the society.

The Other Disadvantaged

3.10.12 The rapid demographic changes that are taking place in the country have led to an increase in the number of elderly persons. According to the 1991 Census, the population of 60+ was 55 million against 42.5 million in 1981. Of these, more than 50 per cent (27.2 million) were women. As per the Report of the Technical Group on Population constituted by the Planning Commission in 1996, the population of 60+ is expected to go upto 68.51 million by the year 2000 AD.

3.10.13 Also, a large number of street children suffer destitution, neglect, abuse and exploitation due to various socio-economic reasons. As per the joint survey conducted by the Ministry of Welfare and the UNICEF in 1988-1993 in eight metropolitan/major cities viz. Delhi, Mumbai, Calcutta, Chennai, Bangalore, Ahmedabad, Kanpur and Indore, the estimated population of the Street Children was 4.15 lakhs. This, being an emerging problem in the recent past, the same needs to be curbed right in its infancy.

THE NINTH PLAN STRATEGY

3.10.14 The Ninth Plan is committed to prepare a National Charter for Social Justice to ensure all-round development of the disadvantaged sections of the society. Therefore, approach to Social Welfare in the Ninth Plan is distinct from the earlier Plans, as it proposes to adopt the following three-fold strategy, specific to each individual group, viz. Empowering the Persons with Disabilities; Reforming the Social Deviants and Caring for the Other Disadvantaged.

NINTH PLAN STRATEGIES

- To prepare a National Charter for Social Justice for ensuring all round development of the disadvantaged section of the society.
- To adopt a three-fold strategy of - Empowering the Persons with Disabilities; Reforming the Social Deviants; and Caring for the Other Disadvantaged through various preventive, curative, rehabilitative and developmental policies and programmes

Empowering the Persons with Disabilities

3.10.15 The Ninth Plan reaffirms the earlier commitment of making as many disabled as possible active, self-reliant and productive contributors to the national economy. Accordingly, it lays special emphasis on adopting an integrated approach to empowering the disabled and thus mainstream them. To this effect, systematic efforts

EMPOWERING THE PERSONS WITH DISABILITIES :

- Every effort will be made towards effective enforcement of the Persons with Disabilities Act (PDA), 1995
- 'Reaching the rural disabled' - those who have been neglected so far will receive special attention
- Continuing efforts will be made to converge the existing services in welfare - specific and other welfare-related sectors to gain the optimum benefit
- An enabling environment for persons with disabilities to exercise their rights for equal opportunities and full participation will be put into action through joint efforts of both Governmental and Non-Governmental Organisations
- A special strategy of Family / Community-Based Rehabilitation (CBR) will be adopted by pooling the resources of both financial and manpower, of all the concerned
- Special efforts will be made to prevent disabilities through supplementary nutritional feeding for both children and expectant / nursing mothers, early detection and timely intervention
- Strengthening / expansion of special schools and vocational training programmes with barrier-free environment
- Positive discrimination through earmarking not less than 3% of benefits under various employment cum poverty alleviation programmes like IRDP, JRY, NRY, PMRY, EAP, DWCRA etc.
- Strengthening and expansion of existing National Institutes for the persons with disabilities
- Special efforts will be made to equip the persons with disabilities with most suitable, simple, durable and inexpensive Aids and Appliances
- Setting up of a National Trust to ensure total care and custodianship of those with Mental Retardation and Cerebral Palsy.

will be made to converge the existing services under the welfare-related sectors of health, nutrition, education, science and technology, rural development, urban development, women and child development, information and broadcasting etc. In these efforts, the rural disabled, who have been neglected all through, will receive special attention. To this effect, efforts will be made to reach the services to the rural disabled right upto the district level and with perspectives to extend upto the village level in a phased way starting from the Ninth Plan, through a comprehensive programme viz. 'National Programme for Rehabilitation of persons with disabilities', being launched during the Ninth Plan, as a major effort in this direction.

3.10.16 Empowerment of the persons with disabilities, who are differently abled, will be a continuous process wherein the joint efforts of both governmental and non-governmental organisations will be put into action to create an enabling environment for the disabled to exercise their rights for equal opportunities and full participation with the strength and support of the recently enacted Persons with Disabilities (PD) Act, 1995 and the relevant support structures, mechanisms and services. As the envisaged empowerment of the disabled is mainly based upon the PD Act of 1995, every effort will be made towards its effective enforcement on a priority basis.

3.10.17 Considering the size of the population of the persons with disabilities and the slow pace of the implementation of policies and programmes, concerted efforts will be made to strengthen/expand the out-reach and coverage of services. Programmes catering to the needs of the persons with disabilities under various sectors will be reviewed and co-ordinated to converge all the related services in such a manner that the inter-sectoral support gets strengthened towards empowering the persons with disabilities.

3.10.18 The strategy of the Community Based Rehabilitation (CBR) will be put into action towards pooling the efforts of the persons with disabilities, their families and the communities, as well as that of the concerned Ministries/Departments in a coordinated way. To fill the existing void in the rural areas, efforts will be made to promote the CBR through voluntary organisations.

3.10.19 Special efforts will be made to strengthen the preventive measures as the incidence of the disability can be prevented through early detection and timely intervention. Therefore, priority attention will be given to early detection and treatment by taking advantage of the latest technologies. To prevent certain disabilities and arrest their increase, the on-going supplementary nutrition feeding programmes including prophylaxis against Vitamin A, anaemia and Iodine deficiency as pronounced in the Special Plan of Action of 1998, will be strengthened and expanded. Similarly, universalization of immunization will be attended to on a priority basis. The frequency and coverage of programmes like Pulse Polio will be continued in an expanded manner and at regular intervals, till the problem is completely eradicated. National campaigns to eradicate diseases like measles and mumps will be undertaken as these are the diseases which lead to various disabilities. Safety measures for prevention of accidents on roads and at work-places including the industrial and agricultural operations and road transport, will receive special attention. Along with these direct short-term measures, education and awareness generation to the family and the community will receive priority attention as part of the long-term measures for preventing various disabilities. In this direction, the Integrated Child Development Services (ICDS) will be utilised to help the family, especially the mothers, to ensure effective health and nutrition care, early detection and timely treatment. For this, special training will be provided to mothers, ICDS functionaries and the para-medical staff associated with ICDS. Priority will also be accorded to spread the messages of health and nutrition education and awareness, especially amongst the mothers to ensure proper dietary intake for themselves and their children.

3.10.20 To mainstream the persons with disabilities, the major strategy will be to encourage more and more children with disabilities to join the Integrated Schools by extending special incentives like free books, uniforms, transport and aids and appliances etc. so that the disabled children will be able to complete their school education in

these Integrated Schools, which are equipped with infrastructural facilities, support services and barrier-free environment. Besides, the ongoing scheme of the Integrated Education for the Disabled Children (IEDC) will be further expanded during the Ninth Plan to meet the growing demand for these types of schools, especially in the context of enacting the P.D. Act, 1995, ensuring equal opportunities for the disabled. In this regard, special attention will be paid to those districts which have poor, or no, educational facilities of Integrated Education.

3.10.21 Vocational training programmes for the persons with disabilities, which are employment-oriented, will be increased substantially by activating the existing Industrial Training Institutes (ITIs), Craft Training Centres (CTCs) and Vocational Rehabilitation Centres (VRCs). Simultaneously, efforts will also be made to set up Training-cum-Production Centres and Sheltered Workshops to ensure that the trained persons with disabilities are kept gainfully engaged either on wage or self-employment. While planning for the training programmes for the disabled, every effort will be made to diversify the trades, besides giving priority to the up-coming trades, keeping in view the trends and the demands in the employment market.

3.10.22 Earmarking of certain percentage of benefits for the disabled under various poverty alleviation programmes like IREDP, DWCRA, JRY, EAP etc. will be made as the entry-points to reach the rural persons with disabilities. Further, income-generation activities will be initiated for the rural disabled through Self-Help Groups called 'Sangams' on the lines of DWCRA. Priority will be given to impart vocational training to women and adolescent girls with disabilities. The activities of the National Handicapped and Finance Development Corporation set up in 1997 will be made functionally effective to play the role of a catalytic agent in promoting employment opportunities, both wage and self-employment, for the persons with disabilities. Besides, the Corporation will also extend 'forward' and 'backward' linkages of credit and marketing facilities to those disabled who would like to venture into entrepreneurial efforts.

3.10.23 The implementation of the policy of 3 per cent reservation of vacancies for the blind, deaf and orthopaedically disabled in Group 'A', 'B', 'C' and 'D' posts in Central Services and in the Public Sector Undertakings, will be monitored on a continuous basis and stock-taking will be done at regular intervals both at the Central and State levels. The Ninth Plan recognises the need for employment/placement services of the persons with disabilities as a priority area. These special needs are expected to be met through the new strategies that are being contemplated by the nodal Ministry of Labour Welfare.

3.10.24 To deal effectively with problems in the areas of research, training and development of manpower in the context of providing a complete package of preventive-cum-curative-cum-rehabilitative services to the persons with disabilities, all the existing National Institutes will be activated and their services streamlined. The District Rehabilitation Centres meant for the rural persons with disabilities will be further strengthened to cater to the needs of all the rural disabled in their respective districts. To ensure effective implementation of policies and programmes for the rehabilitation of the disabled and to maintain a uniform/minimum standard of training services, programmes of the Rehabilitation Council of India, located at New Delhi will be streamlined. While the existing National Institutes will be devising practical strategies to extend services to the disabled living in the backward rural and remote tribal areas, the Ninth Plan will programme to set up an exclusive National Institute for Multiple Disabilities.

3.10.25 Also, the Ninth Plan commits to ensure: effective integration of the on-going efforts of S&T with developmental pursuits so as to improve the quality of life. In line with this, special endeavour will be to equip the persons with disabilities with simple, suitable, durable and inexpensive aids and appliances so as to improve their functional ability and enable them to take up various income generation activities to become economically independent and self-reliant. To this effect, the Artificial Limb Manufacturing Corporation (ALIMCO), Kanpur will be directed to develop and produce cost-effective aids and appliances on a large scale. Linkages and mechanisms for effective application of science and technology would be established with all those concerned so as to tackle the rehabilitation problems of disabilities with right type of aids and appliances.

3.10.26 In order to have a User-Friendly Programme, the Science and Technology in Mission Mode Project will continue its Research and Development (R&D) activities for generating new cost-effective and easy-to-handle technologies for the disabled. In addition to this, the ongoing collaborative efforts of the nodal Ministry of Welfare, the Department of Science and Technology and the Defence Research and Development Organisation, New Delhi will continue, during the Ninth Plan, not only to standardise the production of polymeric composite rehabilitation aids for the polio-affected, physically disabled but also to produce aids and appliances for rehabilitating the persons with other disabilities also.

3.10.27 To address the problems relating to both mental disability and mental health, efforts will be made to extend convergence of the available services of health, welfare and other related sectors, including that of the voluntary sector. Special thrust will be given for the prevention, the early detection, speech and communication, vocational training, family and community orientation, etc. In all these efforts, voluntary organisations will continue to be involved very closely in view of their experience and established credentials.

3.10.28 The Ninth Plan envisages the setting up of a National Trust to ensure total care and custodianship of those with mental retardation and cerebral palsy. For the welfare and care of the Spastics, special service centres will be set up to cater to the urban slums and backward rural areas, undertake large-scale manpower development programmes, and evolve new approaches to information, dissemination and community awareness. Rehabilitative services, like appropriate treatment, psychological support, day-care centres and specialised training for manpower development, especially in the area of cerebral palsy and mental retardation, will be expanded.

3.10.29 To assess the status of women and girls with disabilities, needs-assessment survey will be conducted. The findings of these surveys will be used in improvising/developing educational, vocational training and employment packages with necessary support services for women with the ultimate goal of equipping them to become economically independent and self-reliant. In fulfilment of the 'Women's Component Plan', every effort will be made to ensure that adequate funds/benefits flow to women with disabilities from all the relevant programmes.

3.10.30 Voluntary organisations, who have been playing an important role in the delivery of services for the persons with disabilities, will be supported to widen their

operations so as to reach the unreachable, viz. the rural disabled. They will be involved in sensitizing the rural population towards prevention, early detection, timely intervention, appropriate referral and follow-up services, rehabilitation etc. Voluntary organisations, especially working for Spastics, mentally retarded and leprosy-cured patients, will be supported with adequate funding.

3.10.31 To ensure planning for the welfare and development of the disabled more meaningfully, there is an impending need for the Office of the Registrar General and Census Commissioner, to revive their practice of 1981 Census to collect the data on the size of the population of persons with various types of disabilities and to make it available through the next Population Census of 2001 AD.

REFORMING THE SOCIAL DEVIANTS

- **To tackle the increasing problem of maladjustment**
 - Efforts will be made in close collaboration with both Governmental and Non-Governmental Organisations for effective enforcement of the Juvenile Justice Act (JJ Act), 1986
 - Ensure minimum standard of services in the various mandatory institutions set up all over the country under JJ Act, 1986
 - Encourage more and more voluntary organisations to take up the responsibility of extending welfare cum rehabilitative services for reforming the juvenile delinquents / juvenile vagrants and other children who come in conflict with law
- **To control / reduce the ever increasing / emerging problems of alcoholism, drug addiction, HIV Aids etc.**
 - Strict enforcement of legislation to prohibit / restrict the production of alcoholic drinks with necessary punitive measures
 - Expand the services of preventive, curative and rehabilitative services through counselling ; running de-addiction camps / centres
 - To develop an integrated strategy involving all the concerned to curb the ever increasing inter-related problems of drug-addiction and HIV / AIDSS
 - Launching of awareness generation programmes / campaigns to educate / sensitise and make people especially the younger generation conscious of the ill effects of these problems

Reforming the Social Deviants

3.10.32 Keeping in view the increasing problems of social maladjustment viz. juvenile delinquency/vagrancy, abuse, crime, and exploitation, the scope of the Juvenile Justice Act (JJ Act), 1986 will be widened with requisite infrastructural support of various statutory institutions in rehabilitating children, who come in conflict with law. A definite thrust will be given to developing appropriate/suitable services under juvenile justice. Necessary steps will be taken to ensure that the State Governments strictly adhere to the directives given under the JJ Act, 1986 and also set up the required number of institutions and deploy the staff, accordingly. Further, the norms and standard of services in various institutions under the JJ Act will be reviewed to identify gaps in the existing services and initiate action to lay down the minimum standard of services. To initiate preventive

and rehabilitative measures, efforts will be made to identify the specific areas infested with these social problems of delinquency and destitution. Further, the existing State and Central level monitoring systems will be activated to ensure effective implementation of the JJ Act of 1986.

3.10.33 In order to arrest the growing problem of alcoholism, effective measures will be taken to restrict/reduce the production of alcohol within the country and keep a special check and close vigil on the flow of liquor from abroad. Further, prohibition as contemplated, will be treated as a national endeavour to overcome the problem of

alcoholism and its consequences. To this effect, efforts will be made to impress upon the States to control/eradicate this serious problem of alcoholism from the society. Apart from the strict enforcement of the legislation, the role of the mass media would be enlarged to send powerful/effective messages about the ill-effects of the two social evils of drug and alcoholic addiction which ruin the family and the society. The services of counselling, de-addiction, rehabilitation, after-care and awareness generation will be expanded to reach the unreached.

3.10.34 As the problems of alcoholism, drug addiction and HIV/AIDS are inter-related, the Ninth Plan envisages the development of an integrated approach to curb the increasing magnitude of these problems with effective co-ordination amongst the concerned Ministries viz. Home Affairs, Finance, Health, Welfare, Information and Broadcasting and the voluntary sector. As a first step in this direction, action will be initiated immediately to identify those areas in the country which are infested with these problems and concentrated attention will be paid to curb the nexus of these inter-related problems. Measures for enforcement of the Prevention of Illicit Traffic in Narcotic Drugs and Psychotropic Substance Act, 1988 will be further tightened towards effective control over the flow of drugs and detention of persons trafficking in drugs. Also, simultaneous efforts will be made to strengthen the existing de-addiction-cum-rehabilitation Centres and expand the services to cover those areas, which are left uncovered. In all these efforts, the North Eastern Region, especially the State of Manipur, where the menace has already taken very serious proportions will receive priority attention during the Ninth Plan. To make these efforts effective, the local voluntary organisations will be actively involved to act as interface between the governmental agencies and the target groups.

3.10.35 For the prevention of the age-long problem of beggary, a three-way approach will be adopted. The first step being preventive in nature, special squads will be activated to round up the beggars from all the public places especially at religious/pilgrimage Centres on a continuing basis, till no such people are visible in the public places. The second and the third are curative and rehabilitative in nature. While all those, who become beggars due to poverty, will be dealt with by keeping them gainfully employed through various employment-cum income generation programmes/social assistance programmes, those, who opt wilfully and adopt begging as a profession, will be tackled through effective implementation of legislation and stringent measures of punishment.

3.10.36 The National Institute of Social Defence (NISD), located at New Delhi, will be strengthened/activated with the much-needed professional staff and basic infrastructure and encouraged to develop professional linkages with the line-agencies like National Crime Records Bureau (NCRB), New Delhi; Police Research Bureau, New Delhi; National Academy of Police, Hyderabad and the State Police Training Institutes, so as to meet the growing needs of research and training in the field of Social Defence.

CARING THE OTHER DISADVANTAGED

- To tackle the ever increasing problem of Street Children through :
 - More emphasis on preventive measures through various developmental services for children like, integrated child development services, compulsory primary 'education, supplementary feeding programmes, health and referral services etc.
 - Priority for non-institutional services through restoring the street children to their families and to Foster Families
 - Review / re-orientation and expansion of the existing limited services for Street Children, both institutional and non-institutional by involving more and more NGOs
- Policy Commitments for the well-being of Older Persons
 - Direct Policy prescriptions to extend support for financial security, health care, shelter, welfare and other needs of older persons
 - To provide protection against the dangers of life and property; abuse and exploitation of older persons.
 - To extend opportunities for older persons to contribute their mite in various developmental activities
- To curb the social evils like prostitution, beggary through:
 - Strict enforcement of the related legislations with rigorous punitive measures
 - Special programmes for economic rehabilitation of the disadvantaged women
 - Special Packages for the development of the Girl Child with a special focus on her educational development which would prevent the Girl Children from becoming victims of these types of social evils
 - Continuous awareness generation campaigns to sensitise the society and change the mind-set of the people
- To strengthen the National Institute of Social Defence, New Delhi to extend its technical advice and support in this Area

involving them in various developmental activities.

3.10.38 The Scheme of Old Age Pension will be reviewed and efforts will be made to rationalise the same in terms of providing at least the barest minimum subsistence and expand its coverage, wherever possible. The Panchayati Raj institutions will be actively involved in the implementation of various welfare schemes particularly with regard to selection of beneficiaries and disbursement of funds. The voluntary organisations will be encouraged to set up 'Homes for the Aged/Homes for the Destitutes/Homes for the Dying' so as to meet the increasing need for such services. Through effective advocacy, efforts will be made to promote awareness amongst the people to plan in advance for the old age. To develop greater sensitivity and better attention towards the needs of the Elderly, action will be initiated to expedite the finalisation/ adoption of the 'National Policy on Older Persons'.

Caring the Other Disadvantaged

3.10.37 Programmes for the Elderly, will be taken up in the Ninth Plan to ensure their well-being and continued participation in the community. The immediate social institutions of family and the community will be mobilised to play their catalytic role in the effective implementation of the programmes for the Elderly. Priority attention will be paid to the Elderly, especially in the rural areas, in extending the most wanted health care, housing, shelter, pension etc. Also, efforts will be made to reach/disseminate information regarding various welfare measures and special concessions being extended to the 'Senior Citizens', so that the rural Elderly can also come forward to enjoy these privileges along with their urban counterparts. The insurance sector will also be encouraged to formulate special health insurance programmes for the benefit of the Elderly. In extending housing facilities, the concept of 'Sheltered Homes' for the lonely/destitute Elderly will be explored with the help of private and public agencies as well as the NGOs. In order to facilitate productive ageing, the services of the Elderly will be made use of by

3.10.39 Amongst the disadvantaged, the Street Children are the most vulnerable. To tackle the growing problem of Street Children, the existing schemes for the welfare and development of Street Children will be reviewed and restructured keeping in view the Child's Rights with perspectives for necessary expansion. Towards this end, emphasis will be given to provide adequate health, nutrition, education, vocational training and other related services to ensure healthy development of these children so as to make them productive members of the society. The National Charter for Children envisaged in the Ninth Plan promises to ensure that no child remains illiterate, hungry or lack of medical care. In line with this, special efforts will be made to ensure that no street/destitute/orphaned child or any other child in difficult situations will be left uncovered for. The emerging threats from Drug and Psycho-tropic Substances as well as HIV/AIDS to Street Children will receive special attention. The voluntary organisations, which are already engaged in this area, will be further encouraged with necessary support to reach as many Street Children, as possible.

3.10.40 The other disadvantaged, who include the destitutes, deserted, widowed, orphaned and women and children in moral and social danger, will continue to receive priority attention in the Ninth Plan with a special focus on the child/women prostitutes. The evil of prostitution and its diverse manifestations viz. Devadasis, Basavis, Jogins etc. will be tackled not only through strict enforcement of the law but also through building strong public opinion and support along with police and community vigilance. Special programmes will be designed for economic rehabilitation of these disadvantaged women. The special package launched for the girl-child in 1997 will act as a measure to prevent the girl children from becoming victims of these types of social evils. More details are available under the Chapter on 'Empowerment of Women and Development of Children'. As regards the welfare of destitute women and children, the State governments will be encouraged to continue the ongoing programmes with further expansion so as to meet the increasing need.

3.10.41 While planning, programming and budgetting various services under Social Welfare sector, special efforts will be made to ensure that a definite percentage of the benefits are earmarked for women and girl children under the Special Component Plan for Women as they are the most vulnerable to become easy victims of all types of social evils/social problems and of the emerging situations.

POLICIES AND PROGRAMMES : A REVIEW

3.10.42 The policies and programmes relating to welfare and development of the persons with disabilities, the destitutes and the elderly received priority within the Social Welfare sector during the Eighth Plan. Along with these, the problems of drug abuse, prostitution, delinquency and beggary also received special attention.

Persons with Disabilities

3.10.43 The major policy thrust in the Eighth Plan was to make as many Persons with Disabilities as possible active, self-dependent and productive members of the society by extending opportunities for education, vocational training and economic rehabilitation etc. Efforts were also made to integrate the services for the Persons with Disabilities covering the entire range of activities starting from early detection, prevention, treatment, cure and rehabilitation.

3.10.44 The enactment of a comprehensive legislation namely, "The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995", which came into effect in 1996, was a significant achievement in the history of the welfare and development of the Persons with Disabilities. The legislation, which is the most progressive in its thinking and approach, seeks to empower the Persons with Disabilities to demand the elimination of any discrimination against them and creation of a new society which can ensure protection of their rights, equal opportunities to them, and their full participation to realise their potentials. Action on the implementation of the Act has started in the right earnest, as an ongoing process during the Eighth Plan period.

PERSONS WITH DISABILITIES ACT, 1995.

Enactment of 'Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation), Act, 1995' is an important landmark in the history of social welfare planning to ensure equal opportunities and protection of rights and full participation of Persons with Disabilities in the nation-building. Some of the special features of the Act include :

- **Prevention and Early Detection of Disabilities**
 - All children shall be screened once a year for identifying 'at - risk' cases
 - Staff of Primary Health Centres shall be trained to assist in this work
 - Measures shall be taken for pre-natal, perinatal, and postnatal care of the mother and child.
- **Education**
 - Every child with disability shall have the right to free education till the age of 18 years with free books, uniforms and scholarships/ appropriate transportation and barrier-free environment.
 - Teacher's Training Institutions shall be established to develop requisite manpower.
- **Employment**
 - 3% vacancies in Government shall be reserved
 - Governmental Educational Institutions including those receiving grant from the Government shall reserve at least 3% of seats
 - No employee can be sacked / demoted if they become disabled during service.
- **Affirmative Action**
 - Aids and Appliances shall be made available.
 - Allotment of land shall be made at concessional rates for housing, business, special schools etc.
- **Non-Discrimination**
 - All the places of public utilities shall be made barrier-free to give easy access.

3.10.45 Placement of the persons with disabilities in jobs was arranged through 50 Special Employment Exchanges and 39 Special Cells in the normal Employment Exchanges. As regards the number of the Persons with Disabilities persons on the Live Registers, there has been an increase from 3,23,220 in 1992 to 3,53,743 in 1995. As per the information available from the Live Registers from all over the country, 16,948 persons with various disabilities received placement during 1992-95.

3.10.46 To extend employment-cum-income generating opportunities for the Persons with Disabilities and to integrate them into the mainstream of economic activities, a National Handicapped Finance and Development Corporation (NHFDC) was set up in 1997. The Corporation is expected to play the role of an apex organisation and assist, coordinate and monitor the work of the State level Corporations and other voluntary organisations working for the economic betterment of the Persons with Disabilities. While extending support to the Persons with Disabilities through NHFDC, preference is being given to persons with disabilities in rural areas with a specific ceiling on income.

3.10.47 The eleven District Rehabilitation Centres (DRCs), functioning in the States of Andhra Pradesh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh, and West Bengal extended comprehensive rehabilitation services including early detection, medical intervention, fitment of aids and appliances etc. to the Persons with Disabilities especially in the rural and interior areas. The DRCs also carried out special surveys of the Persons with Disabilities population. The four Regional Rehabilitation Training Centres (RRTC), located at Chennai, Cuttack, Lucknow and Mumbai, extended technical support to these eleven DRCs and conducted full-time training and management programmes to the field level functionaries working in the area of rehabilitation of the Persons with Disabilities.

SUPPORT INSTITUTIONS AT NATIONAL LEVEL

- To extend the necessary technical advice and support to the Government for formulating need-based policies and programmes; experiment / demonstrate innovative projects; conduct / sponsor research and evaluation and develop manpower with necessary training and orientation programmes, the following 7 National Institutions are in effective action :

- National Institute for the Visually Handicapped, Dehradun
- National Institute for the Orthopaedically Handicapped, Calcutta
- Ali Yavar Jung National Institute for the Hearing Handicapped, Mumbai
- National Institute for the Mentally Handicapped, Secunderabad
- National Institute for Research, Training and Rehabilitation, Cuttack
- Institute for Physically Handicapped, New Delhi
- Rehabilitation Council of India, New Delhi

These Institutes are the fore-runners as well as trend-setters in their respective areas of specialisation. They offer a variety of long-term training programmes leading to degree / diplomas and also short-term Courses.

3.10.48 In consonance with the policy of providing a complete package of welfare and rehabilitative services to the persons with physical and mental disabilities and to deal with their multi-dimensional problems, the four national institutes, viz. National Institute of Visually Handicapped (NIVH), Dehradun; National Institute of Orthopaedically Handicapped, (NIOH), Calcutta; National Institute of Hearing Handicapped (NIHH), Mumbai; National Institute of Mentally Handicapped, (NIMH), Hyderabad; and the other two apex level Organisations viz., the Institute of Physically Handicapped (IPH), New Delhi and the National Institute of Rehabilitation Training and Research (NIRTAR), Cuttack offered a wide range of services in the field of education, training, manpower, vocational guidance, counselling, research, rehabilitation and development of low-cost aids and

appliances etc. They also offered a variety of training courses starting from short-term Certificate and Diploma Courses to three year Degree Courses in mental retardation, physio-therapy, occupational therapy, communication disorders, prosthetic and orthotic engineering, audiology, speech therapy as well as training of teachers etc. The clinical and rehabilitation units of these Institutes served as in-house laboratories for both the trainers and the trainees besides providing the base for conducting research projects and extending clinical and para-medical services to the patients. Thus, these Institutes played a significant role in meeting the training needs of the technical manpower to extend specialised services to the Persons with Disabilities in the country. Besides the regular academic courses, the National Institutes also conducted a large number of short-term training courses, seminars, orientation courses and camps etc. These provided a forum for creating awareness amongst the community at large for bringing the Persons with Disabilities population closer to the organisations working for their welfare; and

providing opportunities for exchange of information, knowledge and experience amongst the academicians, professionals, doctors, village/community level workers and all those associated with the disability and welfare and development of the Persons with Disabilities.

3.10.49 The scheme to provide durable, sophisticated and scientifically manufactured aids and appliances for the physically disabled, continued with a lower coverage as compared to the increasing demand for these. Financial assistance was provided to 346 implementing agencies located in different parts of the country and by the end of 1996, more than 2.53 lakh Persons with Disabilities persons received benefit under this programme during the Eighth Plan period. In order to provide cost-effective aids and appliances through the application of modern technology, 58 Research and Development (R&D) Projects were identified and funded under the scheme of Science and Technology (S&T) Mission Mode Project. Some of the devices developed through the scheme include close circuit television with magnifying facilities; as low vision feeding aids for children with cerebral palsy, safety devices for use in agricultural machinery, computerised Braille embosser, inter-pointing Braille writing frame, etc. Steps were also taken to start production of these aids at reasonable prices so as to make them available to the needy. Among others, the projects on development of footwear for leprosy-cured persons and training of visually disabled persons on Computers received assistance during the Plan period.

3.10.50 The Artificial Limbs Manufacturing Corporation (ALIMCO), set up at Kanpur in 1972, continued to manufacture standard aids and appliances for the persons with disabilities. During the Eighth Five Year Plan, the manufacturing plants of ALIMCO were modernised so as to ensure quality control. To reach the limb fitting facilities to the persons with disabilities in remote areas, 6 Regional Limb Fitting Centres and 20 Peripheral Limb Fitting Centres were set up in the existing medical colleges as part of the Health Plan of the State Governments. To these centres, ALIMCO extended technical know-how on fitment procedures and use of tools and materials required for the fabrication of orthoses/prostheses. The ALIMCO also assisted the Government of Orissa and Uttar Pradesh for establishing Limb-Fitting Centres in their States.

3.10.51 In addition to the existing Special Schools for education of the children with disabilities, the Ministry of Social Justice and Empowerment initiated a Scheme of Assistance to Voluntary Organisations for the establishment and upgradation of Special Schools in 1993-94. Under the scheme, priority was given for the setting up of schools in the districts where there were no Special Schools. By the end of March 1997, around 6127 disabled children have been benefited through 933 voluntary organisations.

3.10.52 Under the scheme of Assistance to Voluntary Organisations for the Persons with Disabilities, financial support was given (upto December 1996) to 1628 voluntary organisations for extending services to 4.00 lakh persons with disabilities through vocational training centres, special schools, counselling centres, training centres for the personnel and placement services etc. Voluntary organisations were also assisted to extend rehabilitation services to leprosy-cured persons in the areas of education, vocational training, economic rehabilitation, social integration and for running training courses to teachers specialised in the area of cerebral-palsy and mental retardation.

3.10.53 The Rehabilitation Council of India ((RCI), New Delhi set up in 1986, has been playing an important role in ensuring the quality of services in the crucial area of manpower

development and in enforcing uniform standards in training professionals in the field of rehabilitation for the disabled. In 1993, the RCI was converted into a statutory body through the enactment of the RCI Act, 1992 which came into force in July, 1993. So far, the RCI has developed 47 training programmes of both short and long-term durations and had registered a total of 1465 Rehabilitation Professionals/Personnel in the Central Rehabilitation Register till March, 1997. To conduct recognised training programmes, the Council has identified/recognised 91 institutions in the country. Besides these, the RCI also conducted joint entrance examinations on all India basis for the courses in physiotherapy, occupational therapy, prosthetic and orthotic engineering, etc. for the National Institutes.

3.10.54 An Indian Spinal Injury Centre was set up at New Delhi in collaboration with the Italian Government to extend comprehensive treatment, rehabilitation and vocational training and guidance to the spinal injury patients. The Centre also conducted research in multi-dimensional aspects of rehabilitation of such patients. In addition to these specific programmes, there have been many other support programmes for persons with disabilities in other developmental sectors like health, education, labour and employment, as listed below :

3.10.55 In the field of health, a number of ongoing programmes have a direct bearing on the prevention and reduction of the incidence of the various disabilities. They include eradication of smallpox, leprosy, control of blindness, control of iodine deficiency disorders, national mental health programme, universal immunization programme, child survival and safe motherhood and other maternal and child health services. The National Mental Health Programme launched in 1992 with the sole objective of improving mental health services at primary, secondary and tertiary levels. Efforts were also made during the Eighth Plan to integrate mental health care with primary health care. Details of various services extended under this programme are given under the Chapter on 'Health and Family Welfare'. In addition to these, while the apex institutions such as the All India Institute of Medical Sciences (AIIMS), New Delhi, Post Graduate Institute of Medical Sciences, Chandigarh and the All India Institute of Physical Medicine and Rehabilitation, Mumbai, have been extending rehabilitation services to the persons with locomotor disability, the National Institute of Mental Health and Neuro Sciences, Bangalore has been contributing for the rehabilitation of the mentally retarded and spastics. The All India Institute of Speech and Hearing, Mysore is yet another agency which has been contributing towards rehabilitating the persons with hearing and speech disabilities.

3.10.56 Similarly, the Defence Research Development Organisation (DRDO), New Delhi, in collaboration with the Ministry of Welfare, Department of Science & Technology (DST) and Nizam Institute of Medical Sciences, Hyderabad, has been involved in various R&D activities to standardise the production of Polymeric Composite Rehabilitation Aids for polio-affected physically disabled. The aim of the project was to develop different rehabilitation aids in standard sizes under a DST-funded programme and evolve effective production techniques. The aids identified were Floor Reaction Orthosis (FRO), socket for lower limb amputees, prosthetic foot and calipers made of fibre reinforced plastics. FRO is a device meant for people having disability due to polio and having basically a 'hand on knee' gait due to weak quadriceps. FRO made of polymers and their composites developed by IIT, Bombay weigh only 1/5th of the weight of a corresponding metallic caliper. DRDO has been working on standardizing

different sizes, limiting them to 8 sizes, which are likely to cover the majority of the population, after doing detailed anthropometric studies on about 500 polio-affected people, especially children. Different modules of FRCO are being assembled at limb fitting centres in the country, which are equipped with some basic facilities like heat gun etc. The District Rehabilitation Centres (DRC) of the Ministry of Welfare were also involved at the field-level trial stage. After doing the clinical trials in 6 identified validation Centres, the sizes will be frozen to go for production. In order to have the trained people ready to adopt the technology, a three-week training programme for doctors has also been planned for during 1997.

3.10.57 In the field of education, the National Policy on Education (1986) extended its support in advocating equal educational opportunities for the Persons with Disabilities. It envisaged universalization of elementary education for children with mild and moderate disabilities by 1990 and 1995 respectively and for those with severe disabilities by 2000 A.D. In the Eighth Five Year Plan, a special thrust was laid on providing educational services to the disabled children in a sensitized community atmosphere with the provision of adequate infrastructural support. In order to provide educational opportunities for the Persons with Disabilities children in common schools so as to facilitate their retention in the school system, the Department of Education has been implementing a scheme of Integrated Education for Disabled Children (IEDC) since 1982-83 and more than 50,000 disabled children have been covered in 12,292 schools so far. Under the community-based and innovative District Primary Education Programme (DPEP) launched during 1994 in 60 districts, integrated education for children with mild to moderate disabilities was given special emphasis. In addition, the Project 'Integrated Education for the Disabled' (PIED) initiated by the National Council for Educational Research and Training (NCERT) with UNICEF assistance in 1987, continued to strengthen the implementation of the scheme of IEDC in a selected block in 10 States. An external evaluation of this project in 1994 showed that not only the enrolment rate of disabled children increased considerably but the retention rate amongst the disabled children has also increased to as high as 95 per cent which is much higher than that of the non-disabled children in the same blocks. Over 6,500 disabled children have been covered in 1382 schools under Project Integrated Education for the Disabled (PIED).

3.10.58 The Central scheme to award Scholarships to the Disabled students to pursue general, technical and professional courses from Class IX onwards on the basis of means-cum-merit test was transferred to the States from 1993-94. All the States implemented programmes for providing scholarships to the Persons with Disabilities at the elementary and secondary stages in the schools. A few States provided free books and extended scholarship to the disabled students for music, vocational, technical and other professional courses.

3.10.59 Under the Employment sector, the vocational training facilities for the persons with disabilities were expanded through a grant-in-aid programme. At present, there exist 852 government-run and 105 private-run Industrial Training Institutes (ITIs) in the country which provide 3 per cent reservation of seats for persons with disabilities. The National Council of Vocational Training, a non-statutory body set up by the Ministry of Labour, formulated a policy of 3 per cent reservation of seats for trainees with locomotor disability in all the ITIs in both engineering and non-engineering trades. In order to facilitate speedy rehabilitation of the persons with disabilities, Skill Training Workshops (STWs) have also been attached to all the existing seven Vocational Rehabilitation

Centres (VRCs) located at Mumbai, Ahmedabad, Bangalore, Chennai, Thiruvananthapuram, Hyderabad and Kanpur. Rehabilitation services to the rural Persons with Disabilities were being extended through Mobile Camps and 11 Rural Rehabilitation Extension Centres (RRECs) set up in 11 Blocks and 5 VRCs located at Mumbai, Calcutta, Kanpur, Ludhiana and Chennai. By 1996, 8,32,888 blind, 10,376 deaf and dumb, 67,656 orthopaedically disabled and 1,690 persons with other disabilities were rehabilitated. To support economic activities of the Persons with Disabilities, the Ministry of Rural Areas and Employment has initiated action to allocate 33 per cent of funds under all the Poverty Alleviation Programmes, except in respect of Employment Assurance Scheme and Jawahar Rozgar Yojana. Action was taken to extend credit facilities to the Persons with Disabilities under the Integrated Rural Development Programme.

3.10.60 Various concessions have also been extended to persons with disabilities through executive orders/notifications both by the Government of India and the State Governments. To illustrate, the Indian Postal Services deliver Braille literature free of cost to various Libraries for the Blind. Organisations working for the persons with disabilities get rebate in telephone rentals. Blind persons can travel by the Indian Railways, by paying 1/4 of the normal fare for themselves and their escorts. The Indian Airlines give 50 per cent concession to blind people on domestic flights.

The Social Deviants

3.10.61 To tackle the problem of social maladjustment amongst children, Central assistance was provided to States/UTs for setting up Observation Homes, Juvenile Homes and upgradation of the existing Institutions etc. Under the scheme of Prevention and Control of Juvenile Social Maladjustment, about 280 Observation Homes, 251 Juvenile Homes, 36 Special Homes and 46 After-care Homes have been supported. In addition, 271 Welfare Boards and 189 Juvenile Courts were functioning in the country.

3.10.62 The Probation of Offenders Act, 1958 provides for non-institutional treatment of offenders. This approach has been universally recognised as the most scientific and economical alternative to imprisonment. According to the Act, administrative infrastructure has already been established in more than 400 districts of the country, thus providing a good base to build these services further.

3.10.63 The problem of alcoholism/drug abuse received priority attention in the Eighth Plan by curbing the illicit trafficking of drugs/liquor within and across the border; and by demand reduction through building awareness and educating people about the ill effects of alcoholism/drug abuse. While the control of supply of these toxic substances was taken care of by the Narcotic Control Bureau and the Police, the welfare and rehabilitation aspects were attended to by the nodal Ministry of Welfare through a comprehensive programme of 'Assistance to Voluntary Organisations for Prohibition and Prevention of Drug Abuse and De-addiction and Rehabilitation of Drug and Alcoholic Addicts' launched in Eighties. To enlarge its scope and effectiveness, certain modifications were brought in to reformulate the scheme in 1994. Voluntary organisations were assisted in creating awareness about the ill-effects of alcoholism and drug abuse, counselling services to addicts and their families, referral services for hard-core addicts to De-addiction-Cum-Rehabilitation Centres and for follow-up services.

3.10.64 By March, 1997, 218 Awareness/Counselling and Assistance Centres and 123 De-addiction/Rehabilitation Centres were functioning in the country. As a result of the implementation of the programme, the number of drug addicts registered in these Centres started declining steadily from 3.12 lakh in 1994-95 to 2.82 lakh in 1995-96 and 1.25 lakh till September 1996. During this period, 3.775 lakh drug addicts were detoxified in various Centres in the country. Of this, 32,819 drug addicts were detoxified in 18 De-addiction Centres of the North Eastern region where the problem of drug addiction is acute. Further, the Ministry of Welfare, in collaboration with United Nations Drug Control Programme (UNDCP) took up a number of projects which include Community Drug Rehabilitation and Work Place Prevention Programme. Under this programme, 20 voluntary organisations were identified in different parts of the country and were given extensive training in rehabilitation of drug addicts.

3.10.65 In order to cover a wide spectrum of programme/areas for tackling the social problems, the grant-in-aid scheme for 'Assistance to Voluntary Organisations in the field of Social Defence' was continued. Support was extended to the research schemes for pilot projects in unattended and neglected areas and social problems of an inter-State character. Under this scheme, 17 projects have been initiated for maintenance and rehabilitation of the children of prostitutes in Uttar Pradesh, West Bengal and Delhi. To extend support for maintenance of the Central Office of the voluntary organisations, the scheme of Organisational Assistance to Voluntary Social Welfare Organisations was continued.

3.10.66 Efforts were continued by the States to prevent, control and rehabilitate beggars as provided under their respective anti-beggary legislations. At present, 16 State Governments and 2 Union Territory Administrations have enacted Anti-beggary Legislations. The Ministry of Welfare initiated a scheme for Beggary Prevention in 1992-93. Under this scheme, grant-in-aid was extended to NGOs for establishing Vocational Training Centres for the care, treatment and rehabilitation of beggars. Services in this field lacked uniformity.

3.10.67 The National Institute of Social Defence (NISD), New Delhi, functioning under the nodal Ministry of Welfare, continued to serve as the central advisory body in the field of prevention of crime, treatment of offenders in the areas of juvenile justice administration, welfare of prisoners, probation and allied measures, suppression of immoral traffic and drug-abuse prevention etc. The NISD organised training courses for various categories of personnel viz., government officials, social workers, counsellors, project managers, programme officers, prison welfare officers, enforcement machinery etc. in collaboration with State Governments, Universities and voluntary organisations in different parts of the country. During the Eighth Plan, the NISD organised 70 One-Week Regional Training Courses, 25 Two-Week Training Courses and 4 Training Courses of four days duration benefiting about 3400 personnel and workers engaged in the area of drug abuse prevention. The Institute being an advisory body in the field of 'Prevention of Crime and Treatment of Offenders', provided a research base for the identification and formulation of schemes suitable to different regions of the country. The Institute has contributed significantly to the laying down of a basic framework for handling and treatment of various categories of juvenile and adult offenders.

The Other Disadvantaged

3.10.68 Since the life expectancy in the country has improved, the proportion of the elderly population is on the rise. Correspondingly, the magnitude of the problems of the elderly is also increasing. To tackle the growing problem, a new scheme of assistance to voluntary organisations was introduced in 1992-93 for setting up/continuance of Day Care Centres, Old Age Homes, and Mobile Medicare Services. During the Eighth Plan period, voluntary organisations were assisted to establish 186 Old Age Homes, 223 Day Care Centres and 28 Mobile Medicare units. The other important welfare measure for the aged was the implementation of Old Age Pension Scheme under the State Sector. The rate of monthly pension varies from State to State and ranges between Rs.75 and Rs.200 per month. However, a majority of the States offer a minimum of Rs.100 per month. In August, 1995, a National Social Assistance Scheme was launched by the Department of Rural Development under which the Government of India announced Central assistance to States for providing old age pension of Rs.75 p.m. per beneficiary to the destitute or poor elderly of age 65 and above. While most of the States have adopted destitution as the criterion, some have adopted income approach also.

3.10.69 Due to rapid urbanisation and unabated migration of the rural poor, the population of destitutes, especially that of the street children, in urban centres is increasing. In order to tackle this problem, a scheme for the Welfare of Street Children was launched during 1992-93, to provide community-based non-institutional services for the care, protection and development of street children. The major components of the scheme are - identification of street children; mobilising nutritional support maintenance of the requisite level of physical and mental growth offering facilities for education, linking facilities for the training of street children in gainful vocations, trades and skills so as to enhance their earning capacity; promoting facilities for shelter and hygienic living; offering counselling, guidance and referral services. Under this scheme, all possible efforts are also made for re-integration of the street children with their families or their placement in a family setting and protecting the street children against all forms of abuse and exploitation. The scheme is being implemented through 831 voluntary organisations in 23 cities covering approximately 24000 street children under the guidance of a city level Task Force composed of Secretary, Social Welfare, Police Commissioner, Municipal Commissioner, Director, Social Welfare of the concerned State Government.

3.10.70 To streamline the adoption services, the Central Adoption Resource Agency (CARA), set up in 1988 in pursuance of the directives of the Supreme Court, continued to act as a clearing house of information with regard to children available for adoption. To regulate inter-country adoption and formulate detailed procedures with regard to the adoption of children for foreign nationals, a revised guideline was notified in June, 1995. Around 82 national agencies and 286 foreign agencies were given recognition for dealing with the inter-country adoption cases in more than 25 countries. During the Eighth Plan, an estimated number of 7810 children have found homes through these agencies, of whom, 4456 are intra-country and 3354 are inter-country adoption. The cases of children adopted by the foreign nationals are monitored through the Embassies/High Commission of various countries. Voluntary organisations were also assisted for setting up Homes for Infants (Shishu Griha) since 1992-93 and for promoting intra-country adoption. By 1996, 66 such Homes came into operation.

3.10.71 All the above listed on-going programmes catering to the welfare and development of these Groups will appropriately be strengthened, streamlined and expanded ensuring qualitative and quantitative improvement during the Ninth Plan.

3.10.72 Most of the programmes under Social Welfare Sector are being implemented by the State Governments for the welfare and development of the Persons with Disabilities, the deviants, and the disadvantaged. They include special schools, scholarships, hostels, aids and appliances for the Persons with Disabilities; implementation of various social legislations like- Immoral Traffic (Prevention) Act, 1956 (amended upto 1986), Probation of Offenders Act (1958), JJ Act (1986), Beggary Prevention Acts (State Acts) and setting up/maintenance of various mandatory institutions in the field of Social Defence like Juvenile Homes, Childrens' Homes, Childrens' Boards, Observation Homes, Correctional Homes, Shelter Homes, Reception Homes, Nari Niketans, Beggar Homes etc; and other Social Welfare Institutions and services like Orphanages, Old Age Homes, Homes for the Destitute and Dying; welfare services for children and women in need of care and protection etc. In running these programmes, the central Ministry and its sub-ordinate organisations extend necessary guidance, advice, support and technical know-how in respect of the programmes for the persons with disabilities to the States/UTs.

RESEARCH, EVALUATION AND MONITORING

3.10.73 The on-going efforts of research and evaluation will be oriented more towards the diagnostic and evaluative research in identifying the existing gaps, besides helping mid-term corrections in the ongoing programmes. At present, as there is no systematic monitoring of the implementation of various policies and programmes, efforts will be made to develop the required mechanisms, which would help ensure necessary feed-back for the quality of programmes. Efforts will also be made to ensure the setting up of similar mechanisms at State level.

3.10.74 The existing seven national level institutes will continue to undertake specialised area-wise research to provide necessary inputs to the Ministry of Welfare in developing appropriate strategies and packages for the development of the Persons with Disabilities. The National Institute of Social Defence, New Delhi will continue to serve the Ministry as an advisory body in the field of prevention of drug abuse, beggary, crime and the treatment of offenders etc.

IMPLEMENTING MECHANISMS

3.10.75 The administrative machinery at the Centre for implementing the various social welfare programmes had been continuing without much of a change till 1985 when a separate Ministry of Welfare was set up. As part of the Ministry, exclusive Bureaux - one for the persons with disabilities and the other for the social welfare and social defence, continue to handle welfare and development of these groups. The six national institutes for the Persons with Disabilities, located at various places of the country, the Artificial Limbs Manufacturing Corporation, Kanpur; National Handicapped Finance and Development Corporation, New Delhi and the National Institute of Social Defence, New Delhi function as support structures and assist the nodal Ministry in performing its administrative and developmental responsibilities. At the State level, while majority of the State Governments have exclusive Departments/Directorates of Social Welfare, a few States still continue to handle the social welfare programme in a scattered way. As

these State Departments/Directorates are not equipped adequately with technical manpower, they need to be strengthened with professionally trained persons to ensure formulation of need-based programmes and their effective implementation. At the field level, the Panchayati Raj Institutions and the Local Bodies will be actively involved along with the voluntary sector and the community in implementing, coordinating and supervising/monitoring the welfare programmes. Upholding the spirit of 'Co-operative Federalism', the Ninth Plan seeks more involvement and co-operation from the States/UTs in respect of social welfare/social defence programmes whose responsibility mainly rests with the State Sector.

VOLUNTARY ACTION

3.10.76 The voluntary organisations, since history, have been playing a very important role in the field of social welfare. Their role as effective motivators in bringing the local government and the people together in working towards the well-being of the disadvantaged and the deprived as pressure groups in impressing upon the Government to extend social sanctions in favour of the deprived; and as an effective implementing force in translating the policies and programmes of the Government into action, has been successful in the past. Some of the voluntary organisations in the recent past have also proved

ROLLE OF VOLUNTARY ORGANISATIONS

Voluntary Organisations have been playing a very important role for the welfare, rehabilitation and development of Social Welfare Groups viz., Persons with Disabilities, Juvenile Delinquents / Vagrants, Alcoholics and Drug Addicts, Sex Workers / Child Sex Workers, Working Children, Street Children, Destitutes / Deserted, Women and Girls in social / moral danger, Older Persons etc. who have special problems or living in problem situations. In handling / reforming / rehabilitating / caring these Special Groups, the contribution of the Voluntary Organisations which are in direct contact with these Target Groups has been very vital. In fact, the Social Welfare Services in the country have been developed on the strong foundations of the Voluntary Sector and still being continued through the country-wide network of the Voluntary Organisations which are more than 10,000 in number at present. Through this medium, services to these Special Groups are being reached to the most backward, remotest and inaccessible areas of the country.

their credentials in experimenting successful alternative models in providing certain specialised services for the welfare and rehabilitation of spastics/mentally retarded, drug addicts, leprosy affected, prostitutes, destitutes and the dying, street children etc. Another important area, where the voluntary sector made an effective entry is to change the mind-set/attitudes of the people to overcome the wrong and blind beliefs which are the causes for many present day social evils/problems. They can also be effective animators in generating awareness and thus, equip the target groups with necessary information about their rights and privileges besides the governmental efforts to improve the lot of the deprived and the disadvantaged groups. Therefore, efforts will be made to promote voluntary action especially in those areas where it is missing completely or weak.

PLAN OUTLAYS

3.10.77 While an outlay of Rs.1208.63 crore has been earmarked for the Social Welfare Sector at the Centre in the Ninth Plan(1997-'-2002), an amount of Rs.3348.12 crore has been earmarked (provisional) for Social Welfare programmes including for women and children in the State Sector for the Ninth Five Year Plan (1997-2002).

3.11 Labour & Labour Welfare

3.11.1 One of the major concerns of the Government has been the improvement of labour welfare with increasing productivity and provision of a reasonable level of social security. The planning process attempts to create conditions for improvement in labour productivity and for provision of social security to supplement the operations of the labour market. The resources have been directed through the Plan programmes towards skill formation and development, exchange of information on job opportunities, monitoring of working conditions, creation of industrial harmony through an infrastructure for healthy industrial relations and insurance against disease and unemployment for the workers and their families. The achievements of these desirable objectives in the areas of labour and labour welfare have been determined primarily by the kind of labour market that exists. The situation of surplus labour, coupled with the employment of most of the workers in the unorganised segments of the economy, has given rise to unhealthy social practices like bonded labour, child labour and adverse working conditions faced by the migrant labour. Within the available resources, a limited effort at handling these problems has been feasible.

3.11.2 Many of the initiatives taken by the Government for labour welfare and the role of the Plan in supplementing the efforts of labour, employer and the Government have to be reviewed regularly in the context of an evolving economic and social background. The social, economic and political conditions that existed in the initial years of planning in the country have changed. The trends in demographic, social and economic developments, that have taken place, are not always the same as expected and the Government policies have to be adjusted to the changing situation.

3.11.3 The diversification of economy away from agriculture, as measured by the sectoral pattern of employment, has been much slower than expected. The Second Plan had projected a decline in the workforce engaged in agricultural activities from 70 per cent in 1956 to about 60 per cent in 1976, i.e. by 10 percentage points over 20 year period, but the actual decline has been much slower. Even in 1991, 64.9 per cent of the workers were in the agriculture sector, representing a decline by only 5 per cent from 70 per cent of 1976.

3.11.4 The share of the organised sector in employment has continued to be low and has been declining, accounting for 7.82 per cent of total employment in 1991. Within the organised sector, the private sector's share in employment reduced from 42 per cent in 1961 to 30 per cent in 1995.

3.11.5 The proportion of self-employed in employment has reduced but still it accounts for 56 per cent of those employed in 1992. The proportion of casual labour has increased from 19.7 per cent in 1972-73 to 28 per cent in 1992 among the male employees and from 30.7 per cent to 36.4 per cent among the female employees. The regular salaried employees constituted only 16 per cent in the case of male employees and 6.8 per cent in the case of female employees.

3.11.6 Employment per enterprise, enumerated in the economic census, has reduced from 2.92 to 2.88 persons between 1980 and 1990. Nearly three-fourths of the establishments enumerated in the 1990 economic census had less than five employees each and 90 per cent had less than 10 employees each.

3.11.7 Given the large share of those employed in the primary industries, outside the organised sector, in very small establishments and at casual status of employment, the strategy for benefiting the workforce in general has to be based on an increase in productivity rather than on attempting labour welfare through a frame-work of multiple regulations.

3.11.8 The labour movement in the country took shape when textiles, mines and plantation industries were the principal employers in the organised sector and when these industries were almost entirely in the private sector. A mutually acceptable independent third party used to arbitrate in the case of disputes between the employees and the employers prior to independence. After independence, the role of the arbitrator has been assumed increasingly by the Government. A system of labour tribunals with associated fora came into existence. Such a system can be effective only in the case of labour in the organised sector.

3.11.9 With 70 per cent of organised employment being in the public sector, a peculiar situation has developed in which the Government assumes the role of an employer as also of an arbitrator. In the public sector, there exist very effective, industry-specific associations of workers, which negotiate directly with the managements of the public sector enterprises. The role of the Government as an arbitrator in the public sector industrial disputes should, therefore, reduce drastically. Both the employers and the employees can select a mutually acceptable arbitrator, independent of the Government, on a case to case basis. The resources of labour administration infrastructure should become available increasingly for studying the working conditions of the unorganised sector.

3.11.10 In recent years, following the initiation of economic reforms in 1991, the rate of expansion of employment in the private sector has been higher than in the public sector. The rate of growth in private sector organised employment during the period 1987-88 to 1993-94 was 1.18 per cent as compared to 1.000 per cent rate of growth in the public sector employment. This is a welcome reversal of the relative situation that prevailed in the eighties. The gains from economic growth accrue to the labour force from the expansion of all-round employment and an increase in the real output per worker. The labour market in India, being for the most part outside the regulatory frame-work, has adjusted itself without much strain to the process of reform of economic policies. In labour disputes, the settlement can be much quicker if the rewards are linked with productivity improvement that comes from cost reduction and higher output.

3.11.11 Changes in the work culture can sometimes bring in a much larger all-round benefit than resistance to such changes. For example, resistance to changes in the structure of an industry will not benefit the workers. The services segment of the organised sector covering insurance, finance, trade, communication, transport and a variety of public services concerning health and welfare, is the largest segment of organised workforce. The benefits from the reforms in trade and fiscal policy to the consumer depend very substantially on a more flexible structure of the firms in these industries. During the Ninth Plan it is envisaged that the Trade Unions will contribute to promoting changes in the work culture. The contribution from the Trade Unions is also required for creating an environment that encourages linking of rewards to labour with productivity improvement in a more flexible structure of the firms that deliver such services. The trade unions have undertaken research studies on issues relating to improvement in labour productivity in the past utilising the insights acquired by them through the labour movement. The forum

of Indian Labour Conference, where these labour representatives, employers and the Governments at States and Centre mutually interact, can make useful contributions by guiding research focussed at labour productivity.

Labour Laws

3.11.12 The labour laws encompass areas like industrial disputes, wages and minimum wages, security measures like Workmen's Compensation Act, Equal Remuneration Act,

Review of Labour Laws

Benefits from existing labour laws reach a minor part of the workforce because of administrative difficulty in implementation. Ninth Plan will aim at reducing the number of laws which determine relations between workers and employers, with the objective that a much smaller number of laws can reach the entire workforce.

Maternity Benefit Act, Child Labour Act, Factories Act, Mines Act, Contract Labour Act, Welfare Fund related legislation etc. The basic objectives of all these laws are to create a safe work environment, provide the mechanism and the procedure to settle industrial disputes and ensure minimum wages, payment of

provident fund, gratuity and bonus etc. besides other statutory benefits, to the worker.

3.11.13 To maintain its sanctity, any particular law requires to be reviewed in the context of the changes that have occurred in the conditions that govern employment and industrial relations. The basic objective of initiating the process of economic reforms was to correct certain distortions and imbalances which had crept into the economy, to overcome the crises arising out of macro economic imbalances and to lay the foundation of an economic regime characterised by de-licensing, de-regulation and de-control, besides removing all irritants and stumbling blocks to the production system in order to make it competitive on the one hand and to integrate the national economy with global economy on the other. Radical changes have been made in the licensing system, in the mechanism governing import and export, in the foreign exchange regulations, and in the procedures for foreign direct investments. It is imperative to bring about corresponding changes in the labour laws.

3.11.14 It may be seen, however, that in the changed economic scenario, where displacement of labour is inevitable and existing labour force is expected to get retrenched, the workers thus retrenched are not affected adversely. With this in mind, the National Renewal Fund has been created out of which payments are made to the workers who are voluntarily retiring and funds are also provided for retraining and redeployment of the retrenched workers. Steps need to be taken so that the loss out of reform process is minimum for the labourers.

3.11.15 The labour laws enforcement machinery in the States is under a severe strain. The number of cases pending before the courts is too large to be handled. Any miscarriage of justice is difficult to avoid in such a situation. An effort to drastically reduce the number of labour laws from the present 150 or so, and devise a single labour code is necessary. This task is enormous. During the Ninth Plan period, action will be taken to (a) identify the laws which are no longer needed and repeal them; (b) identify the laws which are in harmony with the climate of economic liberalisation and hence need no change; (c) amend the laws which require changes and (d) revise the rules, regulations, orders and notifications etc. The Ministry of Labour has taken the preparatory steps in this direction.

3.11.16 At present, labour laws are targetted towards the organised labour force. The unorganised sector does not get much benefit out of the existing labour laws. Particularly vulnerable groups among the unorganised sector are urban informal sector, agricultural labour, migrant labour, women and child labour and poor landless workers who are poverty stricken. One of the laws which is widely applicable to this vulnerable groups is enforcement of minimum wages. The Minimum Wages Act, 1948 is primarily applicable to unorganised sector/sweated sector and empowers both Central and State Governments to fix/revise the minimum rates of wages in respect of scheduled employments under their respective jurisdiction. The minimum wages have been fixed at different levels by the different State Governments.

3.11.17 The subject of national minimum wages has been considered by several bodies in the past. The National Commission on Labour (1969) was of the view that such a wage in the sense of uniform minimum monetary remuneration for the country as a whole is neither feasible nor desirable. The 28th Indian Labour Conference (1985) also discussed the need for national minimum wage. It was felt that till such time the national minimum wage is feasible, it would be desirable to have regional minimum wage for which the Central Government may lay down the guidelines.

3.11.18 In the 33rd session of the Standing Labour Committee, it was suggested that measures should be taken to evolve a uniform floor level minimum wage for all unorganised establishments. The need for so fixing and notifying minimum wages that no wage is fixed below Rs.35 per day was felt. It was also suggested to the State Governments that the existing benefits should not be reduced and wherever the current level of minimum wages are more than Rs.35, they should be allowed to continue. The State Governments were also requested to take measures to reduce inter-state and intra-state disparity in minimum wages.

3.11.19 If properly enforced, minimum wages can offer greater potential for income transfers than special employment generation schemes. There may be opposition to this from rural oligarchy resulting in labour substitution through mechanisation, but Government must stress on enforcing minimum wages at least in short term periods like sowing/harvesting season. If minimum wages are properly enforced, it will reduce migration of population from rural areas to urban areas.

Social Security

3.11.20 The present approach to providing social security to the population has been framed in the context of a low recorded unemployment (less than 3% of labour force) but high incidence of poverty (more than 30% of households). A large number of those employed are getting wages that do not provide them an acceptable minimum level of living. The attempts at providing social security are targetted at the poor through special employment generation programmes on the one hand and provision of free or heavily subsidised basic needs like health, nutrition, housing and education on the other. Though 20 per cent of the Plan and the non-Plan expenditure of the Governments at the Centre and the States is directed towards the creation and maintenance of social infrastructure, the gap between what is needed and what can be made available within the available resources of Governments is too large.

3.11.21 The other effort of the Government to guarantee social security is through a set of laws, but such legal measures can tackle only the symptoms of a deeper malady underlying the economic and social situation, and that to the extent the measures are enforceable. The administrative and legal infrastructure can not secure for all those in the unorganised workforce what the laws seek to provide for them.

3.11.22 Given the situation where the provision of social security encounters fiscal constraints and administrative limits to the enforcement of laws, the only feasible approach to reach social security to the population is by creating conditions wherein the "economically active" segment of population gets a reward for its labour, which affords a reasonable level of basic needs.

3.11.23 The working conditions of labour in those parts of the country where agricultural productivity is high and where the per capita income levels, in general, are high are by and large satisfactory. In these parts, the market wage is well above the statutory minimum wage. At some of the locations it is difficult to find the beneficiaries eligible to get benefit under poverty alleviation schemes because there are few households identifiable as below poverty line. The policies that enable high growth in output do reduce the burden on the planning process of providing social security.

3.11.24 However, the situation is not as good in the States characterised with low productivity and high level of poverty. There are inter-State variations in the levels of Minimum wages fixed. This calls for a periodic revision of minimum wages in all the States, which will ensure a level of income above the poverty line.

3.11.25 The Employees State Insurance (ESSI) scheme, framed under the Employees State Insurance Act, 1948, provides for medical care and treatment, cash benefit during sickness, maternity, employment injury and pension for dependents on the death of the insured worker due to employment injury, besides meeting the expenditure on the funeral of an insured person. The scheme is not applicable to non-power-using factories employing less than 20 persons now but efforts will be made to extend it to all factories employing 5 or more persons.

3.11.26 Health aspect is very important for an average worker, who is poor and can not sustain himself unless work is available. Unless he is fit, his earnings get directly affected. In these circumstances stress should be laid on proper health care arrangements for the workers in general and workers in the unorganised sector including urban informal sector in particular.

3.11.27 The agricultural labour which constitutes majority of workforce, is exposed to many potential risks at the work location. The hospitals receive a large number of cases of accidents at work in the field. The health, hygiene and industrial safety set up, which has so far remained confined mainly to manufacturing sector should allocate a substantial part of its resources to providing services to agriculture sector.

3.11.28 The Governments of Gujarat, Kerala, Karnataka and Madhya Pradesh have insurance schemes for the landless agricultural labourers. This needs to be extended for the entire country. The Welfare Boards for Mine Workers, Bedi and Cigar Workers etc.

are financed by the cess levied on these commodities. A Cashew Workers Welfare Board exists in Kerala. In the Ninth Plan, a strong research and development effort will be mounted to facilitate the extension of social protection to all sections of the working population. A scheme of social security for the unorganised rural labour would be designed to provide for protection during the stoppage or diminution of income. The existing welfare schemes of the unorganised sector which are widely scattered and fragmented, will be integrated properly. Institutions and arrangements for providing group insurance to the rural poor across the country need to be made more effective and their coverage increased.

3.11.29 Any scheme that has to benefit the working population in the unorganised sector has to be employer-friendly. Identification of a prospective beneficiary is possible only with the active involvement of the employer.

3.11.30 The purpose of the National Scheme of Social Security is to explore the most appropriate institutional mechanism for distributing among the working population, what has been earned by its labour, rather than financing the full cost of social security.

3.11.31 A scheme of social security to the working population at a particular location can be effective only if the number of people who are to be reached through the scheme is manageable. The benefits of a uniform country-wide scheme cannot reach effectively all the locations. The requirements of the working population and resources that can be pooled from the workers, the employers and the State or national level institutions differ from place to place. Thus, the design of the efforts for providing social security has to be promoted on a location-specific basis.

3.11.32 Resources from the Plan can be used for demonstrating the viability of such efforts. Certain conditions need to be fulfilled. Resources should be raised primarily by the employees and employers. The Government can provide a token support but cannot meet the full expenditure incurred on social security. In the long run such location-specific schemes should invest their resources in, and earn from, the capital market. The schemes will have to be operated and managed jointly by the employers, employees and representatives of the local authority. The support from the Government, in the initial, and for a specified number of, years can be on a matching basis to the resources pooled by the employers and the employees. The support from the Government needs to be shared by the State Government and the Central Government. The primary purpose is to test and demonstrate the viability of a location-specific, and largely self-financing, effort to provide social security at a rate that broadly matches the market wage rate of an average worker at that location.

3.11.33 Such a scheme, to be owned by the local beneficiaries, has to have a strong location-specific character. The task of identification, in association with the employers, can be managed for a reasonable size of population unit. Hence, the formulation of location-specific social security schemes for a unit size of say 20,000 households or one lakh persons, under the supervision of local authority, will be encouraged.

3.11.34 The social security set-up as it exists among industrial countries is not applicable for India. Firstly, nearly half of those employed are the self-employed, which is a very small category in the industrial countries. Most of the self-employed are in the informal sector, in contrast to the industrial countries, where formal sector employs

bulk of the workforce. Secondly, the incidence of poverty is high here and persistent over time. It is rooted in several structural features of the economy. These include low wages, their irregular payments and irregular employment.

3.11.35 A few states in India, namely, Karnataka, Kerala and Tamil Nadu demonstrated the viability and potential of old age pension scheme. Some form of social assistance is also given to the workers in the unorganised sector. This could be considered by the other states. However, social security must be targetted to particular vulnerable groups like informal urban workers, migrant workers, women and children etc. However, multiple social assistance schemes will not be effective. It will be meaningful to choose the most cost effective ones among them for application across the board. Formal social security system can not be exclusively relied upon in a developing country like India. It is necessary to reform and to extend their applications where and when appropriate. However, there is considerable scope for improvement in most of the promotional and protective social securities programmes in efficient utilisation of funds through better administration.

3.11.36 Urban informal sector is a sector where mostly migrant workers are found. They are landless poor who come to the cities and find themselves in a difficult situation, staying in most unhygienic conditions. They do not have support of the trade unions. Steps may be taken to improve their lot with social security measures. The disabled workers are also in a disadvantageous position for whom special schemes are needed.

3.11.37 An effort at providing social security to the poor was initiated in the Eighth Plan period in the form of a National Social Assistance Programme (NSAP). The programme comprises (i) Old Age Pension, (ii) Maternity Benefit and (iii) Family Benefit for the girl child in particular. This has been implemented mainly as a programme for the poor under the broad head 'Poverty Alleviation in Rural Areas'. In the Ninth Plan, an effort will be made to extend the coverage of NSAP to the casual and the self-employed workers in informal sector both in the rural and the urban areas. The objective will be to cover the economically active population outside the organised sector. To begin with, the beneficiaries will be those having income at a level below the average income. As discussed earlier, such a scheme will have to have requisite contribution by local authorities and the State Governments. Since the objective is to cover economically active population, the role of employers and the local authorities is crucial in identification of beneficiaries.

Employment Service

3.11.38 The employment service, set up under the Government comprises Employment Exchanges which register the job seekers and use this information for two purposes; (i) to send the names of the job seekers to organisations where the jobs arise and (ii) to present the data on job seekers and job placements as employment market information. Promotion of self employment is also achieved by providing information on the opportunities available. Registration of some special groups of job seekers like physically handicapped, professionals and executives, besides the demand for labour in specific industries like the coal mines and the plantations, is also attempted.

Towards a National Employment Service :

* Present Employment Service set up took shape at a time when the public services were expanding and there was a sharp increase in urbanisation linked with expansion of the organised services sector. There is a need for reorientation of Employment Service in the context of emerging markets.

* Employment Exchanges should be organised under a local society which can raise resources from the beneficiaries -the employees and the employer in return for the information provided.

* Area specific studies to assess the manpower needs of both the organised and informal sectors at district levels to be carried out.

* The ability of the existing employment service set up to identify the job seekers can be utilised for determining those eligible to get benefits related to unemployment.

3.11.39 This set-up took shape at a time when the public services rendered by the Government were expanding, the supply of educated manpower was increasing and there was a sharp increase in urbanisation linked with expansion of the organised services sector. The legislation on compulsory notification of vacancies, enacted in 1959, sought to bring the information on private sector job

demands into the employment exchange information system. The function of identifying the job seekers has been assumed now primarily by the organisations where jobs arise. The private sector does not, practically, use the employment service provided by the Government. A number of placement agencies function outside the Employment Exchange set-up. Within the Public Sector, the personnel selection function has been strengthened, reducing sharply the reliance on Employment Exchanges. The Governments now reach the job seekers directly when a sizeable job demand arises. The number of jobs that arise in the public sector has reduced sharply with the reorientation of the role of economic planning. A number of special employment promotion schemes in small scale industry, khadi and village industries, animal husbandry and rural development do not have any linkage with this employment service. Within the public sector, including the Government administration, the role of employment exchanges in personnel selection has, therefore, practically vanished.

3.11.40 Some of the State Governments have attempted to enhance the utility of the employment service set-up. The efforts have been made in two directions, one is in extending the reach of the employment service set-up by taking the service closer to the people with the help of the available infrastructure facilities. The second is in helping the identification of the persons who are unemployed and can be considered for support. The Government of Gujarat has attempted to utilise the employment service set-up at the Taluka level by bringing the job seekers and the job providers together in Bharti Melas. The Maharashtra Government, in its programme of State-wide employment guarantee, intends to use the employment exchanges to identify the beneficiaries. The West Bengal Government has provided unemployment allowance to those registered, and in the process has generated some information on the number of unemployed persons in the State, by identifying them.

3.11.41 The strength of the present employment service set-up lies in its ability to function close to the job seekers at the field level. It is difficult to expect this set-up to provide "intelligence" on the labour market as this function requires strong technical capabilities. Such intelligence has to be gathered on "sample basis" rather than on "enumeration basis", which is the normal approach to data collection used by the Employment Exchanges. Most

job seekers, registered at the Exchanges, are those looking for a change and are not necessarily unemployed. Efforts at streamlining the capabilities for the identification of the actual unemployed have been made by using computers to maintain and update the information on the job seekers.

3.11.42 National Employment Service in the context of newly emerging market scenario has to be reoriented. The employment Service must accept its enhanced role and pay greater attention to compilation and dissemination of comprehensive Labour Market Information, Employment Promotion and Vocational Guidance and give up excessive reliance on traditional registration and placement activities for the organised sector. Unorganised sector needs to be covered and focus to be shifted towards employment generation taking shape in the private sector, particularly in the services sector and not traditional manufacturing sector wherein growth of jobs has moderated downwards. Regular flow of data in respect of employment in the informal sector of economy needs to be generated through strengthening of Employment Market Information Programme.

3.11.43 The Employment Service needs to contribute towards employment management by providing reliable data base generated through surveys on the labour market process and skill needs by assuming the role of coordinator of promotional activities undertaken by different agencies. Area specific studies to assess the manpower needs of both the organised and informal sectors at district levels are required to be carried out.

3.11.44 If the Employment Exchanges are to function as placement agencies meeting the needs of the private sector, they should not function as a Department of the Government. These should be organised under a local society, which can raise resources from the beneficiaries - the employees and the employer, in return for the information provided. Wherever the management of an existing Employment Exchange is transferred to a local society, the State Government can consider offering a subsidy, equivalent to the revenue expenditure of the Government on running the employment exchange. The subsidy given to the society managing the employment promotion function, thus will be at no additional cost.

3.11.45 The ability of the employment service set-up to identify the job seekers can be utilised for determining those eligible to get benefits related to unemployment. At present, an "unemployment allowance" is not feasible. However, any effective scheme of social security to the working population has to be eventually based on an unemployment benefit, replacing the large number of schemes through multiple Central and State departments, which use multiple criteria to identify the beneficiaries namely poverty, backward class, minority status, gender, physical handicap, rural artisan, backward area etc. Each of these schemes seeks to benefit some one who needs employment and attempts to devise its own criterion and procedure for "identification" of the beneficiary. In the long run, the resources of Plan for social development will increase. But it is not possible to fulfil the entire needs of social infrastructure through public finance. Ultimately, the resources for this will have to come from the purchase of the service by the consumer in need of the service. An employment service set-up that functions close to a small population unit size can be an effective arm for providing social security benefits to those facing temporary spells of unemployment. A beginning in this direction will be made in the Ninth Plan.

3.11.46 Presently, the employment service mainly caters to the needs of jobseekers and requirement of the employer is not so much looked after. The Employment Service should provide quick and good quality service to the employers as well as employment seekers. The educational and training needs for entry in emerging establishments of private sector having large employment potential must be identified. Employment service should also cater to the needs of the persons seeking to pursue avenues for self-employment.

3.11.47 There is need for a coordinated action between Centre and States for evolving an effective employment service so that the existing gaps in the system are narrowed down. The gaps which already exist in the field of vocational guidance and in terms of computerisation of employment exchanges may be reduced. Employment Market Information Programme run through the employment exchanges needs to be strengthened.

Vocational Training

3.11.48 The National Vocational Training System (NVTS) seeks to provide training for developing the skills for production in those entering the labour force. Two major resources for such training are the Industrial Training Institutes, (ITIs) and the 25000 industrial establishments that take part in Apprentice Training. The National Council for Vocational Training (NCVT), a tripartite body under the Ministry of Labour, supervises this work. Vocational education and technical education are under the purview of the Ministry of Human Resource Development. The intake is 4.74 lakh trainees in the 3083 ITIs in the public and the private sector and another about 2.59 lakh under the Trade Apprentice Scheme. Within the public sector, the States operate the ITIs and the Central Government trains the instructors at the Advanced Training Institutes (ATIs) and has a few ITIs for women. The Director General of Employment & Training (DGE&T) in the Union Ministry of Labour co-ordinates the activities among the Centre and the States.

3.11.49 The institutional set-up under DGE&T has evolved over a fifty year period with a clear definition of functions and responsibilities among different agencies for imparting training, curriculum development, and technical approval of the institutes. Training is imparted mainly in the engineering trades as a response to the requirements during the period of rapid expansion of engineering and capital goods industries in the manufacturing sector.

3.11.50 A few trades outside the engineering field are also covered but the bulk of the services sector, and the training needs of industries other than manufacturing, are handled by agencies other than DGE&T, such as the electronics establishments, agricultural institutions and medical institutions. For many of the large services sectors, such as transport and construction, much of the training skills are acquired on job. Since the DGE&T has concentrated on the provision of training of a reasonable standard, it has not been able to extend its area of operation beyond engineering into the services sectors.

3.11.51 Some of the existing difficulties in the system of vocational training are uneven spread of ITIs in different regions, small coverage out of the total school pass outs and drop outs, trade obsolescence, lack of training infrastructure, shortage of experienced staff etc. Training programmes being standardised on a national basis lack the desired flexibility to meet the regional and local needs. The procedural requirement for affecting

changes are time consuming. Existing instructional packages in different trades need to be updated and made more attractive.

3.11.52 Women constitute a significant part of the work force. The National Vocational Training Institute in NOIDA (UP) and the Regional Vocational Training Institutes for women in different parts of India impart basic and advance levels of vocational training to women. Special attention is given to the modernisation and establishment of women Industrial Training Institutes under the World Bank aided Vocational Training Project. A women's Cell under the Office of Director General of Employment and Training is also coordinating with the States in the matter of Vocational Training for Women. The employment exchanges take special care to cater to the job needs of women registered with them. Proper linkage in respect of women training may be established between Director General of Employment and Training (DGE&T), Ministry of Labour and other Ministries like Department of Women and Child Welfare etc. and the training facilities available in the Institutions created or to be created under the education, health, agriculture, welfare, tourism sector plan programmes. DGE&T (Women Directorate) should be provided a role in making such linkages effective.

3.11.53 In the Ninth Plan, the Central Government will seek to strengthen the accreditation facilities for the training institutes on the pattern of the All India Council of Technical Education. Since the States have had the experience of actual training activity over a long period, they should also take up such functions through the State Councils for Vocational Training. In the Central Plan, the DGE&T may reduce its role on imparting training to the trainees and the instructors and extend its institutional expertise to the services sector, modern as well as traditional. As a leading agency for training those entering labour force, the DGE&T can co-ordinate the activities for the development of training courses in the fields of health, instrumentation, transportation, agriculture, rural industries, handicrafts, etc.

3.11.54 Enrolment of students at class X level is of the order of 75 lakh. The intake of the Vocational Training System is less than ten per cent. of this. The position will not be very different even if the training facilities outside the NVTS set-up are included. Proper training being an essential input for improving labour productivity, a comprehensive view of the training facilities across all types of trades deployed in the production of goods and services needs to be taken by one agency. It is only through such an exercise that an appropriate choice in the distribution of public resources between academic education and training for production activities can be made. This will be attempted in the Ninth Plan. The DGE&T could be a suitable resource centre for this purpose.

3.11.55 In those parts of the country like the Southern States where industrialisation has taken place much earlier, the intake capacity in the non-Governmental ITIs is more than twice of those in the Government ITIs. In other parts of the country, the non-Government ITIs have less than one fourth of the Government intake. If the training needs of all the entrants to the labour force are to be met, the Government alone cannot deliver the goods. The training cost per seat has to be reduced and the course content made responsive to the needs of the local industry. The training institutes, that generate resources by way of fees, are better equipped, institutionally, to respond to the needs of the

industry. In the Ninth Plan, the effort will be to increase sharply the intake in non-Government ITIs in the Northern and the Western States. Institutional set-ups, such as the Societies, with none or only a token input of public resources will be encouraged.

311.56 There is a need for demonstrating to the younger persons the benefits in terms of well-being and career development accruing from industrial training. At present, very few surveys comparing the career development of the youngsters who take to training at the right age vis-a-vis those who continue with academic education, are available. The mistaken notion that vocational training is only for the 'school drop-outs' needs to be dispelled and results demonstrated widely through applied manpower research.

311.57 The existing Vocational Training system is more supply oriented rather than demand oriented. It is, thus, less responsive to the changing technological and market requirements. Accurate, timely and sufficient data with regard to the absorption of trained craftsmen and apprentices in different sectors of economy, is largely absent. Such information is necessary not only for those trained under the Labour sector institutions but also for those trained under the Khadi, Village, Small Industries etc. institutions. Without such a database, the feedback for making changes in the system at the policy and operational level is not available and the expected outcome is all the more difficult to anticipate.

311.58 In order to bring qualitative improvement in the system, policy making functions on vocational training may be retained by the Director General of Employment and Training whereas delivery functions may be delegated to the All India Council of Vocational Training by formation of statutory boards on trade testing, affiliation, apprenticeship training etc. Ministry of Labour is considering autonomy for some of its institutes to allow flexibility in their day to day work instead of approaching the Government for approval in routine administrative matters.

311.59 At present, there is little linkage between vocational training and vocational education both at Centre and at the State level. There should be coordination between vocational education and vocational training imparted by various departments, so that the programme designs, curriculum and service provided are in conformity with each other.

311.60 In the available ITI seats in the country, the North Eastern States have a very low share. The employment opportunities in the government offices have shrunk due to constraint of resources faced by the State Governments. In the Ninth Plan, a special effort will be made to expand the vocational training facilities in the North-Eastern States with support from the Central Plan for this Sector, under Ministry of Labour.

Children at work

311.61 The framers of the Indian Constitution consciously incorporated relevant provisions in the constitution to secure compulsory universal elementary education as well as labour protection for children. Labour Commissions and Committees have gone into the problems of child labour and made extensive recommendations. The existence of child labour in hazardous industries is a grave problem in India. Efforts will be taken in the Ninth Plan to modify the existing National Child Labour Project. A major activity undertaken under this scheme is the establishment of special schools to provide non-formal education, vocational training, supplementary nutrition, stipend, health care

etc. to children withdrawn from employment. Under the existing scheme, there are 76 such projects throughout India. This will help the working children and the children who do not have any access to the formal schools because of parental poverty. Parental poverty and higher birth rate in 1970s were and still are responsible for a large number of children joining work force at an early age. This scheme will partially take care of the existing child labour problem and this will be supplemented by schemes like universal education etc. run by other Departments. Government is also actively involved in generating awareness among the people against employing a child as a labourer, especially in hazardous industries. This programme will continue in the Ninth Plan and the responsibility of education of child labour will be taken up by the Ministry of Labour.

Research in Employment and Manpower

3.11.62 The Institute of Applied Manpower Research (IAMR) is a society carrying out training and research activities. The Institute has conducted training courses for national and international participants. Its infrastructure needs to be strengthened. The Institute is supported by grants-in-aid from the Planning Commission. At present, the five theme areas for research on which the institute is working are: i) Employment and Unemployment, ii) Human Resource Development, iii) Science, Technology and Industry, iv) Social Concerns and v) Manpower Information system. The research capabilities of the IAMR for carrying out research in employment and unemployment will be strengthened further.

3.11.63 The work of the Institute should also contribute towards a better understanding of the effect of various social sector programmes on building up of human capital. Effective networking of research efforts with Labour Bureau, Labour Institutes at Centre and States, Statistical Departments at Centre and States, and the Central and State Departments responsible for social sector programmes can make a significant contribution towards this objective.

3.12 ART AND CULTURE

3.12.1. It is widely recognised that there is an integral relationship between art and culture on the one hand and socio-economic development on the other. More than any other sector of contemporary life, it is art and culture which has been the truly unifying, enduring and meaningfully integrating instrument of harmony and social cohesiveness. It is in the realm of culture that the Indian dynamics of internalising change within tradition, of bringing about consonance between modernity and traditional wisdom has most effectively manifested itself.

Progress Since Independence

3.12.2. Since Independence, the main concentration was on the building up of cultural institutions in the field of Archaeology, Anthropology, Ethnography, Archives, Libraries, Museums, Akademies etc. for conservation and promotion of the country's cultural heritage. Central Conservation Laboratories were set up. Cultural institutions of higher learning and research in universities and departments were further developed to promote creative talent and specialised studies through various scholarship schemes. Cultural relations with other countries were also strengthened by developing the Indian Council of Cultural Relations. Since 1970's, attention has also been given to increasing the cultural awareness among the students by strengthening the cultural content of the curriculum at various stages of education, thereby linking culture with education so that the educational system could help in building up the cultural and social identity of the nation. Basic infrastructural facilities have been expanded. Culture has also been recognised as one of the basic concepts to be integrated with all development activities, particularly at various levels in the education sector for making it more relevant in the life of the people. During the successive Plans, in order to build up cultural momentum in the country, emphasis has been laid on contemporary creativity, preservation, documentation and conservation of cultural heritage through Archaeology, Archives, mural & tribal arts etc. Special attention has been given to sensitising the Indian youth regarding the country's rich cultural heritage and for promoting community participation. A number of programmes for preservation of monuments and sites of national importance were also taken up on priority basis. While formulating programmes for welfare of tribals and other social and ethnic groups in different sectors, the element of cultural development has also been taken into account. Similarly, in the development of Indian languages and book promotion, important components of our cultural policy have been incorporated.

Progress in the Eighth Plan

3.12.3. During the Eighth Plan the thrust was on strengthening the regional and local museums; promoting tribal and folk culture and their systematic documentation by institutions like Anthropological Survey of India, Indira Gandhi Rashtriya Manav Sangrahalaya, Zonal Cultural Centres (ZCCs), National and State Akademies of literature, performing, plastic and visual arts, State Departments of Culture, and setting up Shilp Grams to bring the craftsmen and artisans from all corners of the country to display and market their products. People's initiative for dissemination of knowledge about the country's various folk, tribal and classical arts, music, dance, theatre etc. was encouraged. Stress was also laid on improving literacy through libraries and associated activities.

3.12.4. One important scheme emphasised during the Eighth Plan was that of financial assistance for the establishment of multi-purpose cultural complexes in States, including those for children, for creating infrastructure like auditoria, libraries, museums etc. The Archaeological Survey of India continued the work of conservation of 3,562 Centrally protected monuments, including 16 World Heritage monuments. As many as 450 monuments were taken up for comprehensive conservation work including structural conservation and environmental development.

3.12.5. The Maulana Abul Kalam Azad Institute of Asian Studies was established at Calcutta as a research and training centre on the life and works of Maulana Azad. The Institute undertakes studies on social, cultural, political and economic movements in Asia from the middle of the nineteenth century. Srimamta Sankaradeva Kalakshetra has been set up for protecting, preserving and promoting the cultural heritage of the people of Assam. Kalakshetra, Chennai was declared an institute of national importance. Financial assistance was also provided through a number of schemes to dance, drama and theatre ensembles as also to persons distinguished in arts and letters and such other disciplines for their creative work. Training was imparted to a number of teachers and resource persons by the Centre for Cultural Resource and Training to promote interlinkages between culture and education. Cultural kits and audio-visual programmes were distributed among students. Young children were awarded cultural talent scholarships.

3.12.6 The Sahitya Akademy brought out six volumes of Encyclopaedia of Indian Literature, an Integrated history of Indian Literature and an Anthology of Modern Indian Literature. It published more than one thousand titles in various languages and launched a Translation Bureau at Bangalore. The Lalit Kala Akademi and the Sangeet Natak Akademi continued with their on-going programmes. The National School of Drama opened a regional centre at Bangalore and organised exhibitions and festivals of plays.

3.12.7 The National Council of Science Museums executed the Science City Project at Calcutta. The Convention Centre was opened on 21st December, 1996 and the remaining wings were opened on 1st July, 1997. The National Museum launched the scheme of conservation of wall paintings in 1996-97. The National Archives of India continued with its various programmes. The Public Record Act was enacted in 1995. The National Archives of India established its regional centre at Bhubaneswar and provided financial assistance to 23 States/UTs and 178 organisations for the development and preservation of archival repositories and preservation of manuscripts. The Archives also brought out Vol. III & IV of the Guide to the Sources of Asian History.

3.12.8 The Anthropological Survey of India continued with its "People of India" project, covering the anthropological profile of 4635 communities of the country. Out of the proposed 43 volumes, it has already brought out 14 (6 in the National and 8 in the State series). Indira Gandhi Rashtriya Manav Sangrahalaya (IGRMS) organised an international meet on tribals and analogous people, attended by delegates from 27 countries, besides the representatives of all the States of India.

3.12.9 The National Library, Calcutta initiated the work of computerising its data base. The Central Secretariat Library at New Delhi, as part of modernisation effort, installed an automated integrated system for giving on line public access catalogue. The Raja Ram Mohan Roy Library Foundation, Calcutta promoted library services in the country by providing matching financial assistance to 18 States, 2 UTs and other organisations working

in the field. It also extended its mobile library services to the physically and socially handicapped persons. Some of the manuscript libraries like Thanjavur Raja Sarfoji Sarswati Mahal Library (TRSSML), Khuda Baksh Oriental Public Library, Patna and Rampur Raza Library, Rampur continued with the work of preservation of the manuscript heritage of the country. The TRSSML is also preparing micro-film copies of their manuscripts.

3.12.10 The Indira Gandhi National Centre for the Arts continued its work through its five divisions viz. Kalakosa, Kalanidhi, Kaladarshan, Jaanapada Sampadha and Sutradhara. Its building project is in progress.

3.12.11 The Salarjung Museum, with its wide range of collection of art objects, and rare manuscripts in Persian, Arabic and Urdu, undertook the preservation of more than 2000 objects by chemical treatment and restored 20 oil paintings.

3.12.12 The Nehru Museum and Library, engaged in research in modern and contemporary Indian history, brought out 19 publications. The Asiatic Society, Calcutta continued its activities for the improvement of library and museum services, besides scientific preservation of its collection. It has introduced computerised cataloguing of old books, papers, paintings by old masters, sculptures, photographs, pictures etc.

Objectives and policy framework for the Ninth Plan

3.12.13. The activity in the culture sector will continue to be the preservation, conservation, dissemination and promotion of all aspects of art and culture. The focus will be on comprehensive plans for conservation of the archaeological heritage and development of the monument complexes in the country. There will be an emphasis on the development of museum complexes which are a hub of activity for the community and where not only the heritage is preserved and displayed but is actively linked to education and entertainment also. In the field of promotion and dissemination of culture, the effort would be targeted towards documentation of rare and vanishing art forms, promotion of folk and tribal arts and crafts and oral traditions which are threatened with extinction. Zonal Centres are the arm of the department for this purpose and need to be strengthened by providing additional financial support. A National Mission for Manuscripts is being launched in three phases to identify, list, preserve and provide access to rare manuscripts strewn all over the country which are the repository of our ancient wisdom. Networking of Central and State institutions of culture including State Governments, State Academies and Zonal Cultural Centres, Libraries and Museums will be a high priority item.

Implementation and Delivery System

Art and Culture

3.12.14. The Archaeological Survey of India would take up 300 monument complexes, including 16 monuments on the World Heritage list, for comprehensive development. A scheme of cataloguing through the establishment of a central computerised documentation centre for movable and immovable cultural properties is proposed to be undertaken. A scheme for site management of monuments will be initiated for preserving the monuments and reviving the historic gardens in their original style. Setting up and upgradation of Site Museums will be another important area of work. Computerisation and modernisation of circle offices of Archaeological Survey of India will also get attention.

3.12.15. Courses in Museology will be introduced in various institutions to overcome the shortage of qualified personnel for the existing cultural institutions. Priority will be given to the publication programmes of the ASI, National Museum, Anthropological Survey of India, National Archives and the three national Akademies so as to bring out publications of high quality. Fellowships for authors and writers would be provided to make the programmes attractive. Royalty could also be given as an incentive.

3.12.16. The scheme for conservation of wall paintings, initiated in 1996-97, will be carried forward. A scheme will be initiated to have one museum in each district of the country, which would be multi-disciplinary in nature and specific to that area for acquainting the people about the country's heritage.

3.12.17. The National School of Drama (NSD), the State Akademies and the Zonal Cultural Centres have worked towards taking culture to people through various schemes of promotion and dissemination. The Zonal Centres have created a meaningful dialogue between artists of different regions and the craftsmen representing the traditional mode of life. During the plan, Zonal centres would concentrate more on tribal/folk art forms and establish documentation of rare and vanishing art forms as their priority area. They will also increase their outreach so as to cover district headquarters and mofussil towns. The centres will be strengthened by addition to their corpus fund over the plan period, as a falling interest rate regime has shrunk their incomes from the existing corpus. To provide sustenance to artists engaged in performing arts, an increase in the scale of salary and production grant under 'Guru-Shishya Parampara' scheme is proposed. The scale of assistance to artists in indigent circumstances is also proposed to be increased to cover the increase in cost of living. Such financial assistance under 'Guru Shishya Parampara' is currently being provided to about 2000 artists annually.

3.12.18. The Department of Culture will strengthen the network for preservation of classical folk and tribal arts and crafts consisting of the Indira Gandhi Rashtriya Manav Sangrahalaya, the Anthropological Survey of India, the Zonal Cultural Centres, the three national Akademies, the NSD, the State Departments of Culture and the State Akademies. The scheme of National Culture Fund, initiated in 1996-97, will be given a thrust during the Ninth Plan for promoting corporate involvement and people's participation in preserving the cultural heritage of the country.

3.12.19. Another area of focus will be linkage between culture and education. The Centre for Cultural Resources and Training would develop a programme for training of trainers and cultural inputs for the school curriculum. Other programmes would include a training scheme for cultural administrators in the Akademies, Zonal Centres and Govt to improve their management skills and impart knowledge of art and culture and a scheme of assistance to State and Central institutions for developing cultural software.

3.12.20. There is a proposal for opening more Regional Resource Centres of the National School of Drama in other parts of the country. The NSD will also work for propagating Indian theatre through workshops, seminars and exchange of troupes both within the country and abroad. A theatre festival at national level is also planned.

3.12.21. Computerisation will be undertaken with special focus on the creation of an inventory of archival heritage, preservation of public records and manuscripts kept in the archives and archaeological artifacts and manuscripts kept in the museums and libraries.

Inter-Sectoral Coordination

3.12.22. Efforts will be made to bring about inter-sectoral coordination among the Ministries/Departments having inter-related subjects like tourism, education, information & broadcasting, etc. A media policy for culture will be initiated with the twin purpose of emphasising cultural aspects within India and propagating Indian culture to the outside world.

3.12.23. Special emphasis will be laid on regular monitoring of the schemes of the Department and expenditure of autonomous organisations/institutions receiving grants under Plan and for this State Govts. and State institutions will also be involved.

3.12.24. To have a forward linkage with the National Literacy Mission, it is imperative that we increase the spread of our public libraries to new areas in rural regions of the country. A scheme for assisting and establishing libraries at Panchayat level is proposed in 9th Plan with initial coverage of the North-East region, as they already have a tradition of village libraries. Later on, the scheme will be spread to other parts of the country. In addition the emphasis will also be on old libraries with rare manuscripts such as Khuda Baksh Oriental Public Library Patna and Thanjavur Saraswati Mahal Library, Thanjavur.

3.12.25. To keep pace with the latest in Information Technology the facilities in public libraries will be upgraded and latest equipment provided. A networking of Central and State libraries is also planned.

3.12.26. Under Anthropology and Ethnology, it is proposed to give a thrust to up-gradation of institutions such as Indira Gandhi Rashtriya Manav Sangrahalaya, Bhopal and improvement of infrastructure of Anthropological Survey of India. This will be part of the Department's effort to preserve and document vanishing rare art-forms, with special emphasis on tribal and folk traditions and crafts.

3.12.27. For the optimum utilisation of available resources in the computer and communication technology more effectively, a proper networking of all libraries and resource centres will be given due emphasis. For this purpose, the development of a national network of libraries is envisaged.

3.12.28. Efforts will be made to harness the advances made in the field of electronics to provide better facilities to physically handicapped people, especially those visually handicapped. It is proposed to have Braille sections in public libraries and to extend other facilities as well.

Manpower

3.12.29. Adequate finances will be provided for developing expertise in terms of trained manpower for both physical and chemical conservation of monuments through Central/State Plans.

3.12.30. In the field of Libraries and Informatics, besides formal courses of Library Science and Information, continuing education for practising librarians, quality improvement programmes for faculty and modernisation of existing library schools to enable them to teach modern information technology would be introduced.

3.12.31. The Centre for Cultural Resources and Training will devise new training programmes for programme officers of State Academies and Directorates of Culture / Zonal Cultural Centres and National Academies. Management input would be provided to achieve optimum results.

3.13 YOUTH AFFAIRS AND SPORTS

Introduction

3.13.1 Youth constitute the most creative segment of any society. Their role and contribution are vital to all societies and more so in a country like India with wide social, cultural and other demographic diversities. Youth constitute about 34% of the total population of India. The need and importance of physical education for health and physical fitness with a view to increasing individual productivity, and the value of sports as a means of recreation and with a potential for promoting social harmony and discipline are well recognised.

YOUTH AFFAIRS : Achievements Since Independence:

3.13.2 The importance of youth in national development has been a recurring theme in all Five Year Plans. The National Discipline Scheme introduced in the Second Plan continued in the Third Plan. The Fourth Plan gave special emphasis on the needs of the youth and training of youth leadership. Support was provided to voluntary organisations to participate in youth development programmes. Community Service was developed as an integral part of the curriculum for education, instruction and training of all students enrolled in educational institutions.

3.13.3 During the Fifth Plan, expansion and strengthening of National Service Scheme and Nehru Yuva Kendras received emphasis. National Service Volunteer Scheme was launched. In the Sixth Plan an effort was made to effect coordination of different programmes. The services of youth were increasingly utilized for conservation of environment and generation of mass awareness and community education programmes. A National Youth Policy was framed in the Seventh Five Year Plan and accordingly a Plan of Action was formulated in 1992.

3.13.4 The main schemes in the Seventh Plan for student youth related to Bharat Scouts and Guides, National Service Scheme and National Service Volunteer Scheme. At the end of the Seventh Plan enrolment in these schemes was: NSS - 10 lakhs, Scouts and Guides - 22 lakhs and NSVS - 3000. Considering the large number of school and college students this coverage was inadequate.

3.13.5 During the VII Plan for non-student youth the main schemes were Nehru Yuva Kendras the number of which increased to 3998 and Youth Clubs where the increase in number was from 25,000 to 50,000. The Programme Evaluation Organisation of the Planning Commission carried out an evaluation of the programmes. The evaluation indicates some inadequacies such as disparities in service conditions of youth coordinators, lack of proper linkages with development activities of their departments etc. Steps were initiated to take up National Integration Programmes, particularly in the north-east and the border areas. National Youth Awards were also instituted.

Eighth Plan Performance Review

3.13.6 The Eighth Five Year Plan and the National Youth Policy had inter alia emphasized (i) organising the youth force for the promotion of national and cultural integration; (ii) promoting

awareness and involvement of youth in social programmes pertaining to literacy, environment, health and family welfare, and community development; (iii) fostering and developing interaction between youth from different parts of the country specially the isolated border and tribal areas; (iv) promoting education and self-employment capability of the rural youth, especially of girls and youth in backward areas; (v) developing the interest of youth in adventure and other outdoor activities; and (vi) providing opportunities for leadership training.

3.13.7 The Department of Youth Affairs & Sports made major strides during the VIII Plan period. The number of Nehru Yuva Kendra went up from 398 to 499. Number of Youth Clubs affiliated to Nehru Yuva Sangathan went up to 1,64,000 by the end of the VIII Plan Period. The number of Volunteers enrolled under National Service Scheme went up to 13 lakhs during the VIII Plan period covering 158 universities, 7,000 colleges and +2 institutions. A new scheme for the setting up of "Youth Development Centres" for a group of ten villages was introduced during the VIII Plan period. These Centres are responsible for creation of facilities for information, sports, training and for taking up youth programmes for rural youth. A one time financial assistance of Rs.30,000/- is given to each Centre to cater to its requirements of equipment and furniture etc. 340 such Centres were assisted during the VIII Plan period.

3.13.8 The Government of India constituted a Committee for National Youth Programme (CONYP) in pursuance of National Youth Policy. National Youth Festivals (Yuva Utsav) were organised every year since 1995. Outstanding individuals and organisations were rewarded. Work on a new National Youth Policy was initiated during 1996-97.

3.13.9 During the Eighth Plan, the field operations of Nehru Yuva Kendra Sangathan were extended to provide more opportunities to the rural youth. New programmes, namely, Health Awareness Units, Panchayati Raj Training, Self-Employed Workers Association Kendras etc. were introduced. Training programmes were organised by NYKS on health awareness in many villages of the country. NYKS also took up 'Youth Against AIDS' campaign in several districts in addition to 'Mass Awareness Generation Campaign on GATT'. Watershed Management and Wasteland Development Programmes were integrated into NSS programmes under "Youth for Sustainable Development". State level adventure academies were established in Gujarat and Tripura. Aerospots and Water sports were promoted in several states. Public trusts and NGOs provided vocational training programmes to promote self-employment for youth. So far 50 Youth Hostels have been commissioned and 23 are under various stages of construction.

Ninth Plan Thrust

Harnessing Yuva Shakti

3.13.10 The National Agenda for Governance states: "Our youth are the strength of the family, village, locality and the community, they are also the future of our nation. We will take all necessary steps to mobilise this most idealistic, inspired and energetic section of our society in the mission of nation-building. For this purpose, we shall build national consensus for the creation of a National Reconstruction Corps aimed at environmental protection, ecological tasks, reclamation of waste land, including

afforestation, and for spreading literacy. We will have a time-bound programme for promotion of sports."

Action Plan

New thrust areas of youth programmes will focus on harnessing yuva shakti by taking into consideration the following:

3.13.11 A new scheme of National Reconstruction Corps (NRC) will be formulated aiming at environmental protection, ecological tasks, reclamation of waste land, including afforestation, spreading literacy and other community based nation building activities. Youth volunteers to be enrolled as members of NRC will be given a honorarium and will simultaneously be given

vocational and enterprise development training, enabling them to take up self employment ventures. A national level apex organisation for rendering technical and financial assistance to youth for setting up micro enterprises for self employment will be set up.

3.13.12 The Department of Youth Affairs and Sports as a nodal agency for extending necessary support and dissemination of information to the targetted youth, will work out modalities of networking with other Ministries/Departments for effective and efficient utilization of resources. The training of youth will be development-oriented in order to provide facilities to those who need them. Market surveys on specific skills will be conducted for specific product-oriented training. Self-employment and entrepreneurship development will be emphasized.

3.13.13 Community polytechnics and NGOs will be involved extensively in vocational training programmes of NYKS in order to provide access to rural and marginalised youth. Assistance to Voluntary Organisations and Self-Help Groups working in the field of Youth programmes will be encouraged. Voluntary Organisations will be encouraged to work in the field of adolescent youth.

3.13.14 The adolescent youth will receive particular attention. A concerted effort will be undertaken to build for adolescents a relatively stable place in society so as to facilitate their healthy development.

3.13.15 Youth with special needs will receive priority attention. Programmes for young people with physical and mental disabilities, slow learners, youth prone to social deviance, youth with drug addiction and HIV seropositives will be further strengthened and coordinated.

3.13.16 Youth Clubs will be further strengthened. The aim will be to have a club in each village, which will be of multi-dimensional character, so as to address the problems of youth and channelise their energy for productive endeavour and good citizenship.

Sports Achievements Since Independence

3.13.17 Physical education, games and sports; and yoga in educational institutions were promoted right from the beginning of the planning era. During the Second Five Year Plan, National College of Physical Education and National Institute of Sports were established. Facilities for coaching of games and rural sports were expanded. In the Sixth Plan, spotting and nurturing of talent was emphasized. In the Seventh Plan emphasis was given to adventure sports. Infrastructural development was taken up for the purpose. The Sports Authority of India implemented a number of programmes such as training of coaches, establishment of centres for sports medicine etc. On the basis of the National Sports Policy framed during the Seventh Five Year Plan, an action plan was formulated in 1992.

3.13.18 The Asian Games 1982 gave a new impetus to sports and games. The implementation of the National Sports Policy, 1984 was taken up. The policy emphasized importance of health and physical fitness through physical education and participation in sports; to achieve these, the desirability of creating infrastructure and facilities were emphasized. Sports Authority of India implemented the following schemes: (i) Under the National Physical Fitness Scheme, a national level display 'Bharatiyam' with 50,000 children participating was staged in 1989. (ii) In 1989 the Sports Project Development Areas Scheme was introduced to provide infrastructural facilities for training, coaching and coordinating competitions. Each SPDA covers 80-100 development blocks. So far 25 SPDAs have been sanctioned. (iii) About 8000 coaches were trained under National Coaching Scheme through different centres of the Netaji Subhash National Institute of Sports. Of these, more than 1600 have been deployed. (iv) Sports talent from tribal, coastal, hilly and far-flung areas of the country was scouted under the Special Area Games and trained in competitive games. Archery and Watersports centres were established under the scheme.

3.13.19 The Department of Sports continued to implement the schemes of the National Sports Organisation which included creation of sports infrastructure in colleges and universities with assistance made available through the UGC, financial assistance to sports clubs, and scholarships to women for promotion of sports among them.

3.13.20 In physical education, the infrastructure consists of Laxmibai National Institute of Physical Education, Gwalior, Regional Centre at Tiruvananthapuram and about 200 colleges of physical education.

Plan Performance Review

3.13.21 The thrust areas of the VIII Plan as also the Plan of Action (POA 1992) for Sports Policy inter alia emphasized (i) creation of desired sports climate in the country and generating conscious responsibility in every citizen to keep physically fit and participate in games and sports; (ii) introduction of sports and physical education in schools, creation and improvement of facilities beginning with primary and secondary schools and ending at college level with networking between different levels; (iii) adoption of scientific approach including sports physiology, sports psychology, sports medicine and balanced nutrition to

enhance sports potential; (iv) participation of State Governments in developing comprehensive plan for development of sports; (v) promotion of sports and physical education among girls and marginalised populations; (vi) identifying talent and training in sports; (vii) making National Federations financially autonomous and encouraging public to invest in sports by giving them incentives like tax rebate and relaxation in import duty etc.

3.13.22 Creation of lot of sports infrastructure and laying of synthetic tracks and surfaces have been undertaken during the Plan. Many rural schools have been assisted for development of playfields and sports equipment. Infrastructural facilities have also been created in a number of colleges and universities. Prize money is given to winning schools at district level tournaments. Talented school children in the age group 9-12 years are identified. Special training is imparted to sports persons under Special Area Games (SAG) and Sports Project Development Area Centres (SPDA) schemes.

3.13.23 Annual scholarships are disbursed to University level players through Sports Authority of India (SAI). Scholarships are also provided to champions in the National Women Championship. Evaluation of SAI schemes has been done by Tata Consultancy Services.

3.13.24 A core group on Sports Medicine was set up in 1992 which came up with several recommendations which are being implemented by SAI. SAI has developed Sports Science and Sports Medicine facilities at Delhi, Patiala and Bangalore. Netaji Subhash National Institute of Sports has developed a two-year course in Sports Medicine.

3.13.25 Some corporate investments in sports have been made available for football, hockey, tennis, chess and table tennis etc.

Ninth Plan

Action Plan

3.13.26 For promotion of sports, National Sports Development Fund will be created where private and government contribution will be made for creating necessary infrastructure for sports, its maintenance and organising sports events.

3.13.27 It is proposed to set up sports schools by suitably adopting the Navodaya Vidyalaya Pattern in different States. These schools would mainly be geared to physical education disciplines and have some academic subjects in addition.

3.13.28 There is also a need to take a wider perspective of integrating 'sports' as part of the educational system. For that purpose, Department of Education will earmark funds for sports promotion, upkeep of playgrounds and physical sports infrastructure under Kendriya Vidyalayas and Navodaya Vidyalayas, training of physical education instructors, etc.

3.13.29 Similarly, State Governments will also provide 'additive provision' for 'sports' in their education budgets, so that improvement of sports facilities could be made available to youth.

3.13.30 Department of Youth Affairs & Sports will take necessary action to prepare and update 'Directory of Sports Facilities' both at the Centre and State/UT level and take necessary steps for utilisation of the existing facilities on 'neighbourhood' concept. Necessary guidelines will be prepared in consultation with the State Governments and other authorities.

3.13.31 Greater integration of the scientific facilities, the established and sound principles of sports physiology and sports medicine with requisite quality of manpower relevant to the training needs of sportspersons will be achieved in coming years. Greater importance will be given to further enhance the competencies and skills of our coaches for training the national teams as also for availing up services of world class coaches. Programmes of continuing education of such coaches will be established. Special attention will be given to the North-East region for maximum utilization of available talent.

3.13.32 A policy for promoting the participation of NGOs and industries for their contribution in sharing resources and sponsored programmes for sports and youth activities will be evolved. The private and public sector units will be encouraged to take up promotion and development of sports infrastructure. Sports academies in specific disciplines will be developed under their sponsorship. The existing tax incentive in sports to the corporate houses will be simplified and publicised with a view to attracting as much investment as possible.

3.13.33 The strategy adopted for greater access will involve substantial investment in physical education, infrastructure development and in creating widespread awareness for physical fitness with special focus on school children. The State Governments will be requested to implement the recommendations of the Central Advisory Board on Education to make Sports and Physical Education compulsory subjects in the curriculum.

3.13.34 There is a need to promote Research & Development (R&D) on sports. It is necessary to initiate research on sports medicine using all systems of medicine. Deptt. of Youth Affairs & Sports will inter-act with Defence Research Development Organisation (DRDO) for development of low cost artificial turf surfaces for playing hockey. Indian Institutes of Technology (IITs) will also be approached for research on low cost surfaces.

3.13.35 Sports infrastructure will be made readily available to the public at large so that it can participate in various activities. Various State and nongovernmental organisations will need to be encouraged to build infrastructural facilities. The creation of infrastructure at district and tehsil levels will be the responsibility of the State Governments. There will be maximum utilisation of the existing facilities. Proper coordination, joint effort and congruence of objectives are required to get the maximum output. For this purpose it is necessary to do a detailed analysis and prioritization of schemes.

3.13.36 Special attention will be given to the promotion of sports and games among the handicapped persons by providing specially designed equipment, playgrounds for special education centres, training of special educators and instructors and holding of tournaments etc. A special scheme will be formulated for the promotion of sports and games among the four categories of disabled persons namely, (a) Blind and Visually Handicapped; (b) Deaf and Dumb; (c) Mentally Retarded; and (d) Physically Handicapped. The scheme will provide financial assistance for specially required equipment, play-grounds for special education centres, training of special educators, appointment of sports teachers/coaches in special education centres, training camps, holding of tournaments etc.

3.13.37 A National Programme of Physical Fitness in schools will be taken up, which will involve the training of select subject teachers in the basics of physical education through in-service training programme and measuring the progress of each individual student against a laid down norm.

3.13.38 The North Eastern Region will be given special facilities for promotion of sports. The work on State level Sports Complexes in the State Capitals as well as District level/Sub-district level complexes/centres will continue. A regional agency under the aegis of NEC will fund, monitor and coordinate sports and youth programmes in the region. Development of sports and youth activities in colleges and Universities, upgradation of coaching standards, scholarship schemes for outstanding young athletes, promotion of adventure activities, projects aimed at creating awareness of environmental, national and social issues, training of personnel incharge of various sports and youth facilities, holding of sports tournaments, regional championships in specific disciplines, regional sports tournaments for colleges and universities will be taken up.

**Physical targets (Ninth Plan) under various schemes of
Department of Youth Affairs & Sports**

A. Youth Affairs

Name of the Scheme	Unit	Target
1. National Service Scheme	No. of volunteers No. of Camps	18,00,000 15,000
2. Nehru Yuva Kendra Sangathan & IDARAs (Information Development and Resource Agencies)	No. of programmes	80,820
3. Assistance to volunteer organisations engaged in youth welfare activities	No. of youths	30,000
4. National Service Volunteer Scheme	No. of volunteers	15,500
5. Commonwealth Youth Programme	No. of meetings No. of Youth Exchange programme	18 12
6. Assistance to youth clubs	No. of youth clubs	5,000
7. Training of youth	No. of youths	7,500
8. Special Scheme for promotion of youth activities among backward tribes	No. of Youths	30,000

B. Sports

1. Grant for supply and installation of synthetic surfaces	No. of surfaces each year	4-5 (Hockey & Athletic)
2. Sports Scholarship	No. of Scholarship each year (maximum)	State-level 2500 National level 800 College/University level. 400 Sr. Women 20 Women doing Diploma 10 Women doing PHD 5
3. National Physical Fitness Programme	No. of Schools	To cover all Sec./Sr. Sec. Schools which have the facility of physical teacher.

CHAPTER 4

4.1 AGRICULTURE AND ALLIED ACTIVITIES

Introduction

4.1.1 Agriculture has all along been the most crucial sector of the Indian economy. Agriculture and allied activities make the single largest contribution to the Gross Domestic Product (GDP), accounting for almost 27% of the total. Agriculture provides employment to around 65% of the total work force. Agricultural growth has direct impact on poverty eradication. The share of agricultural products in the total export earnings is also substantial. Many of these industries still depend on the agricultural sector for raw materials as well as for market. Agricultural growth is also an important factor in containing inflation, raising agricultural wages and for employment generation.

AGRICULTURE SECTOR

- Accounts for almost 27% of GDP.
- Provides employment to around 65% of the total work force.
- Contributes 21% of total exports.
- Provides raw material to several industries.

Fifty Years of Indian Agriculture

4.1.2 India inherited a stagnant agriculture at the time of independence in 1947. The first task of Indian Government in the immediate post-independence period was, therefore, to initiate growth process in agriculture. The agricultural policy was governed by a planning framework. The quantum of Plan outlay, its financing and the targets set for the agricultural sector were all decided through the planning process at the State and Central levels. The first three Five-Year Plans concentrated on growth with some institutional changes including abolition of intermediaries in agriculture, like Zamindars and Jagirdars. In the mid-Sixties, a new technology in the form of high-yielding varieties (HYVs) was introduced for cereals. Apart from the new technology, public investment in agriculture particularly in irrigation, was stepped up significantly. The public sector played an important role in promoting agricultural research and education. Large investments were made for the development of research system under the aegis of the Indian Council of Agricultural Research (ICAR) and the State Agricultural Universities (SAUs). Simultaneously, a well designed extension network was created for disseminating new technologies to the farmers. The administered price policy has provided incentives to the farmers. Successive Five-Year Plans aimed at improving the infrastructure through irrigation, stepping-up the use of fertilisers, improved varieties of seeds implements and machinery and supply of credit. As a result there has been a significant increase in the use of modern inputs leading to higher productivity and production.

4.1.3 The agricultural growth rate of around 2.7% per annum in the post-independence period was much higher than the negligible growth rate of 0.3% per annum in the first half of this century. The production of foodgrains increased from 50.8 million tonnes in 1950-51 to about 199.3 million tonnes in 1996-97. The production of commercial crops like cotton, oilseeds, sugarcane, fruits and vegetables, besides livestock products and fisheries have also recorded significant increases during the same period (Table 4.1.1).

Table 4.1.1
Production of Major Crops and Allied Activities:
(1950-51 to 1996-97)
(million tonnes)

Crops	1950-51	1970-71	1980-81	1990-91	1996-97
Foodgrains	50.82	108.42	129.59	179.39	199.32
Rice	20.58	42.22	53.63	74.29	81.31
Wheat	6.46	23.83	36.31	55.14	69.27
C. Cereals	15.38	30.55	29.02	32.70	34.28
Pulses	8.41	11.82	10.63	14.26	14.46
Sugarcane	57.05	126.37	154.25	241.05	277.25
Cotton (m.bls)	3.04	4.76	7.01	9.84	14.25
Non Oilseeds	5.16	9.63	9.37	18.61	24.96
Milk	17.00	21.20	31.60	53.90	68.60
Fish	0.80	1.80	2.40	3.80	5.35

Source: Agricultural Statistics at a Glance, 1997, Min. of Agriculture.

REVIEW OF EIGHTH PLAN

Investment in Agriculture

4.1.4 During the first three years of the Eighth Plan period, the public investment in agriculture (gross capital formation) has shown an upward trend from Rs.1002 crore in 1991-92 to Rs.1316 crore in 1994-95. In the subsequent two-year period, it declined. However, there has been a steady increase in private investment from Rs.3727 crores in 1991-92 to Rs.5867 crore in 1996-97. Decelerating trends in public investment is a matter of concern given the complementary nature of public and private investments.

Table 4.1.2
Agricultural Investment (at 1980-81 constant prices)
(Rs. In crore)

Year	Total GCF in. Agri	Public (GCF)	Private (GCF)	% share	
				Public	Private
1991-92	4729	1002	3727	21.2	78.8
1992-93	5372	1061	4311	19.7	80.3
1993-94	5031	1153	3878	22.9	77.1
1994-95	6256	1316	4940	21.0	79.0
1995-96(Q)	6961	1268	5693	18.2	81.8
1996-97(Q)	6999	1132	5867	16.2	83.8

Q: Quick estimates; GCF: Gross Capital Formation;
Source: CSO, National Accounts Statistics, Various Issues.

Growth of Agricultural Sector

Foodgrains

4.1.5 The agricultural sector has registered an average annual growth rate of about 3.9 percent during the Eighth Plan period. The foodgrains production, which was 168.4 million tonnes in the base year (1991-92) of the Eighth Plan increased to a record level of 199.3 million tonnes in the terminal year (1996-97). During the first three years of the Eighth Plan, the foodgrains production kept on rising but unfavourable monsoon in 1995-96 brought down the production by about 11 million tonnes to the level of 180.4 million tonnes. Total foodgrains target set for Eighth Plan at 210 million tonnes was not achieved. The average annual growth rate of foodgrains production during the period 1991-92 to 1996-97 was around 3.43%. The rice output fluctuated quite a bit during the Eighth Plan. The production declined during 1992-93 and 1995-96 over the preceding years. In 1996-97, the production of rice stood at 81.3 million tonnes, about 9% less than the targeted 88 million tonnes. The Eighth Plan target of 66 million tonnes for wheat was exceeded in the terminal year of the Eighth Plan. The Eighth Plan target for coarse cereal production was 39 million tonnes. In 1992-93 the production achieved was 36.6 million tonnes which was the highest achieved so far. This level could not be reached subsequently. The production of pulses in 1991-92 was 12.0 million tonnes and in 1996-97 it was 14.5 million tonnes. In between these years, excepting 1994-95 when it was 14 million tonnes, the production ranged between 12 million tonnes and 13.3 million tonnes only. The country could not make any visible breakthrough in raising the production of pulses during the Eighth Plan.

Oilseeds

4.1.6 There has been a significant increase in the output of oilseeds during the Eighth Plan. It was 18.6 million tonnes in 1991-92, in the base year of the Eighth Plan. It kept on increasing all through the years of the Eighth Plan except for a small decline from 21.5 million tonnes in 1993-94 to 21.3 million tonnes in 1994-95. Its production in the terminal year of the Eighth Plan was 25 million tonnes, an all time record. Soyabean and sunflower have, of late, emerged as the oilseed crops having major growth potential.

Cotton

4.1.7 The cotton production showed a significant increase during the Eighth Plan. The cotton output, which was 9.7 million bales in 1991-92, increased to a record level of 14.3 million bales in 1996-97. This was both due to increase in area and yields.

Sugarcane

4.1.8 The production of sugarcane declined from 254 million tonnes in 1991-92 to 228 million tonnes in the first year of the Eighth Plan. The production reached a record level of 281.1 million tonnes in 1995-96. However, in 1996-97 the production declined to 277.3 million tonnes. The production target and achievement of various crops during the Eighth Plan period are given in table 4.1.3.

Table 4.1.3
Eighth Plan Targets and Production Performance of Crop
(In Million Tonnes/Million Bales of 170 Kg. each of Cotton)

Crop	8th Plan Targets	1992-93 Achiev.	1993-94 Achiev.	1994-95 Achiev.	1995-96 Achiev.	1996-97 Achiev.
Rice	88.0	72.86	80.30	81.81	76.98	81.31
Wheat	66.0	57.21	59.84	65.77	62.10	69.27
C. Cereals	39.0	36.59	30.81	29.88	29.03	34.28
Pulses	17.0	12.82	13.31	14.04	12.31	14.46
Foodgrains	210.0	179.48	184.26	191.50	180.42	199.32
Nine- Oilseeds	23.0	20.11	21.50	21.34	22.10	24.96
Sugarcane	275.0	228.03	229.66	275.54	281.10	277.25
Cotton	14.0	11.40	10.74	11.89	12.86	14.25

Source: Planning Commission/Ministry of Agriculture.

Plantation Sector

4.1.9 The production of tea has increased from 748 million kg. in 1991-92 to 775 million kg. in 1996-97. The production growth of less than one percent has, however, not kept pace with the fast increasing demand. Production of coffee has risen from 1.69 lakh tonnes during 1992-93 to 2.05 lakh tonnes during 1996-97. The production of natural rubber increased from 3.67 lakh tonnes during 1991-92 to 5.42 lakh tonnes during 1996-97. In the traditional areas, the scope for expansion of rubber is very limited and about 95% of the existing area require replantation. India produces a wide variety of spices like black pepper, cardamom, ginger, turmeric, chillies etc. and spices occupy an important place among the agro products exported. At present, the production of spices in the country is around 24.7 lakh tonnes from an area of 25 lakh ha. The development efforts put into various spices crops during the Eighth Plan period contributed significantly to the increase in their area and productivity by 5.0 % and 8.0 %, per annum, respectively. India is the third largest producer of tobacco in the world. Export of tobacco was as high as 1.05 lakh tonnes during 1993-94. However, it declined to 0.54 lakh tonnes during 1994-95 on account of the collapse of the USSR market. It showed some recovery during 1995-96 with export of 0.87 lakh tonnes.

Horticulture Crops

4.1.10 The growth in horticulture based activities in the last five years is due, in a large measure, to the thrust given during the Eighth Plan by the Government. The allocation in the Eighth Plan was raised to Rs.1,000 crore from the Seventh Plan allocation of Rs.24 crore. A large number of concessions, subsidies and incentives were given to the growers and exporters. Simultaneously, the liberalisation process introduced as a part of the New Economic Policy, eased the procedures for production, foreign collaborations and access to international

markets. There has been a substantial increase both in the area and the production of horticulture crops during the Eighth Plan. The area under horticulture crops increased from 123 lakh ha. in 1991-92 to 150 lakh ha. in 1996-97 and the production rose from 961 lakh tonnes to 1410 lakh tonnes during the same period.

Agricultural Exports Performance

4.1.11 A number of policy changes were introduced during the Eighth Plan to make agricultural exports more viable. This contributed to the increase in the exports of agriculture and allied products from Rs. 8228 crore in 1991-92 to Rs. 25040 crore in 1996-97. Agriculture and allied products accounted for 21% of the total exports by the end of Eighth Plan. Since 1990-91, except for 1994-95, the share of agriculture exports has been steadily increasing.

Agricultural Inputs

4.1.12 A number of significant changes have taken place in the seeds sector during Eighth Plan on account of economic liberalisation and changes in the seed policy. The distribution of certified/quality seed increased from 60.3 lakh quintals in 1992-93 to the estimated level of 70 lakh quintals in 1996-97. In the case of oilseeds, against the Eighth Plan target of 7.55 lakh quintals, the achievement in 1995-96 was already 12.48 lakh quintals. This has been mainly due to the excess achievement of 7.50 lakh quintals in groundnut against the target of 3.24 lakh quintals. The achievement for groundnut includes quality seed/other seeds.

Fertiliser

4.1.13 The consumption of fertilisers (NPK) has been stagnant around 12 million tonnes between 1990-91 and 1993-94. Subsequently, it increased to reach the level of 14.3 million tonnes in 1996-97. There were changes in the policy on fertilisers in the 1990s. Phosphatic and potassic fertilisers were decontrolled in August 1992. Only urea (nitrogenous fertiliser) continued to be under the price control system and involves a heavy subsidy for keeping the farm gate prices low. Consequent to decontrol in 1992, prices of phosphatic and potassic fertilisers rose sharply. The gap between the controlled price of urea and the decontrolled prices of phosphatic and potassic fertilisers increased leading to an imbalance in their use. Against the optimum N, P and K ratio of 4:2:1 and an actual ratio of 5.9 : 2.4 : 1 just before the decontrol, the ratio during the end of the Eighth Plan worked out to 10 : 2.9 : 1. It may be, however, noted that this ratio differs from area to area.

Irrigation

4.1.14 Eighth Plan envisaged creation of additional irrigation potential of 15.8 million ha and utilisation of 13.6 million ha from major, medium and minor irrigation schemes. As against these, the additional potential created was 8.3 million ha and the incremental utilisation was only 7.9 million ha. By the end of Eighth Plan, the total potential created through major, medium and minor irrigation stood at 89.3 million ha and the cumulative utilisation at 80.7 million ha. Total utilisation as a percentage of total potential was 90.4.

Agricultural Credit

4.1.15 Efforts to strengthen agricultural credit agencies have been given top priority in the Eighth Plan. Agricultural Credit is disbursed through a multi-agency network consisting of Cooperatives, Commercial Banks and Regional Rural Banks (RRBs). Agricultural loans provided by various agencies rose from Rs. 6992 crore in 1991-92 to Rs. 28653 crore in 1996-97. While the short term agriculture credit from cooperative banks, RRBs and Commercial Banks increased from Rs. 6611 crore to Rs. 19678 crore, the investment credit (medium and long term) increased from Rs. 4587 crore to Rs. 10962 crore during the same period. As against the target of 40 % for priority sector lending by the banks, the sub target for agriculture has been fixed at 18 %. However, the achievement during the Eighth Plan was only 13-14 %.

Watershed Management and Soil & Water Conservation

4.1.16 As about 63 per cent of the cultivated land falls under the rainfed areas, watershed management is an important factor for improving agricultural production. A holistic approach to bring about the development of integrated farming systems on watershed basis is the main objective of the National Watershed Development Project for Rainfed Areas (NWDPA) and other externally-aided watershed development projects. During the Eighth Plan, an area of 28 lakh hectare was targeted to be covered with an allocation of Rs. 1,100 crore. The allocations to North Eastern States and the drought prone areas of Orissa State were increased during 1996-97. Organising self-help groups of beneficiaries in the micro-watersheds to institutionalise people's participation in the projects were stressed. To make soil treatment cost-effective, the guidelines emphasised on the vegetative conservation measures with active involvement of the beneficiaries and the non-governmental organisations (NGOs). The All India Soil and Land Use Survey has so far covered 1155.74 lakh ha. under priority delineation survey and 85.65 lakh ha. under detailed soil survey. A new scheme entitled "Application of Remote Sensing Technology for Soil Survey and Land Use Planning" has been launched during the Eighth Plan. The on-going Seventh Plan Centrally Sponsored Schemes of Soil Conservation in the catchments of River Valley Projects (RVP) and Integrated Watershed Management in the catchments of Flood Prone Rivers (FPR) were continued during the Eighth Plan.

Animal Husbandry and Dairying

4.1.17 There has been a considerable improvement in the production of major livestock products, i.e., milk, egg and wool during the Eighth Plan Period. The milk production witnessed a significant growth of 4.5 % per annum to reach the level of 68.6 million tonnes during 1996-97. This has increased the per capita availability of milk from around 180 gm. per day in 1991-92 to 201 gm per day in 1996-97. The step-up in the production of milk has been attributed to the intensified activities particularly, in improvement of genetic-stock through cross-breeding, effective control of diseases and Operation Flood Programmes which strengthened the cooperative institutions and infrastructure facilities. The poultry sub-sector has also made significant progress due to research and development activities. The egg production which was at the level of 22 billion nos. during 1991-92 increased to 28.2 billion nos. during 1996-97. The per-capita availability of eggs increased from 25 to 30 per annum, for the same period. The wool production has increased from 416 lakh kg. in 1991-92 to 443

lakh kg. at the end of the Eighth Five Year Plan. Though the production of major livestock products during the Eighth Plan showed an increasing trend but their targets have not been realised.

Fisheries

4.1.18 The country has a vast and varied fishery resources both marine and inland. The total fish production potential in the country has been estimated at 84 lakh tonnes. The total fish production has increased from 41.57 lakh tonnes in 1991-92 to 53.50 lakh tonnes in 1996-97 registering an annual average growth rate of about 5 % during the Eighth Plan. The fish seed production has also increased from 12,203 million fry to 15,700 million fry for the same period. There has been a significant increase in the export of marine products both in quantity and value terms. This has increased from 1.39 lakh tonnes (valued at Rs.893 crore) in 1991-92 to 3.78 lakh tonnes (Rs.4121 crore) in 1996-97.

Agricultural Research and Education

4.1.19 The technological advances made during the Eighth Plan have helped to improve production of various crops. The accelerated pace of varietal improvement activities lead to development of over 550 high yielding varieties of different crops. A number of them had in-built resistance to various biotic and abiotic stresses, providing the much needed insulation to crop production. One of the major achievements under foodgrain crops is the release of hybrid varieties of rice for commercial cultivation in different States. In the case of oilseeds, hybrids have been developed, especially in castor seed and sunflower which helped in increasing the productivity of these oilseeds. In the case of maize, three superior hybrids having cold tolerance have been identified and for cotton, new hybrids have been released for cultivation in Punjab, Haryana and Rajasthan. In plant protection, the All India Coordinated Research Project on Biological Control laid more emphasis on biological control of insect-pests. The Integrated Pests Management (IPM) approaches have been worked out for the major nematode pests in a number of crops. During the Eighth Plan period, a number of improved breeds of cattle and poultry such as Frieswal and CARI-Gold were also evolved. Research activities in the fisheries sector were also intensified. There has also been a progress in fisheries research.

Ninth Plan Focus and Strategy

4.1.20 The agricultural development strategy for the Ninth Five Year Plan is essentially based on the policy on food security announced by the Government to double the food production and make India hunger free in ten years. Food production will include not only foodgrains i.e. rice, wheat, coarse cereals and pulses but also all major food items including oils, sugar, fruits & vegetables, milk, egg & meat and fish. The Ninth Plan accordingly, envisages operational strategies and specific programmes/activities to substantially increase the supply of various food items so

STRATEGY TO ENSURE FOOD SECURITY

- Doubling food production.
- Increase in employment & incomes.
- Supplementary /sustained employment and creation of rural infrastructure through poverty alleviation schemes.
- Distribution of foodgrains to the people below poverty line.

that the entire domestic demand for these items is comfortably met and some surplus for exports

also become available. The development strategy to be pursued in the medium term has been consciously interwoven with the country's food security concerns.

4.1.21 Food security is to be interpreted to mean adequate availability of basic food items particularly, foodgrains in the country as a whole and also availability of adequate purchasing power to meet the food requirements at the household level. Accelerated agricultural development based on increase in productivity and income would meet both these elements of food security. Hence, a strategy for food security would encompass the essential components of availability, with a focus on those living below the poverty line as well as the deficit and inaccessible regions of the country.

4.1.22 A three pronged strategy will be followed to meet the basic food requirements of all:

- i. Increase in overall employment and incomes by raising farm productivity and through the growth of other economic activities in the rural areas.
- ii. Provision of gainful supplementary employment through poverty alleviation schemes such as JRY, EAS. These would generate additional employment in the short run but would also help in the creation of durable rural infrastructure for more sustained employment over time.
- iii. Distribution of foodgrains through public distribution system at concessional prices to those living below the poverty line.

4.1.23 In order to provide access to the poor to food at prices they can afford, a Targeted Public Distribution System (TPDS) has been introduced. Under this, 10 kg of cereals are provided per capita per month to those living below the poverty line, at half the central issue price. This too would create additional demand for cereals.

4.1.24 Poverty eradication and generation of productive employment in the growth process are at the top of the Government's agenda. It is recognised that greater productive employment in the growth process will take time to materialise. Lest, a large proportion of the rural poor are left out of growth process, there is need for continued state intervention for poverty alleviation. The resources made available under poverty alleviation programmes and funds provided for old age pension, maternity benefit and family benefit targeted to the poor under the National Social Assistance Programme would provide additional incomes to the poor for purchase of essential food items.

4.1.25 The target of new strategy is to double the food production in the next decade to meet the consumption requirement of the growing population and to make India hunger free. However, it is neither possible nor required to double the foodgrains output of each item or even the group of items in the food basket. In fact, an exercise done to estimate the food requirement suggests that production of 300 million tonnes of foodgrains with an increase in horticulture, livestock and fishery production should be more than adequate to meet the food and nutritional requirement and also leave an exportable surplus of about 5 million tonnes of foodgrains.

4.1.26 In view of the preponderance of the poor in the rural areas, household level of food security can be achieved only through a sustained and rapid increase in productivity growth in the agriculture sector in terms of value added per worker. The pattern of value addition in agriculture is such that this magnitude of income growth of the poor is unlikely to occur from the expanded output of foodgrains only. Rapid diversification towards high value products, in both crop and non-crop sectors, is essential both to meet nutritional needs and to generate adequate incomes for the rural poor.

4.1.27 A production target over 300 million tonnes for the estimated population of over a billion may lead to diversion of area from other crops like oil seeds, pulses, fruits and vegetables towards cereals. The diversion may not be desirable as demand for these items far exceeds the supply and higher imports may mean higher prices. Further, excess production of cereals may depress prices and lead to income losses to farmers, large scale procurement and storage of surplus production may also not be feasible. Therefore, the target for foodgrains production has been fixed at 300 million tonnes (Rice 130 million tonnes; Wheat 109 million tonnes; Coarse cereals including Maize 41 million tonnes; pulses 20 million tonnes) by 2007-08. Foodgrains production is expected to increase at an annual rate of 4.5 % per annum during the ten year period. While the animal husbandry and dairy development is targeted to achieve a growth rate of 6.2 % that of fisheries sector is expected to register a growth rate of 5.7 % per annum. With these targeted growth rates, the production of milk and fish is expected to reach the levels of 130 million tonnes and 9.6 million tonnes, respectively by 2007-08.

Regionally differentiated strategy

4.1.28 In order to achieve the goals of doubling the food output and alleviation of hunger, a regionally differentiated strategy based on agro-climatic regional planning which takes into account agronomic, climatic and environmental conditions will be adopted to realise the full potential of growth in every region. The agriculture development strategy will be differentiated by broad regional characteristic of agro-economic situation. The thrust will be on ecologically sustainable use of the basic resources such as land, water and vegetation in such a way that it serves the objectives of accelerated growth, employment and alleviation of hunger.

AGRO-CLIMATIC BASED PLANNING FOR:

- High Productivity Zone
- Low Productivity-High Potential Zone.
- Low Productivity Zone.
- Ecologically Fragile Regions.

High Productivity Zone (North-West & Coastal region)

4.1.29 The high productivity zone is characterised by either high irrigation-low rainfall or low irrigation-high rainfall situation, spread over 103 districts of the North-West and coastal areas including Andhra Pradesh and Tamil Nadu. Here, the thrust will be on diversification of agriculture towards high value crops through creation of relevant infrastructure and establishment of strong linkages with agro-processing industry and exports.

4.1.30 In this Zone basic infrastructure for accelerated food production is already well developed. Some of the districts in this region have witnessed significant productivity growth and realised 8 to 10 tonnes of paddy per ha. In some of the districts where the growth of productivity

has reached a plateau, the requirement is for new seed varieties and better water management including large scale use of sprinklers to avoid water logging and salinity problems. The latest research of ICAR and the SAUs on production technology including crop management will be implemented in the high productivity districts. The intensity of agricultural input will have to be increased particularly of chemical fertilizers along with green manure and bio-fertilizers. Even in this zone, there are considerable variations in productivity per ha. and input use for crop production with potential for increasing output.

4.1.31 During the next decade, efforts will be made to step up fertilizer application in all the districts where it is low to reach the level of 200 kg/ha in a phased manner. The increased utilisation of chemical fertilizers will be accompanied by complementary use of farm yard manure, compost, green manure and bio-fertilizers. A similar approach will be followed for augmenting irrigation facilities. All the districts in the zone will have assured irrigation covering over 90% of the gross cropped area (GCA). Fertilizer use is positively co-related with irrigation.

Low Productivity- High Potential Zone

4.1.32 In the **Low Productivity - High Potential Zone** which cover about 181 districts in the country, the productivity is low despite abundant water availability and good soil. This zone would include Eastern Madhya Pradesh, Central and Eastern Uttar Pradesh, the Bihar Plains, Assam, West Bengal and some parts of other States. The strategy for this region will be to achieve the productivity levels of high productivity states of Punjab and Haryana.

4.1.33 The production strategy for this region would focus on flood control, drainage management, improved irrigation facilities particularly, minor irrigation and a better input delivery system supported by extension. The fertilizer application will have to be substantially stepped up and the gross irrigated area in this region to be increased to cover at least 50% of the GCA of the districts.

4.1.34 The average fertilizer consumption in the vast majority of the districts in this zone is very low and in over 90 % of the districts the per hectare consumption is less than 100 kg. Here, the urgent need is to step up fertilizer consumption in the first category districts to the level of the second category and in the subsequent phases these districts should catch up with those of the high productivity zone. Along with chemical fertilisers, the use of organic manures and bio-fertilisers will also be promoted for soil health.

4.1.35 Minor irrigation holds the key for this region and there is considerable ground water potential. About one million tubewells will be sunk in this zone which would irrigate about 4.0 million ha. Large scale adoption of drip irrigation and sprinkler irrigation will be taken up in this zone.

Low Productivity Zone(Central Plateau Region)

4.1.36 In the Central Plateau region covering 79 districts, the productivity is low because of water scarcity. Here, the emphasis will be on development of efficient water harvesting and conservation methods and technologies, suitable irrigation packages on watershed approach and appropriate farming system which economise on water-use.

4.1.37 The basic aim of various land and water development programmes in this region will be to enable the farmers to obtain at least one good crop in an agricultural year. In the case of paddy the target should be to obtain a yield of about 3-4 tonnes/ha. and for wheat about 2.5 to 3.0 tonnes/ha. It is possible to obtain 3.0 tonnes/ha of maize with appropriate varieties as available in Karnataka.

4.1.38 Water harvesting structures and conservation works are of prime importance in watershed development. The cost effective indigenous method of water harvesting through check dams etc. will be supplemented by the use of drip and sprinkler irrigation. Apart from deep tubewells, shallow tubewells, open dug-wells and tanks/ponds which help in percolation and recharge of ground water will be emphasised. Regular desilting and redigging of such tanks under rural employment programmes should be taken up. About 10 million ha. will be brought under scientific treatment for soil and water conservation during the Ninth Plan period.

4.1.39 Fertilizer consumption is very low in this region because of water scarcity. For higher intake of chemical fertilizers, the urgent need is to tap ground water potential wherever available for crop production. Million wells Scheme(MWS) can make useful contribution.

Ecologically Fragile Regions including Himalayan & Desert Areas

4.1.40 Development strategy for the fragile Zone has been spun around allied sectors such as animal husbandry, fisheries, horticulture and plantation.

4.1.41 On the basis of existing irrigation facilities and the level of fertilizer consumption in various agro-economic zones, about 212 districts have been identified for priority action for intensifying irrigation facilities and yield raising inputs including chemical fertilisers for the accelerated growth of food output. It is also planned that diversification and modernisation of various sub-sectors of the agricultural sector would gain momentum in the Ninth Plan and the dynamics of agricultural growth would emanate from growth in non-foodgrain sectors, e.g. cotton, oilseeds, sugarcane, fruits and vegetables, spices, plantation crops etc. along with the development of fisheries, animal husbandry and dairying.

Policy Thrust and Key Elements of Growth Strategy

THRUST AREAS

- Conservation of land, water and biological resources.
- Rural infrastructure development
- Development of Rainfed agriculture.
- Development of minor irrigation.
- Timely and adequate availability of inputs.
- Increasing flow of credit
- Enhancing public sector investment
- Enhanced support for research.
- Effective transfer of technology
- Support for marketing infrastructure
- Export promotion.

4.1.42 Within the broad frame work of Plan for doubling food production and making India hunger free the Ninth Plan will aim at achieving the specific objectives of sustainability of employment generation, food and nutrition security, equity and poverty alleviation. Efforts will be made to achieve a growth rate of 4.5 % per annum in agricultural output in order to make a significant impact on overall growth and poverty alleviation. The emphasis will be

on raising the capabilities of small peasants and promoting sustainable agricultural systems, while at the same time conserving and maximising the value from scarce resources, water and land. Infrastructure development will be given the highest importance. Emphasis will also be on minor irrigation by harnessing ground water resources. Timely and adequate availability of inputs will receive special attention. The regional programmes will be formulated in such a manner as to ensure provision of inputs to the farmer, particularly in the remote, hilly, backward and tribal areas. Agricultural credit is a crucial input and it will receive special attention. The programmes relating to land reforms would be strengthened to raise agricultural growth and help the poor. Efforts will be made to increase public investment during the Plan period. In every district, the Rural Infrastructure Development Fund (RIDF) will be used to promote projects which encourage organisations of small farmers, artisans and landless labourers for skill upgradation, processing, transport infrastructure, quality improvement etc. Support to agricultural research will be enhanced and emphasis will be placed on biotechnology, micro-biology, genetic improvement of crops including hybrid technology, genetic upgradation of animal resources, improvement of fish genetic stock and post-harvest technology, etc. Efforts will be made to accelerate the growth rates of allied sectors such as horticulture, including fruits and vegetables, fisheries, livestock and dairy. Agricultural exports will receive special attention as these have a lot of potential for increasing farm incomes and employment, besides earning foreign exchange. Co-operatives will be strengthened. Greater participation of women in agriculture than at present will be encouraged. Linkages with markets will be strengthened and agro-processing and agro-industries will be encouraged.

4.1.43 The Ninth Plan target is to achieve a growth rate of about 4.5 % per annum in agricultural output and production of 2344 million tonnes of foodgrains by 2001-02. The main elements of the strategies to achieve these targets and objectives are discussed below:

New Agriculture Policy

4.1.44 The Government is finalising a National Agricultural Policy which is set to make some major changes in farm practices. The policy will focus on the optimal use of land, water and genetic resources in a sustainable manner. It will include leasing of land, consolidation of land, the use of 80 million ha. of marginal and wastelands and community lands for agro-forestry and improvement of rural marketing infrastructure. The plan will be to create both cold storage and processing facilities close to the production centres in rural areas.

Focus on Social Objectives

FOCUS ON

- Raising Land Productivity in Eastern India.
- Recognition of Women's Rights in Land.
- Protection of Tribals' Rights in Land

4.1.45 The strategies for agricultural development will focus on the social objectives of employment generation, food and nutrition security, gender equality, poverty alleviation and environmental sustainability. Towards these objectives, a special thrust will be given to raising land productivity in Eastern India and the arid-zones of peninsular India where the poor are largely concentrated. These regions require investment in minor irrigation, watershed development and general infrastructure as well as support to small and marginal farmers by way of timely credit, availability of inputs and seeds and market linkages. An attempt will be made to bring about effective coordination between agricultural programmes and rural programmes. Women's rights in land will be recognised and

women will be given preference in group activities for land conservation and improvement. The need for land reforms and improvement of land records will again be brought into focus. Every effort will be made to protect the tribals' rights in land.

4.1.46 Technologies for integrated and appropriate agricultural systems will be developed and disseminated so as to emphasise that agriculture is not only a land and water using activity but also helps to conserve and regenerate land and water resources. The cropping pattern has to be appropriate to the nature of land, water and environmental resources.

Agricultural Employment

4.1.47 The strategy of agricultural development should be such that it should have a significant impact on the reduction of rural poverty by the end of the Ninth Plan from the level of 37 % in 1993-94. The focus on the development of small and marginal farmers will have a direct impact on poverty. With its forward and backward linkages with other sectors, the accelerated agricultural growth targeted for the Ninth Plan should help reduce rural poverty considerably.

4.1.48 The elasticity of employment with respect to output in agriculture has declined over time, if the country as a whole is taken. It is generally observed that during the phase when agriculture is transforming from low productivity to high productivity operation, labour absorption is very high, though at a highly developed stage additional labour absorption stops and elasticity gets reduced to almost zero. The Ninth Plan focuses on raising productivity in the low productivity regions of Eastern and peninsular India. In this process, there will be considerable generation of additional employment. The emphasis will be on high employment elasticity activities like animal husbandry, fisheries, horticulture, fish canning and preservation, tobacco products, cotton ginning etc. Increase in cropping intensity would also lead to an increase in the employment prospects in agriculture. The strategy on employment would also encourage rural non-agricultural employment so that the burden on agriculture would be reduced over time.

Agricultural Research and Technology

4.1.49 For agricultural research and education, the country has a strong national agricultural research system. Today there is a network of 49 research institutes, 30 national research centres, 10 Project Directorates, 28 State Agricultural Universities, one Central Agricultural University and a large number of All India Coordinated Projects involving more than 24,000 agricultural scientists and teachers. The future economic and social development is in considerable measure dependent upon the technological improvements in agriculture. A massive application of science and technology would enable Indian agriculture to face the serious challenges of food security and ensure a place for value added Indian agricultural products in the global markets. There are immense opportunities offered by technological revolutions in the field of molecular biology, biochemistry, physiology, Geographical Information System, systems analysis, revolution in informatics, remote sensing etc. The objective is to tap the potential of science and technology to improve the living conditions of the poor. It is increasingly difficult to obtain any sizeable incremental production from the conventional Green Revolution areas. For the second Green Revolution, it is necessary to make the grey areas green. Hence, a major support for the rainfed areas, especially in Eastern and arid peninsular India would be necessary. Public sector research and technology missions (as for instance the mission on oilseeds) on various crops would play a crucial role in improving

the crop production. How to reduce the yield gap between the lab and the field, particularly in the case of dryland crops is an important challenge for agricultural research & technologies.

Supportive Environment

4.1.50 The country has 106.6 million agricultural land holdings. The holdings of small and marginal farmers together constitute around 80 % of the total holdings and their average size is less than one hectare. A farmer takes his or her own decisions about cropping pattern and other production activities. The Government's role is to help build a supportive environment to increase production and productivity in the form of market intervention, agricultural research, public investment in irrigation and infrastructure, credit and marketing for agricultural export besides creating and strengthening institutions like co-operatives which support agricultural activities.

Infrastructure Development

4.1.51 Infrastructure development in the Eighth PPlan has fallen short of the targets. This is partly due to the reliance that was placed on private sector investment, which did not materialise in adequate measure. Infrastructure includes irrigation, electricity, agricultural research, roads and communication, markets and new technology. The public sector investment in irrigation has been stagnant or declining since the mid-1980s. Efforts will be made to increase public investment in agriculture. The private investment would also increase along with public investment since there is complementarity between the two. Developing roads and agricultural markets in the rural areas is important for the farmers to sell their products. This is also important for food security because public and private trade cannot operate efficiently without good infrastructure. Accessibility of remote areas is also dependent on transport linkages.

Agricultural Investment

4.1.52 Higher investment in agriculture and rural infrastructure is a necessary condition for increasing agricultural growth. Government has a role in not only raising public investment but also inducing private investment. Efforts will be made during the Ninth Plan to increase public investment and encourage private investment in agriculture.

4.1.53 The public sector plays a crucial role in providing the investment for infrastructure like irrigation, electricity, agricultural research, roads and communications. Simultaneously, there is a need for providing incentives for the private sector to invest in a number of agricultural activities. Investment in minor irrigation by the farmers has already picked up in the eastern region during the Nineties. The scope exists for increasing private participation in seed industry, particularly in the non-cereal crops. There is a need to review some of the restrictions on storage, marketing and movement particularly at the State level so that the farmers can avail of better opportunities. This is also important for attracting investment in many activities.

4.1.54 Irrigation development and water management are going to be most crucial for increasing agricultural production and productivity. For increasing the efficiency of irrigation projects, there is a need for institutional reforms. As suggested by the Committee on Pricing of Irrigation Water, the effective involvement of farmers in management is essential for improving the operational efficiency and financial viability of public irrigation systems. During

the Ninth Plan, the Government would aim at encouraging greater community participation in irrigation management for bringing about greater awareness of the need for judicious utilisation of water. Community participation in watershed development and regeneration of land and water resources will have to be promoted.

Credit Availability

4.1.55 Credit is an important input for increasing growth in agriculture. For achieving a growth rate of 4.5 %, the rate of growth in agricultural credit should be higher than that during the previous Plan periods. A strong, viable and professional system of credit disbursal is essential for meeting the emerging credit demand on time and adequately. Credit support needs to be increased for traditional sectors like minor irrigation, farm mechanisation, rainfed farming, wasteland/forestry, dairy and other animal husbandry activities and also for crop production. In addition, the emerging scenario provides vast scope for diversification of activities under horticulture, mushroom, floriculture, fishery, animal husbandry and sericulture as well as agro-processing, storage and the use of advanced technologies like tissue culture, drip irrigation, green-house etc. All these activities need more credit during the Ninth Plan. Efforts will be made to change the legal and administrative system in order to revitalise the co-operative credit structure and enable the system to respond adequately and effectively to the emerging needs of the users and the markets.

Land Reforms

4.1.56 A proper implementation of land laws and policies is essential in order to restructure the agrarian economy in a way conducive to higher rates of agriculture growth with greater equity in the distribution of gains from it. All possible efforts would be made to detect and redistribute the surplus land and to enforce the ceiling laws with firmness.

4.1.57 Tenancy reforms would be taken up in States characterised by semi-feudal modes of production. Absentee landlordism must be eliminated by plugging the legal loopholes, tightening the implementation machinery and providing for speedy adjudication of disputes in revenue courts. Rights of tenants and sharecroppers need to be recorded and security of tenure provided to them. This alone would provide incentive for increasing investment in agriculture, as experience in certain parts of the country has shown. Preference should be given to poor, especially women with respect to wastelands and common property resources. Consolidation of land holding should be expedited but only with the active involvement of the village people and the Panchayat Raj Institutions in order to allay fears of small and marginal farmers whose lands may be under consolidation operations. Updation of land record is a necessary pre-requisite of any effective land reform policy. The rural poor, the elected bodies and voluntary organisation should participate in the process of ensuring agrarian reforms.

Agro-processing

4.1.58 There is a bright future for India in agro and food processing sector and for this purpose appropriate institutional arrangements will have to be made. Large scale processing would have to be selectively encouraged since such activities on small scale are often not viable. As the world's largest producer of milk, and second largest producer of fruits and vegetables, India should focus on promoting processed agricultural products for export purposes. For

increasing agricultural trade, encouragement would be given to infrastructural developments in terms of bulk storage and handling facilities at rail-heads and sea-ports. For perishable commodities, fast track facilities and special cargo terminals at major air and sea-ports are essential.

Foodgrains Self-Sufficiency at National Level

4.1.59 Foodgrain self-sufficiency refers only to the country as a whole and there is no need for self-sufficiency at the State or regional levels. The States would be encouraged to produce crops according to their comparative advantage. Each region or State should use land to its best advantage.

Towards a National Market

4.1.60 The domestic markets should be free and there should be a free movement of commodities. We must proceed towards a full national market by removing unnecessary restrictions. The free movement in the domestic markets would lead to movements of commodities from surplus regions to deficit regions.

Terms of Trade

4.1.61 In recent years terms of trade for farm sector has shown some improvement as a result of various measures taken by the Government like announcing minimum support prices for the major agriculture commodities. As non-price factors are more important for raising the growth, the strategy should be to reduce the cost of production in order to make the agriculture more remunerative.

Effective Price support to farmers

4.1.62 Wide fluctuations in farm prices cause undue fluctuations in income, more than the changes in the output. This depresses the prices received by the farmers and discourages his investments in yield raising infrastructure. The agricultural price policy followed by the Government, over the years, has contributed significantly to the creation of a remunerative and relatively stable price environment, which has induced the farmers to adopt new technology and increase production. It has also helped in the diversification of cropping pattern. While it is necessary to substantially improve input delivery system and target low intensity-high potential areas, it is also essential that farmers are assured of remunerative prices that offer a fair incentive for adoption of improved technology and scientific practices. It is absolutely essential that Minimum Support Prices (MSP) for major cereals should be announced well before the sowing season so that farmers are quite clear about the price expectations and the price policy performs its resource allocation function effectively.

4.1.63 The price support mechanism has also not been very effective in the Eastern States and paddy prices have ruled below the MSP level announced by the Government, on many occasions. All efforts to improve the production of rice in the eastern states will be meaningless if the farmers are not assured of MSP. A mechanism should be devised to monitor farm gate prices of various agricultural produce in all major producing Centres.

Agriculture Marketing

4.1.64 The agricultural marketing infrastructure has not kept pace with the accelerated growth of production in the country. This has resulted in significant post harvest losses of agricultural produce. The Central Government has provided assistance for the creation of infrastructural facilities for marketing and for the setting up of rural godowns. During the Ninth Plan, the Panchayats will also be encouraged to involve themselves actively in creating marketing infrastructure at the rural level. Marketing extension, being a key factor in bringing desirable changes in attitude, skills and behaviour of the farmers, traders and consumers, the agricultural marketing extension will be strengthened. Direct marketing will be promoted in the interests of both the producers and the consumers.

4.1.65 The functioning of the agricultural markets particularly for fruits and vegetables will be improved to ensure fair and remunerative prices to the growers. The wholesale markets will be modernised with all basic infrastructural facilities for cleaning, grading, packaging, storage and also with electronic auction platforms. There is a need for establishment of cold chains, providing pre-cooling facilities to farmers, cold chains in the terminal markets and improving the retail marketing arrangements in the urban areas. Schemes will be formulated for promotion of available low cost technology in the form of fruit vending machines, expellers, grinders, packers, reefer vans, etc. to the educated rural and urban youth with appropriate package of assistance.

Rationalisation of Input Prices

4.1.66 There is a school of thought which emphasizes that the continuance of agriculture subsidies need a re-look as these are considered to be fiscally unsustainable and also encourage sub-optimal utilisation of resources leading to undesirable consequences like land degradation, water-logging, depletion of groundwater resources, etc. It is also argued that the subsidies crowd out the public investment in agriculture and, therefore, a time-bound strategy for rationalizing the agriculture input pricing structure by a proper and transparent method is required. However, it should be recalled that agriculture subsidies have played a very crucial role in improving the production and productivity and have contributed significantly to the country's food security. All our efforts will be made to improve agricultural productivity and raise the farmers income with special emphasis on ensuring the supply of agriculture inputs such as seeds, fertilisers, irrigation, power, etc. in time and in adequate quantities. Efforts will also be made to targetting and selective focussing. Agricultural subsidies, where they are focussed on raising productivity, stabilising production and supporting the small and marginal farmers will have to be continued for some time.

Environment and Sustainable Agriculture

4.1.67 It is a known fact that there is little scope for further expansion of the net sown area and that land scarcity will become an acute feature of the rural economy. Water is a precious national asset and there are several concerns regarding water resources in the country. Therefore, a judicious use of land and water resources will have to be the central concern during the Ninth Plan period and beyond for sustainability of agricultural growth. There has been a growing concern in recent years about the deteriorating conditions of soil health and water resources due to improper management and pollution. The deterioration in land and water resources has been in the form of land degradation, water logging and decline in water table. There is a greater need to have an integrated approach in the management of agricultural nutrients, chemicals and in taking effective measures to deal with the overall pollution problems.

4.1.68 There are several possible technologies and alternatives to reduce the use of chemicals in agriculture. These alternatives are not perfect substitutes to chemicals but adoption of these can substantially reduce the adverse impact on environment. Proper land and water management policies would reduce environmental degradation. Community and village institutions will be encouraged to participate in protecting natural resources from degradation. Programmes for regeneration of land and water resources will be strengthened.

Crop Production Strategies

Foodgrains

4.1.69 Under the accelerated growth scenario for the Ninth Plan, with GDP growing by about 7%, population growing by about 1.7% and per capita income by about 5%, the demand for foodgrains is expected to grow by 3.0% per annum. Under this scenario, the estimated food requirements by the end of the Ninth Plan would be around 227 m.t. Against this the target for foodgrains production is fixed at 2334 million tonnes for the terminal year of the Ninth Plan. To achieve this target, it is assumed that the area under foodgrains would be 126 million ha. The targets show that India has to increase foodgrains production at least by 35 million tonnes during the Ninth Plan from the level of around 199 million tonnes in 1996-97. The large part of the incremental production will have to come from the rainfed areas.

4.1.70 To supplement the efforts of the State Governments in increasing crop production, various crop production oriented schemes have been implemented by the Central Government. Some special schemes for rice, wheat and maize were introduced during the Eighties. The Government has modified the cereals development schemes during the Eighth Plan by considering the overall development of prevailing cropping systems in different years. The modified schemes are Integrated Cereal Development Programmes (ICDP) for rice, coarse cereals and wheat-based cropping systems areas.

4.1.71 The ICDP-Rice was being implemented in the States largely following rice-based cropping system. The States covered under the scheme are: Andhra Pradesh, Assam, Arunachal Pradesh, Bihar, Goa, Kerala, Eastern Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Tamil Nadu, Tripura, Eastern UP, West Bengal and Union Territory of Pondicherry. 1200 blocks were identified in these States where the productivity of rice/cereals was less than the State/national average for implementation of the scheme.

4.1.72 The ICDP-Wheat was implemented in the States mainly following wheat-based cropping system. The States covered under the scheme are: Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Northern Rajasthan and Western Uttar Pradesh. 425 blocks were identified in these States where the productivity of wheat/cereals was less than the State/national average for implementation of the scheme. During the Ninth Plan, the emphasis will be on the rainfed wheat areas particularly in the central region. Over time, wheat production has been catching up with rice production.

4.1.73 The ICDP-Coarse Cereals was implemented during the Eighth Plan in the States largely following coarse cereals-based cropping system. Under the scheme, six States viz., Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Sikkim have been covered. The scheme was being implemented in 830 identified blocks where the productivity of coarse cereals was less than the State/national average.

4.1.74 Maize is one of the important cereals grown in the country. Besides, being a food crop, maize is also important from fodder, feed and industries points of view. The area under maize is about 6 million hectares with a production level of nearly 10.6 m.t. The average yield is only 1.7 tonnes per hectare which is very low compared to the world standard at 4.1 tonnes per hectare. The area under high-yielding variety of maize is about 50 %. However, the area under hybrid seed coverage is less than 10 %. The quality of Indian maize compares favourably with the best in the world. Keeping in view the importance of raising the yield of maize from the present level of 1.7 tonnes per hectare to at least 3 tonnes per hectare and to increase maize production by at least 10 million tonnes, two steps have been taken. These are: (1) upgradation of the All India Coordinated Research Project on Maize to Directorate of Maize Research in the ICAR and (2) introduction of an Accelerated Maize Development Programme under the Integrated Cereal Development Programme based on coarse cereals cropping system approach. The research component is already in place and the accelerated programme, in a mission mode approach, would be made functional during the Ninth Plan.

4.1.75 The production of pulses has remained stagnant between 10 and 12 m.t. during the last three decades. The productivity and production of pulses is low due to its cultivation on rainfed, marginal and sub-marginal lands, high susceptibility to pest diseases and climatic aberrations, lack of genetic breakthrough, application of very low level of inputs by the farmers and diversion of area to other remunerative crops as and when irrigation facilities become available. In order to harness the best of production, processing and management technologies to accelerate pulses production, the programme of National Pulses Development Project (NPDP) was brought under the purview of Technology Mission on Oilseeds in 1990. The NPDP was being implemented in 25 States and Union Territory of A & N Islands. Under this programme, emphasis is laid on increasing the area through multiple and inter-cropping and increasing the yield per unit of area. Assistance under this programme is provided for key inputs. The Integrated Cereals Development Programmes for rice, wheat & coarse cereals and

NPDP project for pulses will be continued during the Ninth Plan.

Oilseeds

4.1.76 There has been a steady increase in the production of oilseeds after the setting up of the Technology Mission in 1986. The aim of the Technology Mission has been to harness the best of production, processing and management technologies for achieving expeditiously self-reliance in oilseeds' production. Soyabean and sunflower have, of late, emerged as the oilseed crops having major growth potential. With a view to augmenting the availability of edible oils, the cultivation of oil palm under irrigated conditions was initiated by the Department of Bio-technology in Andhra Pradesh, Karnataka and Maharashtra. Subsequently, it was implemented as a Technology Mission in the name of Oil Palm Development Programme (OPDP) in 11 states. These programmes will be continued during the Ninth Plan.

Technology Mission on Cotton

4.1.77 The productivity level of cotton in India does not compare favourably with productivity levels attained in many of the major cotton growing countries of the world. The world average of cotton yield is well over 550 kg per hectare whereas in India, it is around 266 kg per hectare. There are a number of constraints from production to processing stages. Therefore, there is a need for evolving and applying technological improvements at several stages of cotton production and processing. The Technology Mission on Cotton proposed in the Ninth Plan will give a major thrust to raise production, productivity, as well as post harvest marketing and processing of the produce. Ministry of Agriculture and Ministry of Textiles are being associated for its implementation, with the Department of Agriculture as nodal agency.

Sugarcane

4.1.78 The area under sugarcane is 4 million ha. and the average productivity is around 66 tonnes per ha. The production of sugarcane is expected to increase from 277 million tonnes in 1996-97 to 336 million tonnes by the end of the Ninth Plan at an average growth rate of 3.91 %. In water scarce area increase in area under sugarcane needs to be discouraged. In the State like Maharashtra, sugarcane cultivation through sprinkler irrigation is taken up which is a welcome step.

Targets of Crop Production

4.1.79 The targets of production of foodgrains and other crops for the terminal year of the Ninth Plan are given in Table 4.1.4.

TABLE – 4.1.4
Targets of Production for Agriculture Commodities for 2001-02

Crops	Production (Million Tonnes)	Annual Compound Growth Rate (%)
1. Rice	99.0	4.02
2. Wheat	83.0	3.68
3. Coarse Cereals	35.5	0.70
4. Pulses	16.5	2.67
5. Total Foodgrains	234.0	3.26
6. Oilseeds	30.0	3.75
7. Cotton*	157.0	4.00
8. Sugarcane	336.0	3.91

* Lakh bales of 170 Kgs. each

Plantation Crops

4.1.80 In the plantation sector, the main emphasis during the Ninth Plan will be on increasing productivity, accelerating the replanting activities and rapid expansion of crops in the non-traditional areas, particularly the North East. The main strategy for product development will be on the adoption of improved agricultural practices, adherence to strict phyto-sanitary norms and upgradation of post-harvest technology. These measures are aimed to bring down the unit cost of production and improving the competitive edge for our exports. Strengthening of infrastructure for value addition and quality control have been identified as the core areas in market development and export promotion. In order to establish a competitive presence in the international market, quality maintenance deserves top-most attention and quality improvement will be achieved through Research and Development intervention. Dissemination of information will receive due importance; so also of modern technologies for cultivation, processing and packaging to internationally accepted standards. Efforts will be made to promote organically produced commodities.

4.1.81 The North-Eastern region will receive special focus with increased flow of resources and higher level of subsidies under various plantation development programmes for exploiting the natural resources which this region is endowed with to their advantage. This region has tremendous potential for spices besides, other plantation crops like tea, coffee and rubber. The constraints of the North-Eastern region such as lack of skilled manpower, infrastructure, resources /credit flow and high transportation cost etc. will be specifically addressed to. Extension service through demonstrations and trainings to the tribal growers assume considerable importance. A substantial portion of the resources of the various Commodity Boards will be for the North-Eastern region. During the Ninth Plan schemes for On-Farm Water Management for increasing production in North-East/Eastern India and schemes for increasing the consumption of fertilisers and increased flow of credit for the agriculture sector are being envisaged.

Tea

4.1.82 Efforts will be made to increase production, improve quality and to ensure availability of tea at a price remunerative to the producer and affordable to the consumer. The bulk of the incremental production during the Plan period is expected from increased productivity in the existing plantations, for which irrigation and drainage facilities will be augmented. The installed capacity of tea factories will also be increased, besides augmenting tea processing facilities by construction of new factories. Efforts will be made to raise the productivity levels of smaller estates where there is vast scope for improvement.

Coffee

4.1.83 Consequent upon liberalisation of coffee marketing and the total withdrawal from marketing activities, the Coffee Board would shift its emphasis towards more critical areas such as research and development, extension, training, market intelligence, promotion of exports as well as domestic consumption and encourage coffee cultivation in the non-traditional areas. For the traditional areas, a comprehensive coffee development package will be devised to improve production, productivity and quality of coffee produced in the small scale sector. In the non-traditional areas, rapid area expansion programme will be taken up with an appropriate package of assistance to the tribal growers. Post-harvest technology and quality upgradation, integrated pest management, free market development including creation of auction platforms, warehousing facilities, quality assurance and plant improvement activities like breeding, vegetative and clonal propagation and biotechnology are some of the key areas for which specific programmes will be launched during the Ninth Plan.

Rubber

4.1.84 There is a lot of scope for expansion of rubber plantations in the non-traditional areas like Tripura, Assam, Meghalaya, Nagaland and Karnataka. In these areas, the tribal growers are financially weak and lack technical expertise. The block/group planting programme launched during the Eighth Plan will be intensified. Besides, the incentive package will also be made more attractive to induce investments in planting and maintenance activities. Infrastructure development for processing and marketing in the North-Eastern region will be given top priority during the Ninth Plan. Initiatives already taken for stimulating demand for rubber and rubber products would be intensified.

Spices

4.1.85 An integrated approach will be adopted for the development of black pepper, ginger, turmeric, chillies, tree spices like clove, cinnamon and seed spices. The identified thrust areas include increasing productivity to bring down the cost of production, developing cultivation of export-oriented varieties such as low fibre content ginger, chillies with bright red colour, developing cultivation of vanilla, saffron, herbal spices etc. and encouraging women in cultivation of spices and community processing of the produce. A technology mission on black pepper will be launched in Kerala, which account for 94 % of the total production. The Ninth Plan programmes will focus their attention on post-harvest management, quality improvement through supply of planting material, developing organic farming, modernisation of processing/ manufacture, development of warehousing and mechanisation of spices farming.

Cashew

4.1.86 There is a good scope for expansion of the area under cashew in the vast tracts of wasteland including sandy coastlines; in both the traditional as well as non-traditional areas. High density planting with 625 plants/ha is required in these areas to control the growth of weeds. Appropriate programmes will be devised to bring such areas under cashew plantations. Cashew development and export promotion programmes will pay special attention to improving the quality of kernels, post-harvest management, packaging (consumer-packed cashew kernels) and infrastructure development. Efforts will also be made to ensure that the processing of cashew is environment-friendly. Studies will be commissioned to assess the side-effects on the workers engaged in cashew processing industries and to suggest remedial measures. Cashew apple has a considerable dietary importance and various edible products prepared out of these apples will be popularised.

Tobacco

4.1.87 Efforts will be made to improve the productivity and quality of tobacco, grading at farmers' level and monitoring and control of pesticides residues. Strengthening of auction facilities, promotion of exports besides exploring alternate use of tobacco will receive special attention during the Ninth Plan.

Targets for the Plantation Sector

4.1.88 The targets for production, envisaged growth rate and exports of plantation crops for the Ninth Plan are given in Table 4.1.5.

TABLE – 4.1.5
Ninth Plan Production and Export Targets for Plantation Crops (2001-02).

Crops	Unit	Production	Growth rate%	Exports
1. Tea	M.Kg.	1000.0	5.0	265.0
2. Coffee	(000 tonnes)	300.0	5.0	200.0
3. Spices	(Lakh tonnes)	33.6	4.25	2.58
4. Rubber	(000 tonnes)	717.3	5.5	4.0
5. Cashew	(Lakh tonnes)	7.0	9.24	---

Horticulture Crops

4.1.89 The horticulture sector has established its credibility for improving productivity of land, generating employment, improving economic conditions of the farmers who are mostly small and marginal and entrepreneurs, enhancing exports and above all providing nutritional security to the people. Horticultural diversification has made some visible impact particularly in the wake of economic liberalisation. In fact, high levels of land productivity in coastal areas can be largely attributed to the growing of high value plantation and horticultural crops. However, due to various technological and infrastructural constraints, the growth remains far from satisfactory. The low productivity of perennial fruits and plantation crops is attributed to small size of holdings, preponderance of old senile trees and poor management available to them. There is also an acute shortage of planting seed/material of improved varieties. Crop specific disorders e.g. various diseases of vegetables, rootwilt of coconut etc. affect production and productivity. Another area of concern is the post-harvest handling which account for 37% of the losses at different stages of storage, grading, packaging etc. Processing infrastructure is weak and the research and development support, inadequate. The marketing is also not well organised. There is a need for proper blending of technology, credit and scientific management for accelerated growth of horticulture sector. Horticulture sector has been brought to the forefront in the overall food production strategy of the country and will continue to be treated as an extreme focus area for provision of strong support for its overall development.

4.1.90 The development strategy would be on the basis of the assessment of factor endowments and comparative advantage in propagating various horticultural crops. Regions which have tremendous potential of horticulture crops including North-East would get top priority. Special package of assistance will be devised for the NE states and the existing schemes will be modified to meet also the requirements of these states. The specific objectives of horticulture development during the Ninth Plan would be:

- (i) to improve productivity and quality of horticulture crops through upgradation of production/farming technologies;
- (ii) to reduce post-harvest losses, and improve marketability of the produce and its availability to consumers;

- (iii) to promote better utilisation and increased consumption of the produce to ensure higher returns to farmers/producers and better nutritional health to the people;
- (iv) to promote export;
- (v) to develop a strong base for supply of inputs, transfer of technology and human resource development to support the development activities.

4.1.91 The aim of horticulture development in the Ninth Plan will be to consolidate the gains made in the Eighth Plan by continuing the existing schemes and implementing new schemes to bridge the identified gaps and remove the deficiencies. The projection of output of fruits and vegetables for the terminal year of the Ninth Plan is 179 million tonnes. The Ninth Plan production target of spices is 3.36 million tonnes. There is likely to be a gap between demand and supply in respect of horticulture crops which will be met through imports. Consistent efforts, however, would be made to raise productivity and reduce post-harvest losses necessary to make the country self-sufficient in horticulture crops.

4.1.92 The targets envisaged can be achieved by promoting development of different crops and related activities around specific thrust areas namely (i) improving productivity and quality of produce from the existing plantations; (ii) developing infrastructure for post-harvest handling and marketing; (iii) product diversification and improving consumption; (iv) increasing the availability of quality seed/planting material; (v) area expansion; (vi) transfer of technology; (vii) export enhancement; (viii) human resource development; and (ix) improving infrastructure and database for horticulture crops. Productivity improvements can be achieved through the use of high-yielding varieties, developing irrigation facilities, use of plastics, beekeeping, rejuvenation/ rehabilitation of old orchards or plantations, uprooting of senile/diseased plantations and adoption of inter-cropping and bio-control measures.

4.1.93 Intervention of horticulture-related activities for improving the nutritional status of people in general and for preventing the disorders associated with deficiencies of vitamins and minerals in particular will be taken up as a new initiative with greater participation of women during the Ninth Plan.

4.1.94 Intensive training programmes will be devised not only for educating the farmers but also for those engaged in processing and exports activities on sanitary and phyto-sanitary measures for meeting the standards of the international market. Cooperative Sector will be encouraged to take up commercial horticulture with the assistance for production and post-harvest management including setting up of grading, packing houses, pre-cooling units, cold storages, green houses, processing units, tissue culture and quality production units.

4.1.95 Transfer of technology from lab to land through demonstration and extension services and human resource development with regard to scientific management of estates, gardens and green houses will be given specific attention with increased interaction between State Agricultural Universities, the State Departments of Horticulture and National Horticulture Board and other Commodity Boards.

4.1.96 Scientific cultivation of medicinal and aromatic plants on commercial basis, will receive specific attention. Quality production and marketing would be encouraged with appropriate package of assistance. Dissemination of information has remained a neglected area in the past. Creating horticulture awareness through various activities including T&V, seminar, work shops, study tours of farmers and demonstration will be essential components of horticulture development strategy.

4.1.97 Facilities for quarantine and cold storage at major air ports and sea ports, a process which already commenced will be expedited for export promotion of horticultural crops. APEDA has taken the lead in sanctioning cold storage facilities in major airports like Chennai, Thiruvanthapuram, Bangalore and Hyderabad. Such facilities in Delhi have already commenced operation.

Agricultural Inputs

4.1.98 The emphasis will be placed on adequate and timely delivery of core inputs such as fertilisers, seeds, pesticides, credit and extension in different regions. Augmentation of irrigation facilities is necessary to increase the cropping intensity. The implementation of the National Watershed Development Programme will be intensified for the development of rainfed farming areas. Fertiliser consumption in low-use areas and crops will be stepped up besides reducing imbalances in the use of plant nutrients and adopting integrated pest management approach and using biotic agents. For this process to be effective, it will be necessary to initiate a widespread programme of soil testing across the various agroclimatic regions.

4.1.99 In order to accelerate higher intake of fertilisers and the use of other inputs in crop production, especially in the remote areas, fertiliser and other input retailers network has to be considerably expanded. Efforts are required of stocking of fertilizer in order to create a supply push to complement the demand pull for fertiisers as a result of extension efforts. There is a need to ensure adequate movement of fertilisers particularly, in the High Potential -Low Productivity Zone with the help of institutional agencies. The State Cooperative Marketing Federation and State Agro-industries Corporation will have to play an effective role in input delivery system. The procedure for provision of margin money and working capital to the Federation will be streamlined by NCDC/NABARD. There is also need for evolving mechanism whereby the institutional agencies are insulated from losses in the event of the off-take of fertilizers falling below their expected level and consequent monetary burden due to surplus stocks.

4.1.100 Though the supply of agricultural inputs like fertiliser, irrigation, power and credit at prices which do not fully cover the cost had substantially increased the intensity of input use but it had also encouraged misuse of the scarce resources in certain areas and has also become fiscally unsustainable. Highly subsidised/free supply of inputs like power and irrigation had also led to inappropriate cropping pattern. For example, in water scarce areas, water-intensive sugarcane crop is being promoted. In order to promote sustainable agricultural development and to make available resources for creation of yield raising infrastructure, there is no alternative other than rationalising the input price structure.

Fertilisers

4.1.101 The consumption of fertilizers (NPK) during 1996-97 was 14.31 million tonnes. The total nutrient requirement in the terminal year of the Ninth Plan is projected at 20.0 million tonnes. During the Ninth Plan greater use of biofertilisers and bio-technological research in this direction will be encouraged. To support the programme for achievement of a target of 234 million tonnes of foodgrains, in the terminal year of the Ninth Plan, a very strong network of all associated activities would be required to be created in the country. This would include, inter-alia, the Integrated Plant Nutrient Management system, use of organic sources and bio-fertilisers, use of legumes by farmers for generating and sustaining the inherent nutrient potentiality of soils, followed by application of chemical fertilisers. Programmes of campaigning for making the farming community aware of micro-nutrient deficiencies and their use would be launched. Programmes for disseminating the research results of the ICAR for soil test crop response, trials, etc. would be promoted.

Pesticides

4.1.102 Promotion of Integrated Pest Management (IPM) for all the crops and throughout the country would continue to remain the main thrust of plant protection activities during Ninth Plan. Further strengthening of eco-friendly IPM strategy to preserve and protect the environment and for maximising crop production would continue to be pursued. Computer networking of all the IPM centres in the country, which is already in progress, would be further strengthened during the Ninth Plan for making available such reliable data on disease pest intelligence to meet the challenges in a more scientific manner. Also, work on strengthening of existing State Bio-control Laboratories and setting up of new ones, wherever required, would be undertaken. Promotion of bio-pesticides like Bt, NVP, GV, Trichoderma etc., neem-based pesticides would be undertaken. Besides, programmes like involvement/ training of women farmers as well as farmers belonging to weaker sections in respect of IPM technology would be emphasised.

Seeds

4.1.103 The target for Ninth Plan for certified seeds distribution is 109 lakh quintals for all types of crops. This would mean a quantum jump over the actual achievement during the Eighth Plan. Focus during the Ninth Plan will be more on development of air-conditioned storage for breeder and foundation seeds, aerated storage for certified seeds, mobile facilities or common facilities for processing, drying etc. for all seed producing clusters in the country. Comprehensive amendments to prevailing Seed Acts, will be required to be enacted during the Ninth Plan. Another provision during the Ninth Plan would be to create a National Seed Grid. Special monitoring arrangements for production and lifting of breeder seeds by users, storage of these seeds, scientific assessment of seed requirements of various varieties of different crops for different areas and States, etc. would be undertaken. Distribution of minikits under various programmes, would be enlarged and more areas will be brought under this programmes. Also, frontline demonstrations would be carried out covering larger areas. Emphasis will be laid on promoting higher seed replacement rate. The most important of all would be the coverage of drought-prone, difficult, hilly and other non-accessible areas under various programmes of distribution of seeds. Care will also be taken so that an effective system of import/export of certified seeds is developed.

4.1.104 The public sector is primarily concentrating on seed production and supply of predominantly self pollinated varieties, while the private sector is supplying hybrids and high value and low volume seeds of inbred varieties and hybrids. Efforts will be made to have effective linkages between the public and the private sectors where both are mutually supporting and complementary in their activities. The seed policy will encourage the private sector to bring its production under the purview of certification or other accepted systems of quality control.

Agricultural Machinery and Implements

4.1.105 The Ninth Plan policy in respect of farm mechanisation will be to encourage the use of efficient tools, implements and machines which raise farm productivity and reduce cost, without large-scale replacement of human labour. Thus, farm mechanisation would largely be in the nature of augmenting resources rather than replacing labour. Within the framework of this policy, the Government has laid emphasis on the promotion and popularisation of improved agricultural implements, both power-operated and animal drawn. The programmes of farm mechanisation have led to the use of farm machinery such as tractors, power tillers, combine harvesters, irrigation equipment, plant protection equipment, threshers, improved implements and hand tools. The demand for agricultural equipments in respect of farm mechanisation is estimated at one percent per annum. Introduction and adoption of agricultural machinery is largely confined to the North and North-West regions of the country. However, with the increase in irrigation and modernisation of cropping practices, the demand for agricultural machinery has also shown an increasing trend in southern and western parts of the country.

4.1.106 During the Ninth Five Year Plan, establishment of prototype production centres for agriculture machinery in different regions of the country is expected to be at least one each in North, South, East and West. These Centres will develop power/draught/hand-driven selective mechanisation of equipment/machinery and tools, which would be need based. These centres will also be undertaking the similar activities for developing prototypes of equipments and tools, etc. even for related activities like animal husbandry, piggery development, poultry farming, fisheries, etc. so that these activities would become more beneficial to the farmers. Special attention should be paid for developing such equipments which may be more suitable to the badly felt needs to cotton growers, sugarcane growers and vegetable farmers. Special focus will be made on small farm mechanisation. Specific efforts will be devised for developing and popularising hand held tillers, small tractors etc. with appropriate tie-up arrangements with institutional finance.

4.1.107 Though the country is self-sufficient in meeting the indigenous demand for conventional agricultural implements, the quality is not up to the desired standards due to limited know-how and resource constraints faced by the small scale manufacturing units. The State Agro-industries Corporation (17) are engaged in manufacture and distribution of agricultural machinery improved implements and tools etc.

Plant Protection

4.1.108 The ongoing schemes of Plant Protection in the Eighth Plan will be continued during the Ninth Plan. The IPM strategy has become popular with the farmers during the Eighth Plan, especially in rice and cotton growing areas since it has helped to reduce the load of

chemical pesticides as well as increase their net profits. Hence, greater support in this direction will be given during the Ninth Plan period. In addition, quarantine facilities would be strengthened to more effectively prevent the entry of exotic insects, pests, diseases and weeds. The existing network for warning about locust attack would be geared up. State Pesticide/Insecticide Laboratories would be upgraded with infrastructure facilities for testing and quality control of pesticides. Besides, setting up of Pesticide Residues Testing Laboratories particularly in the private sector will be encouraged in the Ninth Plan.

National Agricultural Technology Project

4.1.109 National Agriculture Technology Project (NATP), with World Bank Assistance has already started functioning in the field of development of agriculture in 24 districts of 6 States. The basic objective of NATP is to diffuse the agricultural technology to the farmers and develop models of cropping system research in association with ICAR.

Crop Insurance

4.1.110 The existing Comprehensive Crop Insurance Scheme (CCIS) and Experimental Crop Insurance Scheme (ECIS), will be replaced by Modified Comprehensive Crop Insurance Scheme (MCCIS). This Scheme will progressively cover all the farmers (both loanee and non-loanee) and some additional cash crops such as sugarcane, potatoes, cotton etc. depending upon the availability of yield-data to progressively increase the extended coverage.

Agricultural Credit and Co-operation

4.1.111 Cooperatives are an integral part of a country's agricultural system. The cooperatives aim at strengthening of people who have limited resources, particularly rural poor, agricultural labourers, marginal and small farmers, etc. The cooperatives have played a major role in disbursement of credit. Nearly 60% of the disbursement of short term loans and 35% of investment credit were provided by the cooperatives. Measures have already been initiated for ensuring autonomy, democratisation and professionalisation of the cooperative credit structure in the country.

4.1.112 One of the major problems faced by the cooperative credit institutions is the imbalances in agricultural loans. The imbalances occur when the agricultural loans of the District Cooperative Credit Banks (DCCBs) to Primary Agricultural Credit Societies (PACS) are not fully covered by corresponding loans, for the same purpose, outstanding against the ultimate borrower at PACS level. This arises on account of poor recoveries at PACS level, diversion of recoveries to meet establishment cost of PACS, repayment of loans of PACS for godowns etc. and also due to malpractices. Accounting practices of DCCBs, which appropriate all recoveries first towards interest and then towards principal, also tend to compound the problem. The DCCBs have no prospects of recovering the outstanding amount from PACS which are not covered by the loans outstanding against the ultimate borrowers. Consequently, the recovery of DCCBs deteriorated and the irrecoverable outstanding amount increased. Over a period of time, the DCCBs have become ineligible for NABARD refinancing as they could not meet the stipulated recovery percentage. This in turn, had affected the credit flow to the PACS. Rectification of the balance sheet of the cooperative sector will be attempted with one time assistance to the cooperative banks. The provision of this assistance has to be a pooled exercise by the Central, State

Governments and Cooperatives.

4.1.113 The cooperatives system and re-financing institutions are the two major channels for providing agricultural credit. The rural credit system is being restructured and it is proposed to double the flow of credit to agriculture and allied sectors. The availability of credit to the farmers particularly to the small and marginal category needs to be substantially improved. The quantum of refinance to cooperatives and RRBs will be progressively increased. The state level agricultural financial corporations established by NABARD would increase the flow of ground level credit, the new local area banks being established are also expected to increase the flow of credit to agriculture and allied sectors. In the North Eastern Region, NABARD's refinancing facilities to the commercial banks and other financing agencies will be at 90% of their ground level credit as against 50-70% applicable to rest of the country. NABARD has estimated that up to 2001-02 an amount of Rs. 1,49,400 crore. would be required for production purposes besides an amount of Rs. 80,350 crore towards investment credit. Thus, the total credit flow projected by NABARD is Rs. 2,29,750 crore up to 2001-02.

Watershed Management

4.1.114 As about 63 % of the cultivated land fall under rainfed areas, watershed management is one of the crucial areas for improving agricultural production. A holistic approach for development of integrated farming systems on watershed basis is the main objective under the National Watershed Development Project for Rainfed Areas (NWDPA) and other externally aided watershed development projects. During the Ninth Plan, the implementation of the National Watershed Development Programme will be intensified for the development of rainfed farming areas.

4.1.115 Apart from the National Watershed Development Project, another component of watershed management relates to externally aided projects. The World Bank aided project namely Integrated Watershed Development Projects (Plains) cover Gujarat, Rajasthan and Orissa. The Integrated Watershed Development Project (Hills) was conceived to ensure integrated development of hilly areas specially of ecologically degraded Shivalik ranges in Jammu and Kashmir, Himachal Pradesh, Punjab and Haryana. Similarly, there are projects assisted by Germany, Switzerland and DANIDA. These projects have helped partly in increasing the area under watershed management.

Soil and Water Conservation

4.1.116 Various soil and water conservation programmes aim at enhancing and sustaining the productivity of the available land stock, controlling land degradation, soil erosion, sedimentation, and hydrologic deterioration etc. The soil conservation programmes like All India Soil and Land Use Survey, State Soil Survey Organisation, National Land Use Boards, State Land Use Boards and the Soil Conservation Training Centres will be continued during the Ninth Plan. The on-going schemes of Soil Conservation in the catchments of River Valley Projects (RVP), Integrated Watershed Management in the catchments of Flood Prone Rivers (FPR) and the Programme of Reclamation of Alkali Soils, watershed development in shifting cultivation areas in North Eastern states will also be continued in the Ninth Plan.

4.1.117 The problem of water logging, saline and alkaline land is required to be tackled through two pronged strategy, namely one which is preventive type for new irrigation projects and the other of remedial nature of existing irrigation projects where water logging has already occurred. Soil Testing facilities are grossly inadequate. It is also a fact that the existing facilities are also not fully utilised to suggest remedial action to the farmers. This is very crucial for both high productivity as well as low productivity zones. Mobile Soil Testing facilities should be established in a large scale so that such facilities are available at farmer's door-step.

4.1.118 Involvement of people, women's groups, NGOs and PRIs have to be ensured on a wider scale in various land and water management programmes like tree planting, contour terracing, contour bunding, construction of innumerable small storages, leveling and reshaping of land under canal irrigation, construction of field channels and drains and the control of grazing.

Irrigation and Drainage facilities

4.1.119 There are about 119 major irrigation works, 176 medium irrigation works and about 67 schemes in Extension, Renovation and Modernisation (ERM). These are spill-over schemes from the previous Plan periods. These schemes have the potential of providing irrigation to an additional 12.5 million ha. The SAP has drawn up a time bound programme for completion of the spill over works with the assistance under RIDF and AIBP.

4.1.120 A new Centrally Sponsored Scheme (minor irrigation) with 100% Central assistance to the states of Assam, Bihar, Orissa and Eastern parts of Uttar Pradesh and Madhya Pradesh which are predominantly tribal and Northern part of West Bengal is envisaged in the Ninth Plan. Given the preponderance of small and marginal farmers in this area, very poor investment climate problems of fragmentation holdings a massive programme for establishment of Group Irrigation system is required. It is proposed that the community works/group tube wells would irrigate about 4 ha. and the group would consist of four or more farmers having contiguous lands. The unit cost of community tubewell may be about Rs.40,000/-. About one million ha. under community tubewell will be taken up under the programme. In states like Assam, providing of the lift irrigation points are required.

Rainfed Farming

4.1.121 Nearly 63 % of the cultivated area in the country comes under the category of 'Rainfed' and contributes about 40 % of total output. It may be noted that if the irrigation potential could be fully utilised, still half of the cultivated land may depend only on rain. Therefore, agricultural growth in future would have to be depend on exploitation and harnessing the growth potential in rainfed areas. Past experience shows that HYV technology have been adopted by the farmers in rainfed areas, particularly where there is adequate rainfall but occurrence of flood and drought are minimal. Due to low and uncertain response to new technology adoption, as well as low capital absorption capacity in rainfed areas, production remains much less compared to those of the irrigated areas.

4.1.122 The Ninth Plan strategy would largely be based on the recommendations of the Report of the Committee on Twenty Five Years Perspective Plan for the Development of Rainfed Areas. The Committee was set up by the Planning Commission under the Chairmanship of

Member (Agriculture). It has been estimated that development of the vast rain-fed areas comprising of 75 million ha. would require over Rs 37,500 crore. Further the estimated cost for scientific treatment for soil and water conservation would be about Rs.7500 crore for 12 million ha. of arable and 3 million ha. of non-arable land (at an average unit cost of Rs.5,000 per ha). It is not possible to fund on this pattern to develop the entire area of 75 million ha. However, in the next ten years it may be possible to develop about 30 million ha. which would need a substantial public investment. Two-thirds of this area will be arable and the remaining one-third non-arable.

4.1.123 The strategy for rainfed areas would be regionally-differentiated and broadly classified into four agro-economic zones for adoption of different technologies. There will be a hierarchy of regions in the scheme of agro-climatic regionalisation :-

- (i) Agro Economic Zone I: High productive areas, high level of irrigation or high assured rainfall and low incidence of poverty;
- (ii) Agro Economic Zone II: Relatively low productivity, high rainfall, low level of irrigation and high incidence of poverty;
- (iii) Agro Economic zone III: Areas having low productivity, low rainfall and high incidence of poverty; and
- (iv) Ecologically Fragile Zone IV: Agro-ecologically fragile zone, having mostly low levels of productivity and serious problem of high run-off and soil erosion in the North Western Himalayan belt, shifting cultivation in north-east and shifting sand dunes, higher degree of land degradation and inadequate water availability in desert and drought prone areas of Rajasthan and Gujarat.

4.1.124 To improve the crop productivity and production on a sustainable basis watershed development programme is being implemented with improved research technology. During the Ninth Plan, 10 million hectares of additional area has been proposed for coverage under watershed development programme funded by national or international agencies.

4.1.125 The problem of waterlogging, saline and alkaline land is likely to be tackled through the proposed strategy of preventive type of new irrigation projects and other of remedial nature of existing irrigation projects where water has already occupied the land. Various land and water management programmes like tree planting, contour bunding and terracing, construction of innumerable small storages, levelling and reshaping of land, cleaning of water canals, construction of field channels and drains and control of grazing would be undertaken to prevent further deterioration of land. Measures will be taken for treatment of alkaline and saline lands through various programmes.

4.1.126 The importance of watershed development as a strategy of agricultural and overall rural development in rainfed areas has been recognised in India for the past several years. A number of Government Departments as well as NGOs and external agencies are involved in promoting watershed development projects in various rainfed areas. In future, watershed development programme should be truly a people's programme and the role of Government should be limited to providing only infrastructural and technological support, wherever necessary.

Animal Husbandry and Dairying

4.1.127 The gross value of output from the livestock accounts for about 26% of the total agricultural output. Animal Husbandry & Dairying development activities will receive greater attention during the Ninth Plan as this sector plays an important role in generating employment opportunities and supplementing the incomes of small & marginal farmers and landless labourers, especially in the rainfed and drought-prone areas. Effective control of animal diseases, declaration of disease-free zones, scientific management of genetic stock resources and upgradation, breeding, quality feed and fodder, extension services, enhancement of production, productivity and profitability of livestock enterprises are the specific areas identified for immediate intervention and support. The Ninth Plan target for milk production is set at 96.49 million tonnes envisaging an annual growth rate of 7.06 percent. Egg and wool production targets are set at 35 billion nos. and 540 lakh kg. respectively. As a part of Special Action Plan for doubling food production new schemes envisaged in respect of dairy sector during the Ninth Plan are; (I) New Primary Dairy Cooperatives; and (ii) Vidya Dairies.

4.1.128 Some of the critical areas requiring priority attention are improvement and expansion of breeding services including AI services, upgradation of health care services, strengthening of training and research facilities. A Centrally Sponsored Scheme for upgradation of genetic stock of cattle and buffalo in a time bound manner will be taken up during the Plan period. Systematic dissemination of appropriate technologies in the field of animal production/management/health care will be undertaken through extension and training programmes. Development of human resource for animal husbandry and dairy sector will also receive special attention.

THRUST AREAS

- Strengthening of Health Care services.
- Upgradation of Genetic Stock of Cattle and Buffalo.
- Quality Feed and Fodder.
- Revival of Sick Dairy Cooperatives.
- Human Resource Development

4.1.129 Fodder and feed development is also one of the crucial areas that call for greater attention. The demand for animal feed is likely to increase at a faster rate in the next ten years and therefore promotion of cultivation of fodder crops, ensuring availability of fodder seeds and also of quality nutritious feed assume considerable importance. For poultry alone, about two million tonnes of maize will be required and this demand would be met through the accelerated development programme for Maize.

4.1.130 Adequate credit and marketing support, modernisation and upgradation of processing facilities including abattoir for livestock products and measures for harnessing the energies of private entrepreneurs, cooperative institutions, self-help groups and other voluntary agencies are some of the major thrust areas in this sector. Efforts will also be made to revive and rehabilitate the sick cooperatives. Such a well coordinated and comprehensive approach will induce the farmers to take up improved breeding, feeding and scientific management of livestock and all these will bridge the gap between potentialities and the actual performance in this crucial sector.

Fisheries

4.1.131 India is the seventh largest producer of fish in the world and, second in inland fish production. The fishery sector provides gainful employment to about 3.84 million full-time or part-time fishermen with an equally impressive segment of the population engaged in ancillary

activities associated with fisheries and aquaculture. The main objectives of the fisheries and aquaculture development programmes during the Ninth Plan are as follows: (a) enhancing the production of fish and the productivity of fishermen, fisherwomen, fish farmers and the fishing industry; (b) generating employment and higher income in fisheries sector; (c) improving the socio-economic conditions of traditional fisherfolk and fish farmers; (d) augmenting the export of marine, brackish and freshwater fin and shell-fishes and other aquatic species; (e) increasing the per capita availability and consumption of fish to about 11 kg per annum; (f) adopting an integrated approach to fisheries and aquaculture, taking into account the need for responsible and sustainable fisheries and aquaculture and; (g) conservation of aquatic resources and genetic diversity.

4.1.132 The total fish production in the country is 5.35 million tonnes (1996-97). This is about 64 % of the existing total production potential of 8.4 million tonnes. While in the case of marine fisheries nearly three fourth of the production potential has been exploited, that of inland fisheries it is only around 50 %.

There is an enormous scope for augmentation of both production potential as well as enhancement of productivity for inland fisheries. In the next ten years, fish production is projected to reach the level of 9.6 million tonnes with special thrust on inland fisheries resources. The Ninth Plan fish production target is set at 7.04 million tonnes envisaging a growth rate of 5.64 % per annum. An integrated approach for fisheries and aquaculture will be adopted for fisheries development on a sustainable basis.

THRUST AREAS

- Enhancing Productivity
- Augmenting Export
- Conservation of Aquatic Resources and Genetic Diversity.
- Integrated Approach for Sustainable Development of Fisheries and Aquaculture

4.1.133 Increase in productivity and production of fish/shrimps from freshwater and brackishwater under ongoing schemes would continue during the Ninth Plan. Present production level of over two tonnes per ha. achieved under ongoing programme of freshwater aquaculture through Fish Farmers Development Agencies (FFDAs) will be raised by adopting advanced technologies. Programmes will also be devised for augmenting fish production from freshwater through integrated fish farming, running water or flow-through systems etc.

4.1.134 The reservoirs constitute a major segment of the inland fishery resources of the country. Emphasis will be given to adopt scientific practices in reservoirs to harness the potential in an optimal manner. Special attention will be given for infrastructure development (rearing space etc.) to have the required size of fish seed for stocking the reservoirs.

4.1.135 There is an ample scope for development of fisheries in fallow derelict water bodies, water logged areas, lakes, beels etc. Programmes will be devised to develop these resources for enhancing fish production. Programmes will also be devised for the development of riverine fisheries through stocking, conservation and pollution abatement measures. Similarly programmes will also be taken up for cold water riverine and stream fisheries in the hill areas of the ecologically fragile zone.

4.1.136 Seed and feed are critical inputs required for development of fisheries and freshwater/brackishwater aquaculture and for enhancing productivity. Research and Development (R & D) programmes will be taken up for production of quality fish/shrimp seed and feed. Present level of fish seed production of 16,000 million fry will be raised at the rate of

7-8 % during the Ninth Plan. R&D programmes will be taken for development of freshwater prawn seed hatcheries at selected places, regulation of brackishwater farming and also overcoming of the diseases in cultured shrimps. Steps will also be taken to overcome other constraints including the legal intervention in brackishwater farming

4.1.137 Major emphasis will be placed on judicious exploitation of the coastal fisheries resources by the traditional and small scale sector by protection of the fishing rights from over exploitation of the resources by the mechanised and deep sea fishing fleet. Measures will also be taken to conserve fisheries resources of the coastal waters. Programmes will be taken up for strengthening the deep sea fishing fleet, diversification of catch by the existing deep sea fishing fleet and introduction of resource specific vessels to exploit the deep sea fisheries resources in the Exclusive Economic Zone of the country.

4.1.138 Programmes for Human Resource Development (HRD) with emphasis on training and skill development in post-harvest/processing and marketing activities particularly for fisherwomen besides, other income generating avenues during lean season will be taken up on an expanded scale. Adequate attention will be given for creation of infrastructure facilities for training of fishermen, fish processing and marketing, development of fishery harbours, landing centers etc. with cold storages, iceplants etc.

Agricultural Research Education and Extension

4.1.139 Agricultural research, education and extension forms one of the critical inputs for accelerating the growth of agricultural production. The Indian Council of Agricultural Research (ICAR) is the apex body in the country in respect of agricultural research and education. The ICAR undertakes to promote programmes for tackling problems relating to conservation and management of natural resources, productivity, improvement of crops, livestock, fisheries etc.

4.1.140 The major constraints that come in the way of improving the production and productivity as identified by Indian Council of Agriculture Research (ICAR) like inadequate and unbalanced use of fertilizers, delayed sowing and also transplantation, sub-optimal plant, disease-insect pest stress, poor weed control, inadequate production of HYV seeds of long duration suited to land with zinc deficiency, salinity and drainage in coastal and canal irrigated areas and soil acidity will be specifically addressed in the Ninth Plan.

4.1.141 The major objectives of the Ninth Plan are:

- * Conservation, planned enhancement and utilisation of agro-biodiversity, enhancing productivity through evolution of high-yielding hybrids and varieties,
- * Research on diversification, quality improvement, post-harvest technology, value addition and export oriented commodities;
- * Sustaining enhanced productivity of irrigated agriculture and judicious development and use of energy, especially renewable source of energy; Characterisation and sustainable land-use models for rainfed agriculture including high-rainfall areas; Development of Integrated Pest Management (IPM) and Integrated Nutrient Management Systems (INMS) for sustainable

agriculture; Fostering excellence in relevant basic and strategic research, Generating research and technologies geared to promote equity among regions, sectors of society and gender;

- * Strengthening social science, policy planning, agri-business, research monitoring mechanisms, administration and personnel reforms, publication and information dissemination systems; Promoting Agricultural Human Resource Development (AHRD); Linking scientists with the farmers through Institute Village Linkage Programme (IV/LP) as an innovative technology transfer model; institutionalisation and strengthening linkages/partnerships with the Consultative Group on International Agriculture Research (CGIAR) and other national and international agencies and research and development establishments, non-governmental organisations and private sectors.

4.1.142 Improved high yielding cultivators and large number of other input technologies in the National Agricultural Research System (NARSS) will be expanded with the missionary zeal. Special focus will be on hybrid research and development and accelerated programmes for breeder seed production particularly of hybrids and of improved varieties. Advent of bio-technology as a powerful tool has opened new vistas in breaking genetic barriers and hence gene transfer across the board is now possible. This would be capitalised through development of transgenics with special reference to biotic and abiotic pressures.

4.1.143 Seed procurement of superior varieties has been recommended by ICAR for each district and farming situation. Advance action for providing the required quantities of breeder and foundation seeds of appropriate varieties will be taken up. Promotion of varietal replacement and propagation of high yielding varieties of wheat, rice, barley, other coarse cereals and hybrid seeds, promotion of production of certified seed of HYV of crops specific to problem areas will be speeded up. Integrated Cereals Development Programmes in Rice/Wheat/Coarse cereals based cropping systems areas (ICDP – Rice/Wheats/Coarse Cereals) will be intensified and all efforts will be made to remove the dysfunctions in implementation process and to streamline delivery mechanisms with better extension services.

4.1.144 Arrangements will be made for monitoring the quality of inputs, particularly agro-chemicals, and also for increasing infrastructure facilities for soil testing. On technology aspects, organisation of breeder seed production programmes, training programmes, minikit demonstrations and technology transfer mechanism will be intensified.

4.1.145 The priorities in respect of research in Soil, Agronomy & Agro-forestry in the Ninth Plan are: (i) Inventory, characterisation, evaluation and conservation of biophysical resources (soil, water, climate, flora and fauna) in different agro-ecological segments; (ii) Evolving technologies for resource conservation and harnessing area-specific advantages of high rainfall, rainfed areas, problem areas (flood-prone areas, acid soils and degraded lands) and fragile ecosystems (mountainous, coastal and islands ecosystems); (iii) Development of sustainable land utilisation systems in farming system frame using modern tools and techniques for different agro-ecological regions/sub-regions/zones, considering not only biophysical aspects but also socio-economic aspects; (iv) Eco-regional water management planning for efficient use of water from various sources and of varying quality; (v) Integrated nutrient management with a focus on the use of organics; (vi) Human resource development in frontier areas of modern

technologies such as GIS, remote sensing, simulation modeling for nutrient and water management, crop-weather model and decision support systems.

4.1.146 ICAR with its network of Institutes, Bureaux, National Research Centres, Project Directorate and through State Agricultural Universities will also concentrate on improvement of health of soil through utilisation of organic wastes, policy planning on monitoring of agricultural research, working out detail design of network for National Agriculture Information Systems. Besides, it would also concentrate on conservation of genetic resources, creation of world's largest germplasm banks in areas of plants, animals and fishery, conservation of threatened breeds, physiology and bio-technological improvement in quality of feed and fodders, preparation of complete feeds, etc, would be three other areas of research on which the ICAR will concentrate during the Ninth Plan.

4.1.147 Design and development of dairy products, processing, packaging and preservation of meat, eggs, etc. measures to control microbial contaminants on these products, development of diagnostic techniques/methodologies for important livestock and poultry diseases, are needed and development of design for monitoring and surveillance system on animal diseases of national and international importance would be taken up on priority by the ICAR.

Animal Sciences

4.1.148 The key research areas identified in respect of animal sciences are (i) Genetic resource enhancement of cattle, buffalo, sheep, goat, pig, camel through selection/cross breeding/embryo biotechnology for milk, meat, draught power, fibre, egg and broiler (ii) Improving quality of feeds and fodder, search for newer feeds and preparation of complete feeds; (iii) Design and development of mechanised equipments for dairy products. Processing, packaging and preservation of meat and egg for value addition; (iv) Development of newer generation of diagnostics and diagnostic techniques/methodologies, immuno-biologicals against important livestock and poultry diseases.

Fisheries

4.1.149 Important areas identified in fishery research are : (i) Technologies for semi-intensive and intensive aquaculture in fresh water and brackish water ecosystems which are sustainable environmentally, socially and economically; (ii) Research support through studies on nutrition, reproduction, disease control and brood stock management with innovative biotechnology; (iii) Development of value-added products from low value fishes and improved packaging techniques with use of biotechnology, microbiology and engineering; (iv) Conservation, management and cataloguing of fish germplasm resources and establishment of gene bank; (v) Development of innovative techniques such as cage culture, pen culture, running water aquaculture, integrated farming systems with recycling of organic wastes for sustainable fish farming.

Agricultural Engineering

4.1.150 Agricultural engineering will emphasise on strengthening the programmes on farm implements and machinery, energy management, post-harvest engineering and technology and, irrigation and drainage engineering.

Agricultural Education

4.1.151 Major emphasis on agricultural education will be on (i) creation of new training and laboratory infrastructure, (ii) fostering greater interaction between agricultural scientists (iii) development of lead centres for providing regional and national level training in selected disciplines; and (iv) redefining the mandate of ICAR Institutes to recognise degree and non-degree training programmes for the scientists of the SAUs.

Modernisation and Maintenance of Research Infrastructure

4.1.152 Presently, the ICAR has 80 institutes comprising 46 Central Institutes, 4 National Bureaux and 30 National Research Centres. It has a network of 10 Project Directorates and 80 All - India Coordinated Research Projects/ Programmes. There are a large number of externally aided projects including that of World Bank. The infrastructure facilities available at the various ICAR Institutes are very old and out-dated. For meeting the future challenges, it is very important that the **basic research infrastructure are updated and strengthened**. It has been estimated that ICAR would need one-time grant of Rs. 500 Cr. for renovation and modernisation of 43 institutions which are 20 - 50 years old. The one-time catch-up grant is essential to upgrade and maintain laboratories and other research facilities/logistics to provide a research environment of international standards. The catch-up grant will provide for replacement of some old equipments and also updating educational facilities at its premier institutes like Indian Agriculture Research Institute (IARI). However, it is absolutely essential that a system of modernisation and maintenance is built in the project itself particularly in respect of costly equipments and machines. The Council should make necessary provision within the plan funds for maintenance and up-keep of research infrastructure.

Agriculture Extension

4.1.153 Lack of adequate manpower and equipment, the declining importance of Training and Visit (T&V) system and lack of professionalism have affected extension services. Regular training of extension functionaries is an integral and essential part of agricultural extension system. This basic responsibility lies with the State Governments. There are over 186 Farmers Training Units in the country. The major task is to energise the extension machinery at the field level. They have to play a significant positive role in dissemination of information and upgrading of the skills.

4.1.154 Ninth Plan will aim at consolidation and quality improvement in the on-going projects, develop support and upgradation of skills of staff working in Krishi Vigyan Kendras (KVKs) so that they can meet the emerging challenges due to globalisation and commercialisation of agriculture; technology assessment, refinement and transfer on participatory mode and institutionalising the vocational training for developing entrepreneurship in various agricultural enterprises and removal of regional imbalances by establishing new (KVKs), re-mandating the existing appropriate institutions to meet the needs of frontline extension in backward, hilly, rainfed and tribal areas. In addition to the above priorities, the Ninth Plan has also programmes for the North Eastern Region, SCs/STs and women. There are two types of Plan schemes during the Ninth Plan. The first one relates to the schemes which would be merged/integrated/upgraded, whereas the second one relates to new schemes which would be introduced during the Ninth Plan.

4.1.155 KVKs will be established in all the districts in the country during the Ninth Five Year Plan period. Presently, there are 261 KVKs covering 253 districts. Some of the districts like Jaipur, Firozpur, Kurnool, Dharwar and Warangal have two KVKs. During the year 1998-99 it is proposed to convert 25 Zonal Research Stations into KVKs and start 25 new KVKs. It is planned to add 78 KVKs during 1999-2000, about 70 each during the subsequent two years so that by the end of IX Plan all the districts in the country have KVKs.

4.1.156 There are a number of development activities which do not involve much of monetary considerations. Motivation and encouragement play an effective role in development activities. Close interaction between field officials particularly, those dealing with extension and the farming community will increase the latter's understanding and awareness. **Increasing demonstration activities on the farmers fields, training camps in villages, dissemination of information through various means including mass media** would bring tangible benefits in accelerating food production.

Human Resource Development in Agriculture

4.1.157 Human resource development for agriculture sector has remained a neglected area in the past. There is an increasing concern that if agricultural development has to proceed at a faster pace, it is essential that a significant qualitative upgradation of human resources in agricultural research, extension, production system and other related activities is achieved. The starting point of human resources is the agricultural education system. The need for constitution of an Agricultural Educational Council is felt more now than ever before to evolve guidelines for strengthening and achieving high standards of a agricultural education system in the country. To begin with, ICAR should strengthen the in-house manpower expertise. In certain new areas such as **commercial horticulture, floriculture, sericulture, establishment and maintenance of cool chains, modern post-harvest technology, establishment of gene bank in respect of fisheries sector**, the scientific manpower available is grossly inadequate. There is a need to build up a reservoir of skilled manpower in modern scientific agricultural practices.

4.1.158 The vast majority of workforce engaged in agriculture and allied activities are women workers. **Special emphasis will be placed to encourage women to acquire scientific skills** through both formal and informal education in agriculture and allied disciplines. Besides financial assistance, other measures including marginally lowering the cut-off marks for entry in Agricultural Universities will be evolved for the benefit of female candidates.

4.1.159 Realising the need for qualitative upgradation of human resources with the improvement of agricultural education system in the country, **constitution of an Agriculture Education Council** would be taken up. This will enable to have the syllabi revised to include specific areas like commercial floriculture, sericulture, modern post harvest technology, and management, environment, cold storage technology. Education and training of women involved in agricultural and allied practices will get special attention in Ninth Plan through various programmes.

Women in Agriculture

4.1.160 Agriculture and its allied sectors would focus special attention on women who play a very major role in all the agricultural operations. The **programmes for training women** in soil conservation, dairy development, social forestry and other occupations allied to agriculture

like sericulture, horticulture and poultry **would be expanded**. Simultaneously, the extension services will be strengthened to cover a larger number of women. The number of women extension workers, especially the Farm Extension Workers, will be increased to assist rural women. The Ninth Plan will aim at **strengthening the conditions of female farmers and female labourers** as it would also help improve the food security at the household level. This is because generally women spend most of their income on household expenditure unlike men and this would help improve the nutrition of the children. Efforts will be made to grant property rights in land to women wherever possible and self-help groups of women may be encouraged to take up activities like regeneration of wastelands. Women will be given preference in the allotment of ceiling surplus land.

Agricultural Exports

4.1.161 Agricultural exports form the major component of total exports. Ninth Plan research on this area will keep in view the changed scenario of liberalisation and emphasis on: (i) development and promotion of markets and products, brand name and dissemination of information among exporters; (ii) improvement in quality and packaging keeping in view the health, sanitation and international standards; (iii) encouragement to export oriented units/100% EOUs; (iv) development of cold chain system; (v) creation of infrastructures at air ports/sea ports and; (vi) integrated long term policy to improve the production, productivity, cropping pattern, as well as processing to augment the value-added products etc. increasing use of bio-fertilizers and bio-pesticides to ensure quality of products; (vii) encouragement to private sector to invest in infrastructure which can promote agro-exports.

MAJOR THRUST AREAS

- Infrastructure Development
- Quality and packaging
- Value addition
- Encouragement to export-oriented production

4.1.162 The major constraints affecting agro-exports include volume insufficiency, quality deficiencies, stringent legislation relating to health and safety standards of the importing countries, procedural bottlenecks, lack of adequate post-harvest infrastructure like refrigerated transport, storage and packaging, inadequate facilities at air ports, sea ports etc. Despite these constraints, agriculture as a whole has been an important contributor to the country's exports. The exports of agriculture products contributed Rs. 225,040 Cr. during 1996-97 accounting for 21% of the total exports. In the post-liberalisation period, except for 1994-95, the share of agricultural exports has been increasing steadily.

4.1.163 A number of policy changes have been introduced to encourage agricultural exports. Lowering of import duty on capital goods particularly for processing industry and easier availability of credit for exports has been very helpful. The measures liberalising agro-exports include decanalisation, relaxation of stock limits, abolition of MEP and extension of benefits of export oriented units scheme to rice processing units exporting at least half of their output. While the export of rice has been allowed freely, export of wheat-durum as well as non-durum, coarse grains, pulses have been allowed with some ceilings. Exports of HPS groundnut and oilseeds like sesame, sunflower seeds, rapeseed and mustard have been allowed freely. The export of de-oiled cake (extraction), de-oiled rice bran, soybean extractions etc. have also been allowed freely.

4.1.164 Agro-processing and agro-exports offer substantial non-farm employment and raise the farm incomes. **The rural educated youth will be encouraged in agri-business activities.** Agricultural Universities and ICAR institutions will give a special focus in research, education and training in commercial agriculture and generate a reservoir of talents and experts in the new areas of diversification such as horticulture, floriculture etc. The fact that our exports of rice, vegetables, fruits and marine products are on the increase shows that we are already price competitive in the international market in respect of these commodities. The Ninth Plan will adopt selective research approach to increase export competitiveness of agro-products.

4.1.165 India is one of the founder members of World Trade Organisation. The country is under obligation to remove quantitative restrictions. Presently, a large number of agro-products are subject to such restrictions. Specific strategies have been devised for meeting the situation. **Improving infrastructure support for post-harvest handling and processing, export promotion and market development, fast track facilities and special cargo terminals at major ports for perishables, establishing linkages with the industry, exporters and farmers for promoting exports of commodities which have high demand in international market, reviewing restrictions on storage, marketing and movement of agricultural products, are all part of the agro-export strategy.** Larger investments are proposed for research & extension for yield augmentation of cereal crops with special reference to hybrid technology. Farm mechanisation particularly, suited to the small farms in the country will be developed by improving farm implements/ machinery thereby reducing the cost of cultivation.

PLANT VARIETIES PROTECTION

4.1.166 **The Government of India is in the process of finalising a legislation on a sui-generis system for Protection of Plant Varieties. The Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement requires that the signatory countries should establish protection for plant varieties either by providing a patent protection or by instituting an effective sui-generis system or by combination thereof. This requirement is to be fulfilled within a period of five years.**

4.1.167 Research in India on breeding plant varieties has taken place almost entirely in public institutions like Agricultural Universities and ICAR. Commendable successes have been achieved by this set-up in the past, without our country having been a signatory to a system of protection of breeders' rights. The focus of Indian research in agriculture has to be on the requirements and the problems of a vast number of resource-poor, marginal and subsistence farmers. Moreover, the research has to respond to the varying agro-climatic conditions and vast areas of rainfed/dryland agriculture. The direction of private sector research world over has been towards promoting cash crops benefiting resource-rich farmers for whom agriculture is more like an industry. The same is true for horticulture, animal husbandry, fisheries, etc. It is this market which assures good returns for investment by the private sector breeders and researchers. Largely, the requirements of Indian agriculture will have to be met by research conducted by public institutions, not looking for profits.

4.1.168 Equally, the low-cost diffusion of better varieties is crucial for development of Indian agriculture and for promoting food security. The emergence of a few hundred small seed companies who engage mainly in multiplication of seeds and diffusion of new varieties has played a crucial role in this regard. Their rights to multiply improved seeds and sell them need to be protected and not restricted by creating a system of protection of the so-called breeders' rights.

4.1.169 **Above all, the rights of farmers as breeders need to be protected in any 'sui-generis' system suited to our needs. Equally, the cumulative and collective contribution of generations of farming communities in evolving a whole range of different varieties responding to the different agro-climatic conditions, needs and tastes also will have to be recognised in such a system.** The system that is evolved should be such that it preserves and strengthens the gains made by the developing countries in the negotiations on the Convention on Biological Diversity and not in the opposite direction.

Agro-climatic Regional Planning Approach (ACRP)

4.1.170 The work of operationalisation of this new technique of planning initiated in five ACRP experimental projects will be completed during the Ninth Plan period. Further, based on the results of these experimental projects, the **ACRP planning from district level will be popularised** for taking up on the basis of this technique of planning. The present phase of institutionalisation would thus have to continue, perhaps on a wider scale. In addition, research/studies on areas having direct bearing on development planning need to be assigned priority, particularly in regions (such as the North East) which have poor database. The ACRP would also have to play a major role in enhancing the farmers' competitiveness to face the opening up of the markets. The Zonal Planning Teams (ZPTs) need to suggest and identify the best resource use plan for all categories of farmers. Agro-Planning & Information Bank (APIB) will build up necessary facilities by acquiring equipments for collecting information which will be useful for line use/ACRP planning; during the Ninth Plan. **The APIB will take-up activities of resource mapping in some more selected States and districts during the Ninth Plan.** The ACRP Documentation & Dissemination Centre (ADDC) will continue to function to achieve its goal of training a large number of officers from administrative development departments and grass root level workers for the adoption of ACRP planning.

4.1.171 Through the institution of the District Planning Committee, the decentralised planning process has been made mandatory and has ensured people's participation at every stage. The State Governments, however, would have to work out suitable procedures for integrating the hierarchical and decentralised planning processes. Since ACRP considers district to be the most operationally feasible unit for institutionalisation, there exists considerable scope for dovetailing the expertise available under ACRP project while formulating an integrated district plan. However, ACRP would have to integrate the ACRP plan with the infrastructure development plan and converging with social development programmes of the State and Centre. For this purpose, the ACRP and the State governments would have to institutionalise the linkages between them.

4.2 IRRIGATION, COMMAND AREA DEVELOPMENT AND FLOOD CONTROL PROGRAMMES AND STRATEGY

4.2.1 Agricultural growth is a pre-requisite for the economic and social development of our country. Agriculture contributes 28% of GNP, about 60% of employment and is the primary source of livelihood in rural areas which account for 75% of India's population and 80% of its poor. The irrigated agriculture, contributes nearly 56% of agricultural output. Addressing the irrigation sector's current performance problems will thus be a central element of future strategy for agricultural development. India has now nearly reached the ceiling of available land suitable for cultivation. Between 1970-71 to 1993-94, net sown area remained virtually unchanged (from 140.27 to 142.10 m.ha.). Hence, increase in production is attributable to an increase in yields through increase in cropping intensity and utilisation of better inputs. The increase in irrigation intensity has contributed to the growth in the overall cropping intensity (including rainfed crops) which increased from 111.07% in 1950-51 to 131.19% in 1993-94. The nature of irrigation development in northwest areas has had much to do with its impact on cropping intensity. Expansion of tubewells and availability of surface water from storage type irrigation projects has enabled the production of Rabi and summer crops. Supplemental irrigation is available via run-of-the-river irrigation schemes as the snow melts. In the 1950s and 1960s, extension in cultivated area contributed substantially to increase in our foodgrain production. Mid Sixties onwards, expansion of irrigation as well as introduction of high yielding varieties of rice, wheat and other crops brought the country's foodgrain production to a satisfactory level. Further step up in foodgrain production, to the extent of its doubling in next 10 years, would mainly depend on the availability and performance efficiency of irrigation. The Ninth Plan will make a thrust in this direction through a "Special Action Plan", the details of which are included subsequently. The overall strategy of irrigation development and management during the Ninth Plan will have the following core ingredients:

- (a) To improve water use efficiency by progressive reduction in conveyance and application losses,
- (b) To bridge the gap between the potential created and its utilisation by strengthening the Command Area Development Programme (CADP), institutional reforms and promoting farmers' involvement in irrigation management.
- (c) To complete all the ongoing projects, particularly those which were started during pre-Fifth and Fifth Plan Period as a time bound programme to yield benefits from the investments already made.
- (d) To restore and modernise the old irrigation systems which were executed during the pre-Independence period and 25 years ago.
- (e) To introduce rational pricing of irrigation water, based initially on O&M cost and then to encourage higher level of water use efficiency.

- (f) To take concrete steps towards comprehensive and integrated development of natural water resources, taking into account the possibility of inter-river-basin transfer of surplus water and,
- (g) To promote adaptive research and development to ensure more cost-effective and efficient execution and management of irrigation systems
- (h) To promote Participatory Irrigation Management (PIM) with full involvement of the water user community, which will be at the centre stage of the implementation of above strategies of the Ninth Plan.
- (i) To encourage and implement the conjunctive use of ground and surface waters towards optimal utilisation of water resource and to have its development environmentally sustainable as well.
- (j) To accelerate the development and utilisation of ground water, particularly in the eastern region on sound technical, environmental and economic considerations along with proper regulatory mechanisms.

Irrigation Development through the Plan periods : Overview

4.2.2 Irrigation is a vital input to increase agricultural output to keep pace with the food requirements of the ever-increasing population. As recently reassessed by the Ministry of Water Resources the country's ultimate irrigation potential is tentatively estimated at 139.89 m.ha. comprising of 58.46 m.ha. through major & medium irrigation and 81.43 m.ha. from minor irrigation as against pre-revised ultimate irrigation potential of 113.50 m.ha. In the post-Independence period a sum of about Rs.91943.40 crore (including about Rs.13469 crore of institutional investment) at the current price level (Rs.231,386.59 crore at 1996-97 constant price), has been made in major, medium and minor irrigation projects including ground water and as a result, the creation of irrigation potential increased from 22.6 million hectares(m.ha.) in the pre-Independence period, to about 89.56 m.ha. at the end of the Eighth Plan. With this, India has the largest irrigated area among all the countries in the world. This has greatly contributed to the increase in foodgrains production from 51 million tonnes (mt.) in 1950-51 to 198 mt in 1996-97 at a compound annual growth rate of around 3 per cent. Broadly speaking, about 60% of the foodgrains production has come from the irrigated area which constitutes about one-third of the total cultivated area and the remaining production has come from the rainfed areas.

4.2.3 Table-4.2.1 shows the magnitude and the composition of investment in irrigation and flood control projects through successive Plan periods.

Table 4.2.1

**Magnitude & Composition of Investment Through Plan periods
in Irrigation and Flood Control Sectors**

(Rs. in crore at current price level)

Plans	Major & Medium Irrgn.	Minor Irrigation			C.A.D.	Flood Control prices	Total at current prices
		Public Sector	Institutional Finance	Total			
First	376.24	65.62	Nieg.	65.62	-	13.21	455.07
(1951-56)	(7803.42)	(1360.99)		(1360.99)		(273.98)	(9438.39)
Second	380	142.23	19.315	161.58	-	48.06	589.64
(1956-61)	(6013.98)	(2250.97)	(306.24)	(2557.21)		(760.61)	(9331.80)
Third	576	327.73	115.37	443.10	-	82.09	1101.19
(1961-66)	(6674.84)	(3797.82)	(1336.94)	(5134.76)		(551.28)	(12760.88)
Annual	429.81	326.19	234.74	560.93	-	41.96	1032.70
(1966-69)	(3943.90)	(2993.10)	(2153.96)	(5147.06)		(585.02)	(9475.98)
Fourth	1242.30	512.28	661.06	1173.34	-	162.04	2577.48
(1969-74)	(7976.41)	(3289.18)	(4243.45)	(7532.63)		(1040.40)	(16549.18)
Fifth	2516.18	630.83	778.766	1409.58	-	298.61	4224.36
(1974-78)	(12519.42)	(3138.74)	(38741.67)	(7013.41)		(1485.75)	(21018.59)
Annual	2078.58	501.50	480.40	981.90	362.96*	329.96	3753.40
(1978-80)	(7949.67)	(1918.02)	(1837.32)	(3755.34)	(1388.16)	(1261.95)	(14355.15)
Sixth	7368.83	1979.26	1437.56	3416.82	743.05	786.85	12315.55
(1980-85)	(19625.50)	(5271.39)	(3826.67)	(5100.06)	(1978.97)	(2095.63)	(32800.16)
Seventh	11107.29	3118.35	3060.995	6179.30	1447.50	941.58	19675.67
(1985-90)	(21207.15)	(5953.87)	(5844.27)	(11798.14)	(2762.85)	(1797.76)	(37566.77)
Annual	5459.15	1680.48	1349.59	3030.07	619.45	460.64	9569.31
(1990-92)	(8125.60)	(2501.29)	(2008.78)	(4510.07)	(922.01)	(685.63)	(14243.32)
Eighth	21071.87	6408.36	5331.00	11739.36	2145.92	1691.68	36648.83
(1992-97)	(31057.63)	(9445.22)	(7857.311)	(17302.52)	(3162.85)	(2493.35)	(54016.36)
Total	52606.25	15692.83	13468.777	29161.60	5418.88	4856.67	91943.40
	(132389.93)	(39492.89)	(33895.777)	(73388.66)	(13385.66)	(12222.39)	(231386.59)

SOURCE : Reports of the Working Groups of Ninth Five Year Plan.
Upto 3/80. Note : Figures within brackets above indicate the
expenditure at constant prices at 1996-97.

4.2.4 Besides the direct investment shown in the above Table, there has been private investments along with indirect investment by way of subsidies to the private development of minor irrigation. The development of irrigation potential through the successive Plans is shown in Table-4.2.2.

TABLE 4.2.2
Development of Irrigation Potential (cumulative) through Plan periods
(In Million ha.)

Plan	Major/Medium Irrgn.		Minor Irrigation		Total Irrigation		Gross Irrigated Area as per Land Utl. Statistics
	Pot.	Utl.	Pot.	Utl.	Pot.	Utl.	
1	2	3	4	5	6	7	8
Pre-Plan	9.70	9.70	12.90	12.90	22.60	22.60	22.56
First (1951-56)	12.20	10.98	14.06	14.06	26.26	25.04	25.64
Second (1956-61)-GW	14.33	13.05	14.75	14.75	29.08	27.80	27.98
Third (1961-66)	16.57	15.17	17.00	17.00	33.57	32.17	30.90
Annual (1966-69)	18.10	16.75	19.00	19.00	37.10	35.75	35.48
Fourth (1969-74)	20.70	18.69	23.50	23.50	44.20	42.19	40.28
Fifth (1974-78)	24.72	21.16	27.30	27.30	52.02	48.46	46.08
Annual (1978-80)	26.61	22.64	30.00	30.00	56.61	52.64	49.21
Sixth (1980-85)	27.70	23.57	37.52	35.25	65.22	58.82	54.53
Seventh (1985-90)	29.92	25.47	46.61	43.12	76.53	68.59	61.85
Annual (1990-92)	30.74	26.32	50.35	46.54	81.09	72.86	65.68
Eighth (1992-97) (anticipated)	32.96	28.44	56.60	52.31	89.56	80.75	70.64

* Component of ground water.

SOURCE : Ministry of Water Resources and Reports of Working Groups and Ninth Five Year Plan proposals of various states.

Figures in Brackets indicate the potential creation by ground water development.

NOTE : Upto the Annual Plan 1978-80, the potential creation and its utilisation for minor irrigation are shown as same. In this context, it is to be mentioned that as per procedure upto Fifth Plan, the utilisation of potential was reckoned as 100% of potential created. However, the PAC in its 1-41st Report (1982-83) did not accept the above practice. Subsequently, the Working Group on Minor Irrigation for the formulation of Seventh Plan recommended that during the Sixth Plan the utilisation figure might be reported as per existing practice but the base line for the year 1984-85 should be worked out both for potential created and utilised. Accordingly, after consultation with the States the Planning Commission fixed the base figure for 1984-85 for potential created and utilised as 37.52 m.ha and 35.25 m.ha. respectively.

4.2.5 While the irrigation potential created through major and medium irrigation projects has recorded about a four-fold increase, the irrigation potential created through ground water schemes, which are mostly executed and managed by the farmers themselves has recorded about seven-fold increase. Among the most important 11 States, from the point of view of irrigation, (Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, M.P., Maharashtra, Punjab, Rajasthan, Tamil Nadu and U.P.) ground water dominates over other sources in all except Haryana. In Gujarat, Bihar, H.P., Punjab, Tamil Nadu and West Bengal, the share of ground water in overall irrigation is over 60 per cent.

IRRIGATION POTENTIAL CREATION

Whereas the irrigation potential created through major and medium irrigation projects has recorded about a four-fold increase by the end of Eighth Five Year Plan over the Pre plan period, the irrigation potential created through ground water schemes, which are mostly executed and managed by the farmers themselves has recorded a about seven-fold increase during the corresponding period.

4.2.6 A consolidated statement of year-wise and State-wise financial performance during the Eighth Plan in respect of major and medium, minor irrigation, CADP and flood control is in Annexure-4.2.10.

Utilisation of Created Potential

4.2.7 Due to rapid expansion of irrigation with its emphasis on new construction, particularly till the end of 6th Plan, the performance of irrigation and the sector's broader management have not attracted due attention. The development impact of irrigation is much less than its potential and deficiency in implementation have accumulated over time. The irrigation sector is now facing a challenging situation and four issues are of particular concern: productivity, sustainability, investment and financial discipline alongwith sector management.

4.2.8 As per the latest estimates, the gap between potential creation and utilisation is anticipated to be about 8.81 m.ha. at the end of the Eighth Plan (major and medium irrigation 4.52 m.ha. and minor irrigation 4.29 m.ha). This gap has been increasing from Plan to Plan. But, this data does not give a correct picture of utilisation of irrigation potential, mainly because of the reason that the criteria/norms for reporting the creation of potential and its utilisation adopted by the States are not uniform. For example, Maharashtra gives the utilisation as achieved and irrigated, while U.P. gives the maximum area irrigated since inception during any rabi and kharif period. This needs to be reconciled on the basis of all the States following uniformly the criteria as laid down by the Planning Commission in 1973 in respect of irrigation potential creation and its utilisation (with modification to cover the distribution system upto 5 to 8 ha blocks). Further, a lag of a few years between the introduction of irrigation and its full utilisation, which is less in the case of minor irrigation, is obvious due to the time required for the construction of the distribution system as well as for switching over from rainfed agriculture to irrigated agriculture involving major changes in agriculture techniques which the farmers take time to master. Further, the potential area, which can be irrigated in a system, depends on several variables including, besides the availability of distribution networks, the volume and seasonal pattern of water availability, the losses in conveyance, distribution and application on fields, the extent to which the conjunctive use is developed and the actual crop pattern on ground. In so far as the assumptions in respect

of these parameters, underlying the project design, are not actually realised in full, there is bound to be a divergence between the actual area irrigated and the potential created.

Gap between Potential Creation and Utilisation

As per the latest estimates, the gap between potential creation and utilisation is anticipated to be about 8.81 m.ha. at the end of the Eighth Plan (major and medium irrigation 4.52 m.ha. and minor irrigation 4.29 m.ha). This gap has been increasing from Plan to Plan mainly due to,

- (i) A lag of few years between the introduction of irrigation and its full utilisation (which is less in case of Minor Irrigation), is obvious due to time required for the construction of the distribution system as well as for switching over from rainfed agriculture to irrigated agriculture involving major changes in agricultural techniques which the farmers take time to master.
- (ii) The criteria/norms for reporting creation of irrigation potential and its utilisation adopted by the States are not uniform.
- (iii) The potential area which can be irrigated in a system depends on several variables including availability of distribution networks, the volume and seasonal pattern of water availability, conveyance losses, distribution and application on fields, the extent to which the conjunctive use is developed and the actual crop pattern on ground. In so far as the assumptions in respect of these parameters underlined in the project design are not actually realised in full, there is bound to be divergence between actual area irrigated and the potential created.

Sectoral Priority in Funding for Irrigation

4.2.9 The funding for the irrigation sector with respect to total State Plan size from the Fifth Plan onwards has steadily been declining as indicated below :-

	Period	Irrigation funding as per cent of total State Plan
1.	Fifth Plan (1974-78)	23.25%
2.	Sixth Plan(1980-85)	20.85%
3.	Seventh Plan(1985-90)	11.85%
4.	Eighth Plan(1992-97)	18.48%
	(Approved outlay)	
5.	1992-93(Actual expdr.)	15.94%
6.	1993-94(RE approved)	15.68%
7.	1994-95(approved)	15.21%
8.	1994-95(RE Approved)	14.08%
9.	1995-96(Approved outlays)	14.91%
10.	1996-97(-do-)	15.00% (anticipated)
11.	Eighth Plan	15.00% -do-

For Ninth Plan agreed outlay for the State sector and the UTs is Rs. 55872.86 crore which works out 14.93 per cent as inter-se percentage in State Plan. Besides, an outlay of Rs. 2291.25 crore is approved for Central sector under Ministry of Water Resources for the Ninth Plan.

4.2.10 In the Ninth Plan, agricultural growth at the rate of 4.5% has been envisaged. With the net sown area almost stagnant in the country at 140-141 m.ha., a further expansion of irrigation, including additional irrigation becoming available from the modernisation/renovation of irrigation capacities, is needed as a critical input in achieving the targeted growth rate of agriculture in the Ninth Plan.

Financing for Accelerated Completion of Projects

Rural Infrastructure Development Fund (RIDF)

4.2.11 This was started in 1995-96 with a corpus of Rs.2000 crore under the aegis of NABARD to provide loans to the State Governments for financing rural infrastructure projects including irrigation, soil conservation and watershed management, etc. During the Annual Plans 1997-98 and 1998-99 for RIDF-III and RIDF-IV Rs.2500 crore and Rs. 3000 crore have been allocated. As per the latest status report (January 1998) out of RIDF-I (closure by 1997-98), a sum of Rs.1748.55 crore has been sanctioned to 20 States for 3517 irrigation projects/schemes (including 7 flood control schemes in Uttar Pradesh) covering total Culturable Command Area of 2.29 m.ha. and about 1382.27 crore has already been disbursed. Similarly, out of IRIDF-II (closure by 1998-99), a sum of Rs.2617.88 crore has been sanctioned to 14 States for 3384 irrigation projects/schemes covering total CCA of 0.50 m.ha. and about 20% of the sanctioned amount has so far been disbursed under RIDF-III a total of 13561 schemes with Rs. 2321.27 crore have been sanctioned.

Accelerated Irrigation Benefit Programme (AIBP)

4.2.12 This programme was launched in 1996-97 by the Government of India with an outlay of Rs.900 crore, subsequently revised to Rs.500 crore to accelerate the completion of selected ongoing irrigation projects in order that the envisaged benefits from locked investments in these projects are accrued. Initially, this programme had two components. The first component was designed to include major/multipurpose projects, each with the project cost exceeding of Rs.1000 crore and the project being beyond the resource capability of the States. The other component was for irrigation projects where, with just a little additional resource, the projects could be completed and farmers could get the assured water supply to the extent of one lakh ha. in the following 4 agricultural seasons or two agriculture years. Upon the revision of this cost criteria, now an irrigation project with its cost exceeding Rs.500 crore is eligible. The funding for AIBP is in the form of loan to the States on 50% matching basis. During the Annual Plan 1996-97, a sum of Rs.500 crore was released to various States and, as reported by the Ministry of Water Resources about 16180 ha. of additional irrigation potential has been created so far. During A.P. 1997-98 and A.P. 1998-99, the approved outlays under AIBP are Rs.1300 crore and Rs. 1500 crore respectively.

Improvement in Water Use Efficiency

4.2.13 Water use efficiency is presently estimated to be only 38 to 40% for canal irrigation and about 60% for ground water irrigation schemes. On the basis of 1991 census, our country's per capita water availability per year was estimated at 2214 cubic metres against the global average of 9231 cubic metres and 3020 Cub. M., 3962 Cub. M. and 4792 Cub. M. per year respectively for countries like Afghanistan, Pakistan and Sudan. In 1990, India was ranked at the 42nd position among 100 countries by per capita water

availability. In the total water use in 1990, the share of agriculture was 83%, followed by domestic use (4.5%), industrial use (2.7%) and energy (1.8%). The remaining 8 per cent was for other uses including environmental requirements. The projected total water demand by the year 2025 is around 1050 cubic kilometres against the country's utilisable water resources of 1140 cubic kilometres. The share of agriculture in total water demand by the year 2025 would be about 74 to 75 per cent. Thus, almost the entire utilisable water resources of the country would be required to be put to use by the year 2025 A.D. Irrigation, being the major water user, its share in the total demand is bound to decrease from the present 83% to 74% due to more pressing and competing demands from other sectors by 2025 A.D. and, as such, the question of improving the present level of water use efficiency in general and for irrigation in particular assumes a great significance in perspective water resource planning. It is estimated that a 10% increase in the present level of water use efficiency in irrigation projects, an additional 14 m ha area can be brought under irrigation from the existing irrigation capacities which would involve a very moderate investment as compared to the investment that would be required for creating equivalent potential through new schemes. Thus, there is a need to improve the water use efficiency in most of the existing irrigation projects through modernisation, renovation and upgradation to realise optimum benefits on the one hand and mitigate the consequential side effects like waterlogging etc. on the other.

Per Capita Availability of Water in India

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Improvement in Water Use Efficiency

On a rough basis, it is estimated that with a 10% increase in the present level of water use efficiency in irrigation systems, an additional 14m.ha area can be brought under irrigation from the existing irrigation capacities at a very moderate investment as compared to the investment that would be required for creating equivalent potential by way of new schemes.

4.2.14 To promote the process of improvement in water management through upgradation of the main systems of selected irrigation schemes the National Water Management Project(NWMP), an externally aided project (EAP), was implemented during the period 1987-95. The basic objective of the project was to improve the irrigation coverage and agricultural productivity and thereby increase the income of farmers in the command areas through a more reliable, predictable and equitable irrigation service. This project was implemented in 11 States of A.P., Bihar, Gujarat, Haryana, Karnataka, Kerala, M.P., Orissa, Tamil Nadu and Utter Pradesh, covering 114 Irrigation projects with a command area of about 3.348 m ha. at a cost of Rs.587.81 crore at current prices. The IDA Credit was to finance about 73% of the total costs and the balance was to be met from the development budget of the participating States. With the implementation of this Project an

overall improvement was found in terms of water management, productivity and farm income, etc. Increase in farm income in the 9 schemes on completion as a direct result of the Project ranged from 8% to 89%, the highest of 50% and 89% were in the tail end reaches of the projects which were essentially rainfed prior to NWMP. Although the project outcome has not been rated as satisfactory in terms of achievement of the target which was only about 15% completion of command at the time of termination of the scheme, this provided adequate feedback for the formulation of future strategy. Now, the Ministry of Water Resources has initiated follow-up action on NWMP-II with an estimated cost of Rs.2880 crore for 7 years.

Renovation and Modernisation of Projects

4.2.15 Increasing the effective irrigation area through timely renovation and modernisation of the irrigation and drainage systems, including reclamation of waterlogged and salinised irrigated lands through low-cost techniques, is needed to be considered especially in the context of the present resource constraints. It is estimated that about 21 m.ha of irrigated area from major and medium projects from pre-Independence period and those completed 25 years ago, require renovation/upgradation/restoration to a great extent of the areas which have gone out of irrigation, either partly or fully, due to deterioration in the performance of the systems. The total investment involved is estimated at Rs.20,000 - 30,000 crore over a period of 20 years. Water Resource Consolidation Project (WRCP- 6 years duration) has also been ongoing in the States of Haryana (estimated cost - Rs.1442.12 crore), Tamilnadu (Rs.807 crore) and Orissa (Rs.1409.90 crore) during the Eighth Plan, in the post-NWMP-I period which also envisages, inter alia, the completion of some incompleated major and medium projects and strengthening of institutions on the lines of Participatory Irrigation Management/Irrigation Management Transfer (PIM/IMT). More States are expected to be covered under this programme during the Ninth Plan. Recently, an externally aided Andhra Pradesh Irrigation Project (Phase-III) has been taken up for modernisation/renovation of selected irrigation projects in Andhra Pradesh. Besides the above, Punjab Irrigation and Drainage Project Phase-II (1990-98), with an estimated cost of US \$ 165 million and closing in March, 1998 and including components of all sectors of irrigation (major/medium/minor, CAD and flood control) is also under implementation. This is aimed primarily at better water management and improved functioning to achieve optimum utilisation of water in Punjab, as the State has almost exhausted the exploitation of surface water. However, a greater push for modernisation/renovation of existing irrigation projects will be needed during the Ninth Plan period.

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International Cooperation

4.2.16 During the Eighth Plan, the externally aided irrigation projects, put together, accounted for 18% of total estimated cost of ongoing projects. The share of irrigation in the total external aid annually was around 7% to 8 per cent. However, the expenditure incurred on the externally aided major and medium projects during the first three years of the Eighth Plan was only 31% of the target. Thus, vigorous efforts to attract more external investments in irrigation sector as well as to improve the level of utilisation are the need of the hour especially against the backdrop of constraints in domestic funding. Apart from provision of inadequate level of funding as per provisions in the agreement, the other major reasons of the low level of utilisation of external assistance relate to the tendering procedure and its finalisation including insistence on global tender for the material/machinery which may be available in India, participation of NGOs in the land evaluation committees in the States leading to delays in finalising land acquisition proceedings, frequent review of R&R programme by making field visits and interrogating the oustees about their level of satisfaction which at times encourages them to ask for more and more facilities which, if not fulfilled, results even in stoppage of works and, sometimes, certain techno-economic issues requiring change in the scope of the project during execution although the agreement has been signed on the basis of detailed appraisal earlier etc.

Irrigation Water Charges

4.2.17 According to the National Water Policy (1987), water rate should be such as to convey its scarcity value to the users and motivate them in favour of efficient water uses, besides, at the same time, being adequate to cover annual maintenance and operation charges and recover a part of the fixed cost. Agricultural productivity per unit of water needs to be progressively increased in order to be able to compete with other higher value uses of water. Simultaneously, sound practices for irrigation revenue recovery by the appropriate agencies, even by institutional adjustments, need to be promoted. Most of the States have at present very low irrigation water rates at substantively varying levels and have not revised these for the last 2-3 decades. A few States had revised the water rates during 1981-86 but the revised rates in some cases had been withheld by the States Governments. Most of the north-eastern States (except Assam and Manipur) do not even charge any irrigation water rate. Maharashtra is the only State where the irrigation water

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Most of the States have, at present, very low irrigation water rates at substantially varying level and have not revised for the last 2-3 decades. Most of the North-Eastern States (except Assam and Manipur), do not even charge any irrigation water rates. Maharashtra is the only State where the irrigation water rates are announced for a 5 years period at a time with a provision for 10% increase per annum so as to cover the full O&M cost as well as interest payable on the public deposits raised through irrigation bonds. The State Governments of Andhra Pradesh, Maharashtra, Haryana and Orissa have revised the water rates recently.

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4.2.18 The Tenth Finance Commission (1995-2000) have suggested the norms for O&M cost of works at the level of Rs.300 per lha. in case of utilised potential and Rs.100 per ha. for the unutilised potential with 30% increase for hilly areas and suitable increase for insulating inflation. Accordingly, the estimated total O&M cost per annum for the country would be about Rs.2500-3000 crore. Against this requirement, the O&M funds, being provided are actually less than even 1/4th with wide variation from State to State. This is one of the major reasons for the deterioration in the performance in terms of adequacy, timeliness and equity in the provision of irrigation water in the system.

4.2.19 A Water Pricing Committee, an internal group was set up by the Planning Commission in October, 1991 to study the pricing of irrigation water. Some of the salient features of the recommendations of this Committee are: treating water rates as user charge, the objective being ultimately to recover cost; linking revision of water rates with the improvement in the quality of service; revision and implementation of water rates in phases; consolidation of the system of farmer group management; upgrading the system to higher levels of efficiency in water use and productivity; switching over progressively to volumetric water rates structure; the setting up of "High Powered" autonomous boards at State level to review the policy, establish norms regarding maintenance costs, assess the actual expenditure and determine the parameters and criteria for raising water rates, mandatory review of all matters related to water pricing every five years, etc. Subsequently, to go into the recommendations of the above Committee, the Planning Commission constituted a Group of Officials under the chairmanship of Secretary, Planning Commission and members from selected States and concerned Government of India Ministries/Departments. The Group unanimously recommended that full O&M cost should be recovered in the phased manner i.e. over a 5 year period starting from 1995-96 taking into account the inflation also and that subsequently after achieving O&M level the individual States might review the status to decide on appropriate action to enhance the water rates to cover 1% of the capital cost also. In addition to the above, the setting up of Irrigation and Water Pricing Boards by all the States and mandatory periodic revision of water rates atleast every 5 years with an opportunity for users to present their views were also recommended. Further, the Group also recommended the formation of Water Users Associations and the transfer of the maintenance and management of irrigation system to them so that each system may manage its own finances both for O&M and eventually for expansion/improvement of facilities. During 9th Plan, all the states will have to be persuaded to implement the recommendations of the Group in a first phase of implementing the Water Pricing Committee's Report.

Private Sector Participation

4.2.20 Private sector participation involves not only the private corporate sector but also groups like farmers' organisations, voluntary bodies and the general public. About 90-95% of ground water development is by private efforts either through own financing or institutional financing or both. However in the case of surface water, especially major

and medium projects, all the irrigation projects are not equally endowed with the potential for privatisation and, as such, identification of projects as a whole or partially (i.e. planning and investigation, Construction, operation and management financing and maintenance etc.) may have to be undertaken in the light of its viability vis-a-vis various privatisation options as available With hydel power generation and recreation, etc. along with irrigation, the viability for privatisation of a project improves

Private Sector Participation

Some States like Maharashtra, Madhya Pradesh and Andhra Pradesh have initiated the action for privatisation of irrigation projects. These projects are envisaged for privatisation on Build-Own-Operate (BOO), or Build-Own-Operate-Transfer (BOOT) or Build-Own-Lease (BOL) basis. In the case of projects on BOO basis, the Irrigation Department may buy water in bulk from the agency at mutually agreed price for distribution to the farmers. Apart from this, Maharashtra Krishna Valley Development Corporation (MKVDC) for Krishna Valley Projects, Sardar Sarovar Narmada Nigam Ltd. (SSNNL) for Sardar Sarovar Project in Gujarat and Jal Bhagya Nigam for Upper Krishna Project, Karnataka have mobilised financial resources through issue of Public Bonds from the private market.

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- (1) The deliberations in the Workshop indicate that private sector participation in irrigation & multipurpose projects is feasible but selectively. Some procedural and legal changes are required to be undertaken in respect of clearances of projects and involvement of private sector investors in this regard. More specifically, some suggestions as indicated below in brief have been offered by the participants.
- (2) Private sector participation could be thought of on BOL or BOLT basis for a specified period of say 10-30 years.
- (3) While it may be more suitable for medium and minor projects, it could pose some problems in the case of major projects.
- (4) Clearances such as forests, environment, resettlement and rehabilitation, acquisition of land etc., should be carried out by the Government departments.

- (5) Concessions should be offered to private sector investors to augment their revenue. These may include tourism, water sports, navigation, moratorium on loans, tax concessions, etc.
- (6) Distribution of water after bulk supply to Water Users' Associations should not be handled by private sector. The WUAs should be encouraged to be formed and they should manage distribution.
- (7) Safety and sociological aspects should be looked into by the Government departments.
- (8) There should be a guarantee on the return of investment of the private sector.
- (9) In difficult terrains, there should be investment from the Government side also.
- (10) While broad national policy guidelines on private sector participation may be framed by the Centre, details may be worked out by the States as suited to their conditions within the framework of such policy and guidelines.
- (11) The obligations of the Government departments and the private sector should be clearly spelt out in the agreement for such participation. It should also include penalty clauses applicable to both the parties so that slippages do not occur in implementation.

Increase in Productivity

4.2.22 Improvement in agricultural productivity from irrigated agriculture is one of the main objectives of the CAD Programme. An analysis of Time series data on productivity in respect of selected projects under CAID Programme indicated, among others, that staple crops like paddy and wheat have registered an increase in productivity by 50% (Pench, Maharashtra) and 85% (Gurgaon, Haryana) respectively. Experience has shown that in most of the Commands, the main problems are lack of a single window delivery system, poor maintenance and water management of micro-networks, weak extension service for agricultural needs and near-absence of farmers' participation etc. As such, in most of the CAD projects, the implementation has been limited mainly to the construction of field channels.

Environmental Concerns in Water Resources Development

4.2.23 Human intervention in water resource sector is closely interlinked with the environmental issues. Substantial positive impacts of irrigation works have been found which include socio-economic, nutritional and health status, benefits from higher income, better and more secured production and supply of drinking water, etc. Hydro-power generation is also one of the important outputs through storage-based irrigation/multipurpose projects, which are generally substantially cheaper than other conventional methods of power generation. However, some side-effects have also been noticed, important among these being water logging and salinisation, population displacement, risk of water borne diseases and loss of land for water development works. Over-exploitation of ground water results in depletion of water level and intrusion of saline water in coastal

areas. Chemical pollutants from fertilizers, pesticides and industrial waste as also loss and change of flora and fauna habitat etc. are also other important side-effects, which affect the overall environmental system.

4.2.24 The growing environmental concerns attracted the attention of the world community and culminated in the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in June, 1992, which came out with Agenda-21 concerning the planning framework and envisaging a set of programmes needed to ensure the objective of economic growth with equity and environmental sustainability.

4.2.25 India is one of the few countries in the world which has been taking appropriate action to protect the environment for quite some time. This includes the specific reference in the Constitution to the need for environmental protection. The main legislations enacted so far for the prevention and control of water pollution are as follows:

- (i) The Water (Prevention and Control of Pollution) Act - 1974 and as amended in 1988.
- (ii) The Water (Prevention and Control of Pollution) Cell Act - 1977.
- (iii) The Forest Conservation Act - 1980 (amended in 1992)
- (iv) The Environment Protection Act -- 1986 (This is an "umbrella" type enactment to ensure enforcement of several Acts and Regulations already in existence, concerning environmental pollution control and safety and, inter alia, includes water also as a subject).
- (v) Environmental Impact Assessment Notification, 1994.

4.2.26 Under the Environmental (Protection) Act, 1986 and Environmental Impact Assessment Notification (EIA) of 1994, the State Governments/project authorities are required to submit Environmental Impact Assessment Statements (EIS) and Environmental Management Plans (EMP) in the context of getting environmental clearance to the projects. It is also mandatory to get clearance from forest angle, if any, in addition to environmental clearance. Certain environmental safeguards are stipulated wherever necessary and these have to be implemented by the project authorities along with the construction activities of the project. These are: preparation of Master Plan for Rehabilitation of Oustees, compensatory afforestation, alternatives in case of adverse effect on flora and fauna and wildlife etc, drainage and anti-water logging measures, identification of critically eroded areas in the catchment for soil conservation works and water quality etc. The environmental impact needs to be assessed periodically i.e. every 5 years, during the implementation of the project and the project implementation agency is required to submit half yearly report to the Impact Assessment Agency about status of implementation of the above measures.

4.2.27 The objective of Rehabilitation & Resettlement is that the oustees should get similar quality of life, if not better, as compared to the original habitation. Project-wise R&R implementation plans are prepared and implemented under strict supervision of the Ministry of Welfare. A national policy for R&R has also been formulated by the

Government of India in consultation with the various States which encompasses Water Resources Development Sector also. This is in the process of finalisation.

Waterlogging and Drainage

4.2.28 The problem of waterlogging and soil salinity/alkalinity was noticed even during the sixties in a few major & medium irrigation projects. The problem has grown since then. The National Commission on Agriculture (1976) estimated that about 6 million ha. of land was affected by waterlogging, in both irrigated commands as well as in unirrigated lands. Out of this, an area of about 2.6 m.ha. was found to be affected due to higher water-table and 3.4 m.ha. due to surface run-off stagnation. The Working Group constituted by the Ministry of Water Resources in 1991 estimated that about 2.46 m.ha. in irrigated commands suffered from waterlogging. The States, where high water-table has been noticed, particularly are Punjab, U.P, some parts of Rajasthan and Maharashtra. The areas with surface stagnation problem are mainly West Bengal, Orissa, Andhra Pradesh, U.P., Tamil Nadu, Kerala, Gujarat, Punjab and Haryana. The Working Group also estimated that 3.30 m. ha. had been affected by salinity/alkalinity in the irrigated commands. It is reported that the spread of conjunctive use of groundwater with that of surface water, especially in Punjab, Haryana and parts of U.P., has substantially lowered the water-table and helped to contain waterlogging/salinity. But there has been no systematic or comprehensive survey undertaken so far. Waterlogging and salinity/alkalinity need to be tackled at two levels: (1) There should be a systematic survey to assess the extent, nature and location of the waterlogged and saline/alkaline lands in the existing project commands; and (2) a phased programme should be drawn up to reclaim such land in a cost-effective manner. Now, the activities related to removal of waterlogging and restoration of saline and alkaline areas in irrigated commands are included in the Centrally Sponsored Command Area Development Programme. This measure is expected to help tackle the above problems more effectively and on a large scale.

Conjunctive Use of Ground Water and Surface Water

4.2.29 The optimum development and utilisation of water resources can be achieved by conjunctive use of ground water and surface water resources. The National Water Policy emphasises that both surface and ground water should be viewed as an integrated resource and developed conjunctively in a coordinated manner and their conjunctive use should be envisaged right from the project planning stage. Tubewell schemes can be integrated with canal irrigation schemes by spacing them suitably along the drainage lines in the distribution area. With a view to promoting conjunctive use of ground water and surface water resources, the Central Water Commission, in consultation with the Central Ground Water Board, has prepared draft guidelines for planning conjunctive use of water resources in irrigation projects. Such type of conjunctive use helps considerably in preventing waterlogging and soil salinity/alkalinity and also in providing adequate and assured irrigation water for crops, particularly of high yielding varieties.

Water Quality Monitoring

4.2.30 The Central Water Commission(CWC) is maintaining a large network of 877 hydrological observation stations in the key locations of the river basin systems of India for reliable assessment of the water resources of the country. Out of these, 319 stations distributed over all the major river basins, are also engaged in the water quality monitoring.

Initially, the water quality monitoring of CWC was started with a limited objective of classification of water for irrigation and other related uses but presently, it also includes monitoring the rate of silt flows, chemical indices like sodium absorption ratio, sodium percentage, residual sodium carbonate and hardness; number as well as other pollution parameters. However, the monitoring does not cover the municipal and industrial effluents. The CWC is also maintaining a three-tier laboratory system for analysis of the chemical parameters of water quality monitoring.

4.2.31 The ground water quality in India is being monitored by the Central Ground Water Board (CGWB) through a network of 14995 monitoring stations set up in different parts of the country. Changes in water quality have been observed in major agricultural and industrial belts and urban complexes as a result of over-use of fertilizers, pesticides and insecticides in agriculture and disposal of untreated waste from industries and urban cities. The ground water quality has also been affected in some parts of the country due to salinity ingress along the coastal area of some of the States like Saurashtra in Gujarat and Tamil Nadu. For planning and management of ground water system, it is necessary to set up a national data bank, where all the important information, covering various facets of ground water will be available. It is necessary that the data from all the concerned organisations in the States as well as at the Centre are stored on uniform formats and there should be easy access to the processed data. This will also help avoid duplication in efforts and investment.

Regional Variations in Water Resource and Its Development

4.2.32 It is grossly a misplaced conception that India is a water-rich country and water is a cost-free commodity. Amongst 121 countries where per capita availability of annual renewable fresh water in the year 1990 was only more than 1695 cubic meters, India ranked at 108th position. Further, according to a number of studies conducted in India and abroad, India's per capita water availability status is likely to move from "marginally vulnerable" (as in 1990) down to "water scarcity" in the year 2025. In fact, India is likely to experience "water stress" from the year 2007 onwards. Such "water-stressed" situation will limit the growth of our development, besides leading to ecological degradation in our country. Unfortunately, so far the creation of public awareness for judicious use of water has not received its due attention and, as such, the launching of a national awareness campaign is now necessary.

4.2.33 The availability of surface water in various regions in the country is uneven with the north zone (Indus, Ganga and Brahmaputra) having 77% of the country's water resource, the west-flowing rivers with 5%, the east-flowing rivers with 14% and the west-flowing rivers in Kerala with 3% only. Similar is the case with ground water which is quite abundant in the Indo-Gangetic Plain but scarce in the western region and in the south. If the ultimate irrigation potential through the major, medium and minor projects/schemes in the various regions is seen in relation to the cultivable area (Annexure-4.2.1, col.12) it is 116.60 per cent in the eastern region, 66.97 per cent in the north-eastern region 84.81 per cent in the northern region, 64.37 per cent in the southern region and 58.58 per cent in the western region. As against this scenario, the total creation of irrigation potential, as percentage of respective ultimate irrigation potential in these regions as anticipated at the end of the Eighth Plan works out to 53.24 per cent, 28.65 per cent, 95.32 per cent*, 54.59

per cent and 39.95 per cent respectively with 64 per cent at the national level. The above figures show that only the northern region is ahead of the national average.

Notes : 1. Regions : Eastern - Bihar, Orissa, Sikkim, West Bengal.

North-Eastern- Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland & Tripura

Northern-Haryana, HP, J&K, Punjab, Rajasthan & UP

Southern - Andhra Pradesh, Karnataka, Kerala & Tamil Nadu.

Western - Goa, Gujarat, Maharashtra, M.P.

2. * The ultimate potential is under revision in the country.

Inter-basin Transfer

4.2.34 The distribution of water resource in the country shows that as against the national per capita (based on 1991 census) annual availability of 2214 cubic metres of water, the average availability in Brahmaputra river basin is as high as 18470 cu.m. while it is as low as 383 cu.m. in the basin of east-flowing rivers between Pennar and Kanya Kumari. Having 8% of the country's population, Rajasthan has just 1% of the country's water resource and thereby the per capita water use in Rajasthan (1991) is estimated to be only 562 cu.m., a level almost near to "absolute scarcity". On the other hand, about 40% of the utilisable surface water resource is in the Ganga-Brahmaputra-Meghana system. With 5.9% of geographical area and 3.2% of population of the country, Brahmaputra sub-basin alone, has 29% of annual water resource. The per capita annual availability for the rest of the country, excluding Brahmaputra basin, works out to about 1500 cu.m. which falls under "water scarcity" category. The Cauvery, the Pennar, the Sabarmati and the east-flowing rivers are some of the basins which fall into the category of "scarcity conditions".

4.2.35 The Ministry of Water Resources (erstwhile Ministry of Irrigation) formulated a National Perspective for Water Development in 1980 comprising of two components - (1) Himalayan Rivers Development and (2) Peninsular River Development. The National Water Development Agency (NWD/A), set up in 1982, has the mandate to study the feasibility of the National Perspective Plan. The scheme of National Perspective for Water Development, inter alia, envisages the creation of irrigation potential for about 35 m.ha (25 m.ha from surface water and 10 m.ha from increased use of ground water) and hydropower generation of about 30,000 MW part of which would be in Nepal and Bhutan.

4.2.36 The Himalayan rivers component envisages storage on the main Ganga and the Brahmaputra rivers and their principal tributaries in India and in Nepal, so as to conserve the monsoon flow for flood control, hydro-power generation and irrigation. An inter-linked canal system is to be provided to transfer the surplus flows of the Kosi, Gandak and Ghagra to the west. In addition, the Brahmaputra-Ganga link is envisaged for augmenting dry weather flows to the Ganga. The envisaged benefits of this scheme include provision of irrigation to 22 mha in the Ganga-Brahmaputra basin in Haryana, Rajasthan, Punjab and Gujarat besides providing 11240 cumecs (i.e. about 40,000 cusecs) to Calcutta Port and hydro-power generation of 13000 mega-watts in Nepal and India.

4.2.37 Under the peninsular rivers development component, it is proposed to transfer the surpluses from the Mahanadi to the Godavari and further from the Godavari to water-

short rivers namely the Krishna, the Pennar and the Cauvery that would provide irrigation in drought areas of Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu. The second component of the proposal is to divert a part of the waters of the west-flowing rivers of Kerala to the east for irrigating the drought areas of Tamil Nadu apart from covering new areas in Kerala. Another component is to inter-link the small rivers flowing along the west coast north of Bombay and south of the Tapi and to inter-link southern tributary of the Yamuna like the Ken and the Chambal. The proposed peninsular river development is expected to provide additional irrigation benefits of over 13 m ha.

National Water Policy

4.2.38 The National Water Policy (NWP) was adopted by the National Water Resources Council, headed by the Prime Minister in its meeting held on 09.09.1987. The NWP recognises water to be prime natural resource, a basic human need and a precious national asset. Therefore, planning and development of water resources need to be governed by a national perspective. The intention of the NWP was to mark the territory in broad terms, so as to establish the need for a National Water Policy, and to give a broad outline of what the policy document needs to cover. The formulation of NWP is not a one-time exercise but is to be kept constantly under review, thereby including within its purview more and more issues and areas of concern as they emerge. For a more effective operationalisation of the NWP stress would have to be placed on the following :-

- (i) Watershed management, rain water harvesting and water saving practices should be an integral part of development and management of water resources at the basin level and while formulating water resources development projects. Also, Micro irrigation systems need to be promoted particularly in arid regions where water is scarce and the topographic and soil conditions do not permit efficient irrigation by conventional methods;
- (ii) Drainage is to be an integral part of the irrigation system, particularly, when perennial irrigation is contemplated;
- (iii) The Management of irrigation systems by farmers should also cover water rights and the need for establishing and regulating them.
- (iv) Since water markets are expanding, there is a need to develop and enforce guidelines for their operation.
- (v) During the Ninth Plan period, the pricing of water for various uses including agriculture should be rationalised in a phased manner so as to at least fully recover the Operation and Maintenance Cost
- (vi) Policy framework or guidelines on the criteria for inter-State river water allocation among the basin states should be evolved.
- (vii) Both demand and supply for water resources should be assessed on the basis of agro-ecological-irrigation zones, cropping systems and other uses within a dynamic time-frame;
- (viii) Conjunctive use of surface and ground water should be encouraged by making adequate energy available to farmers,

- (ix) The role and responsibility of various agencies and organisations involved in water resources development and utilisation should be clearly defined. Appropriate infrastructure should be developed to promote proper linkages among them;
- (x) Involvement of farmers' organisations, such as, Water Users' Associations should be increased in respect of decisions on cropping systems, planning and implementation of water release schedules, collection of water rates, maintenance of irrigation systems, etc. Assistance of voluntary agencies/NGOs should be enlisted in this task. A gender dimension should be integrated in all decisions relating to water use. The new paradigm of water use management should include important parameters such as, efficiency, ecology, equity and employment in addition to economics of energy-use efficiency;
- (xi) In view of increasing demand for water, there is a need to augment the resource through inter-basin transfers, artificial recharge of aquifers, use of marginal quality water, conjunctive use of surface and ground water, rain water harvesting in rainfed areas, watershed development, adoption of water saving practices etc.
- (xii) In order to ensure sustained availability of ground water, average annual withdrawal should not exceed average annual recharge. Ground water of marginal quality could be used advantageously in combination with good quality of water or for alternate irrigations.
- (xiii) The existing law on water quality needs to be effectively implemented for prevention of pollution of surface and ground water. Ground water pollution being more serious and hazardous, as compared to surface water pollution, would require special institutions for preventing and abating pollution.
- (xiv) The Prime Minister while addressing the Nation on 22nd March 1998 indicated that the Government would go all out to achieve five goals which include “unveiling a National Water Policy” so that no water goes waste and our water resources are cleaned up. Appropriate action in this regard has already been initiated.

High Power Commission for Integrated Water Resources Development Plan

4.2.39 The Government of India constituted a High Power Commission in September 1996 for Integrated Water Resources Development Plan to take a holistic view of the overall water resources in the country and maximise the availability and its utilisation including consideration of inter-basin transfers. Presently, the Member-Secretary, Planning Commission is the Chairman of the Commission. The terms of reference of the above Commission are as follows :-

- (a) To prepare an integrated water plan for the development of water resources for drinking, irrigation, industrial, flood control and other uses;
- (b) To suggest the modalities for transfer of surplus water to water-deficit basins by inter-linking of rivers for achieving the above objectives,

- (c) To identify important ongoing projects, as well as new projects, which should be completed on priority basis, together with phasing;
- (d) To identify a technological and inter-disciplinary research plan for the water sector with a view to maximise the benefits;
- (e) To suggest physical and financial resource generation strategies for the water sector; and
- (f) Any other related issue

High Power Commission for Integrated Water Resources Development Plan

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Role of Cooperatives

4.2.40 There is general consensus in favour of the turn-over of irrigation schemes on the principles of "Irrigation Management Transfer" or "Participatory Irrigation Management". The term "turn-over" means the transfer of responsibility and authority for irrigation management from the government agency to irrigators associations. A number of States have already initiated action in this regard.

Cooperatives can play a vital role in sustainable development and management of irrigation works in general and ground water resources in particular. Given the small size of the holdings in the country, cooperative ownership can help in expanding the irrigation development, including fulfilling the eligibility criterion in respect of size of land for institutional funding and management of ground water resources in the coming years. The ground water development programme in the country is primarily (around 95%) sustained with the financial investment by the farmers themselves or through institutional finances or both. The public sector outlay is limited to only such items as ground water surveys, construction of public tubewells, services provided and grants extended to small farmers etc. Large public tubewells are operated and maintained by the Government agencies and corporations of the State Governments. Integrated Approach for Flood Management

4.2.41 Flood Management Schemes have to be planned within the framework of an integrated long-term plan and in conjunction, where appropriate, with the plans for other areas of water resource development such as irrigation, power and domestic water supply. This will help improve the efficacy of flood control schemes as well as their economic viability. The Central Government has set up the Ganga Flood Control Commission (GFCC) and the Brahmaputra Board for comprehensive planning of flood control in the Ganges and the Brahmaputra sub-basins. The GFCC and the Brahmaputra Board have prepared Master Plans for these sub-basins which are at pre-feasibility stage. Considerable follow-up action is required for detailed investigations of the suggested measures and for detailed study of the techno-economic viability, including operationalisation.

Flood Plain Zoning Regulation

4.2.42 The question of introducing Flood Plain Zoning both in flood protected as well as the unprotected areas, has been under consideration for quite a long time. The Government of India prepared a Model Bill for Flood Plain Zoning and circulated it to all the States for action in the 70s. So far, only Manipur has enacted the legislation in September 1978 and started its implementation from December, 1985. Some States like MP have accepted it in principle but the legislation is yet to come. The legislation is also under active consideration of the Governments of Rajasthan, West Bengal and Bihar. Further, the Government of India has taken the initiative in preparing the survey maps in the scale of 1:15000 with 0.5 M contour of the flood plain areas through Survey of India and an area of about 54740 sq km. has been surveyed upto March, 1991. These maps are for the use by the States for preparation of flood risk maps.

Ninth Plan Proposals

4.2.43 Based on the proposals by the States and the Ministry of Water Resources the Annexures-4.2.2 and 4.2.3 have the details of the financial and physical programmes during the Ninth Plan. The physical programme is summed up as below -

PHYSICAL PROGRAMME

(In million ha)

Item	Projected Target for Ninth Plan		Remarks
	Potential Creation	Potential Utilisation	
1	2	3	4
1. Irrigation Potential Creation			
(a) Major & Medium	9.81	8.71	The ultimate irrigation potential through minor surface irrigation & ground water which were 15m ha and 40 m ha respectively are under revision to 17.38 m ha and 64.05m ha.
(b) Minor Irrigation	7.24	4.93	
Total	17.05	13.64	

MAJOR & MEDIUM IRRIGATION PROJECTS

Status of Creation of Irrigation Potential at the end of 8th Plan

4.2.44 It would be seen, from the Table below, that out of the 16 major States, 3 have already achieved 70% or more of the ultimate irrigation potential with Tamil Nadu

recording 100% achievement, followed by Punjab and Rajasthan at 84% and 74% respectively. Six States, i.e., Haryana, Karnata, Jammu & Kashmir, and West Bengal are in the range of 63% to 71%, whereas in U.P. and Maharashtra, the achievement would be 56% each. The States of Bihar, Gujarat, Orissa, M.P. and Assam have achieved less than 50% of the ultimate potential. The ultimate potential under major & medium irrigation in the eastern States (except West Bengal), i.e. Bihar, U.P., M.P. and Orissa put together works out to about 50% of the total ultimate potential of the country. However, their achievement upto the end of the Eighth Plan is 45% of the ultimate potential of these States, put together. The State-wise details of irrigation potential development vis-a-vis ultimate potential through major and medium schemes are indicated in Annexure-4.2.4 and have been summarised in Table-4.2.3 below :-

TABLE 4.2.3

Major & Medium Irrigation anticipated Achievement upto the end of 8th Plan

(Thousand ha.)

Sl. No.	State	Ult. Irrgn Pot 1991-92	Ach. to the end of A/P 92-93 (Anti)	Addl. Ach. during 8th Plan (Anti)	Total Ach. to end of 8th Plan	% of Deve. at the end of 8th Plan
1	2	3	4	5	6	7
1	Andhra Pradesh	5000	2999	46.10	3045.10	61
2	Arunachal Pradesh	-	-	-	-	-
3	Assam	970	176	20.67	196.67	20
4	Bihar	6500	2766	36.50	2802.50	43
5	Goa	62	13	0.02	13.02	21
6	Gujarat	3000 *	1246	104.00	1350.00	45
7	Haryana	3000	2035	43.79	2078.79	69
8	Himachal Pradesh	50	8	2.55	10.55	22
9	Jammu & Kashmir	250	158	15.70	173.70	69
10	Karnataka	2500 *	1377	289.02	1666.02	67
11	Kerala	1000	416	97.31	513.31	51
12	Madhya Pradesh	6000	1962	355.60	2317.60	39
13	Maharashtra	4100	2030	283.00	2313.00	56
14	Manipur	135	59	4.00	63.00	38
15	Meghalaya	20	-	-	-	-
16	Mizoram	**	-	-	-	-
17	Nagaland	10	-	-	-	-
18	Orissa	3600	1409	148.75	1557.75	43
19	Punjab	3000	2367	145.85	2512.85	84
20	Rajasthan	2750 *	1999	274.88	2273.88	83
21	Sikkim	20	-	-	-	-
22	Tamil Nadu	1500 *	1545	0.51	1545.51	103
23	Tripura	100	2	0.30	2.30	2
24	Uttar Pradesh	12500	6806	253.00	7059.00	56
25	West Bengal	2300	1353	91.08	1444.08	63
	Union Territories	98	15	3.51	18.51	19
	Total	58465	30741	2216.13	32956.83	56

* States have indicated that the actual would be more

** included in UT

4.2.45 The cost of creation of irrigation potential per ha through the successive Five Year Plans at current as well as at 1980-81 constant prices has been steeply escalating as shown in Table 4.2.4. -

Table 4.2.4
Cost of creation of Irrigation Potential (per ha.)
(in Rupees)

Plan Period	Cost of creation	
	(at current prices)	(at constant prices of 1980-81)
First Plan (1951-56)	1200	8620
Second Plan (1956-61)	1810	9289
Third Plan (1961-66)	2526	10289
Annual Plans (1966-69)	2893	8313
Fourth Plan (1969-74)	4758	11060
Fifth Plan (1974-78)	6075	9074
Annual Plans (1978-80)	10940	14111
Sixth Plan (1980-85)	21610	18771
Seventh Plan (1985-90)	50000	31475
Annual Plans (1990-92)	66570	29587

Source : Report of the Working Group on Major & Medium Irrigation Programme for the 9th Plan (para 1.3)

4.2.46 The above would show that a substantial increase in cost has taken place from the Sixth Plan onwards which is mainly due to introduction of the extension and distribution system upto 5-8 ha block, the cost of rehabilitation and resettlement, environmental & forest aspects, inclusion of the cost of the catchment area treatment and drainage system in the command of the irrigation projects and increase in establishment costs, etc. However, studies indicate that by clubbing some of the above activities together, the costs overrun, primarily due to change in the scope of the project (35 to 43% of total increase in cost due to this factor alone in some selected projects), rise in the

Increase in cost of creation of irrigation potential

The available data indicate that a substantial increase has taken place in the Cost of creation of irrigation potential per hectare from the Sixth Plan onwards which is mainly due to introduction of the extension and distribution system upto 5-8 ha block, the cost of rehabilitation and resettlement, environmental & Forest aspects, inclusion of the cost of catchment area treatment and inclusion of drainage system in the command of irrigation projects and increase in establishment costs etc

lumpsum provisions, which include, besides others, the R&R activities (40 to 47% of total increase in the revised estimate of some selected projects); increase due to price rise/inflation which varied from 8% to 63% of the total increase in a period of 2 to 20 years in the sample of 11 projects and increase due to change in design (about 38% of the total increase in a selected project was due to this factor), etc.

4.2.47 The number of major & medium schemes which were taken up in various Plan periods are indicated in Table-4.2.5.

TABLE-4.2.5
No. of major and medium schemes taken up in various Plan

Plan Period	Major	Medium
First Plan	44	169
Second Plan	33	102
Third Plan	32	44
Annual Plans (1966-69)	11	30
Fourth Plan (1969-74)	32	73
Fifth Plan (1974-78)	70	300
Annual Plans (1978-80)	13	52
Sixth Plan (1980-85)	30	91
Seventh Plan (1985-90)	12	33
Annual Plans (1990-92)	1	-
Eighth Plan (1992-97)	14	50
Total	292	944

Source : Working Group Report for Major & Medium Irrigation Projects for Ninth Plan.

4.2.48 During the Fifth Plan (1974-78), 70 new major and 300 medium schemes were taken up, although 97 major and 130 medium schemes were already under implementation in 1974. Thereafter also, the tendency to start more and more new projects continued unabated, which resulted in a thin spreading of the available limited financial resources. However, later on during the Seventh and the Eighth Plans, as a strategy, only a few new major and medium projects were taken up and greater emphasis was laid on the completion of ongoing projects as a first charge on the available resources.

Sedimentation in Reservoirs

4.2.49 Sedimentation of reservoirs is a natural phenomenon. The surveys conducted during last three decades have indicated that the sedimentation rates in some of the reservoirs are higher than those envisaged at the planning stage. The variation is due to the fact that enough reliable data on Indian reservoirs were not available earlier at the planning stage. In view of the above, the present design practice (followed progressively since 1965) incorporates the sediment inflow rates based on the reservoir survey data as well as actual observed sediment inflow data. On the basis of Capacity Survey data of 46 reservoirs, it is seen that the sedimentation rate of reservoirs vary significantly and is affected by hydrometeorology, physiography and climate etc. Considering these factors the whole country has been classified into 7 regions (viz. Himalayan region, Indo-Gangetic Plains, East-flowing rivers excluding the Ganga upto the Godavari, Deccan Peninsular east-flowing rivers including Godavari, West-flowing rivers upto Narmada, Narmada - Tapi basin and West flowing rivers) and sedimentation rates have been determined to serve as the broad guidelines.

4.2.50 Oflate, there has been some apprehensions about the higher rates of sedimentation in reservoirs and this has led to the feeling that these may not last for their planned life. But the analysis of data collected for various reservoirs shows that the sedimentation rates are not so high. The data also show that the sedimentation rates are higher during the initial 15-20 years of their operation and thereafter it has fall on significantly. Even some of the reservoirs, which have completed their planned life, are still continuing to serve and provide partial benefits. However, better operation and management may still improve the situation for which there is a need for continued hydrographic surveys at regular intervals which would provided useful feedback for better sedimentation planning of future reservoirs.

Financial and Physical Performance during Eighth Plan

4.2.51 Out of the total outlay approved for the Irrigation sector including CAD and Flood Control, for the Eighth Plan, about 70% was for major and medium projects, of which 80% was for the completion of ongoing major and medium projects and Extension, Renovation & Modernisation (ERM) projects. Overall, the actual expenditure during the Eighth Plan was around the approved outlay for the irrigation sector. The State-wise break-up given in Annexure-4.2.5 shows that major States like Andhra Pradesh, Assam, Goa, Haryana, J&K, Karnataka, Kerala, Maharashtra, Manipur, Punjab, Tamil Nadu and West Bengal have incurred more expenditure than the approved outlays while in the major eastern States, which are already lagging behind the national average of 56% in terms of creation of irrigation potential, the level of actual expenditure was quite low as compared to the approved outlays, with Bihar at 43%, Orissa - 40% and U.P. 64% of the approved outlay.

4.2.52 As many as 176 major project including 103 started prior to and during the Fifth Plan period and 283 medium irrigation projects were ongoing at the beginning of the Eighth Plan. Against the Eighth Plan target of 80 major and 253 medium irrigation projects, only 44 major, 100 medium and 45 ERM irrigation projects were expected to have been completed during the Eighth Plan. Consequently, at the beginning of the Ninth Five Plan, there are, in the category of ongoing projects, as many as 119 major projects with an aggregate spillover cost of Rs.3 5300 crore, 176 medium projects with a spillover

cost of Rs.2200 crore and 67 ERM projects with a spillover cost of Rs.3800 crore, i.e., with a total of Rs.41300 crore involving an additional irrigation potential of about 7.2 m.ha. Further, the additional irrigation potential created during the Eighth Plan period has 1.95 m.ha. as against the target of 5.088 m.ha. As many as 16 major States recorded shortfall in achieving the Eighth Plan target. These are Andhra Pradesh (89%), Assam (77%), Bihar (88%), Gujarat (77%), Haryana (85%), J&K (30%), Karnataka (28%), Kerala (57%), M.P.(24%) Maharashtra (29%),Orissa (55%),Punjab (19%), Rajasthan (86%), Tamil Nadu (44%), U.P. (58%) and West Bengal (47%).

Completion of Ongoing Major and Medium Projects

4.2.53 Under the "Special Action Plan", the target is to complete such ongoing major and medium irrigation projects those are in advance stage of completion. These projects would be provided additional financial support under Accelerated Irrigation Benefit Programme and Rural Infrastructure Development Fund of NABARD. These projects would yield additional irrigation potential during Ninth Plan

MINOR IRRIGATION

Review

4.2.54 The reassessed ultimate irrigation potential in the country through minor irrigation is tentatively estimated at 81.43 million hectare (m.ha.) comprising of 17.38 m.ha from surface water schemes and 64.05 m.ha from ground water schemes (against the earlier UIP of 55 m.ha which include 15 m.ha. for minor surface water schemes and 40 m.ha. from ground water). During the Seventh Plan period the potential created was of the order of 9.09 mha. (1.82 mha per annum) and utilisation was 7.87 m.ha. The additional potential created and utilised under minor irrigation during the Eighth Plan period is anticipated to be 6.25 m.ha (1.25 m.ha per annum) and 5.78 m.ha respectively against the corresponding the Eighth Plan targets of 10.71 mha. and 9.36 mha. Thus, the potential created through minor irrigation at the end of the Eighth Plan is anticipated to be 56.60 m.hectares. Hence, the balance potential available at the beginning of the Ninth Plan works out to 24.83 m.ha which is about 30.5 per cent of the reassessed ultimate minor irrigation potential. During the decade 1985-86 to 1994-95 the average cost (at current price) of creation of potential per ha. has escalated from Rs.6022 in 1985-86 to Rs.11804 in 1992-93 and further to Rs.13790 in 1994-95. The present cost is likely to be around Rs.18000 per hectare. The year-wise potential created and potential utilised during the Eighth Plan period are given in Table 4.2.6.

Table 4.2.6.

(in mha.)

Year	Potential created		Potential Utilised	
	Target	Achieved/Anticipated	Target	Achieved/Anticipated
VIII Plan (1992-97)	10.71			9.36
1992-93	2.00	1.24	1.80	1.19
1993-94	1.98	1.09	1.74	0.92
1994-95	2.05	1.35	1.63	1.30
1995-96	1.59	1.48	1.29	1.44
1996-97	1.62	1.07	1.32	0.92
	9.24	6.23	7.78	5.77
		say 6.25		5.78

State-wise Performance

4.2.55 State-wise statistics of physical achievement are given in Annexure-4.2.6. To the total minor irrigation potential created during the Eighth Plan period, Uttar Pradesh was the major contributor followed by West Bengal, Bihar, M.P., A.P. & Orissa. These six States together accounted for about 88.67 per cent of the potential created during the Eighth Plan period, whereas the States of Maharashtra, Punjab, Gujarat and Karnataka together contributed only about 5 per cent. To the total utilisation of irrigation potential created during the Eighth Plan period, the largest contributor was UP, followed Bihar, West Bengal, A.P., Punjab, Maharashtra, Karnataka and Kerala.

Plan Outlays and Expenditure

4.2.56 The minor irrigation schemes are funded from Plan funds, institutional finance and private investments of user-farmers. It is generally considered as a people's programme as the Plan funds form only a small portion of the total investment for its development. The following Table 4.2.7 indicates the outlays and actual expenditure (Central Sector and State Sector) for minor irrigation during the Eighth Plan :

Table 4.2.7
Outlays and Actual Expenditure on Minor Irrigation during Eighth Plan in Central Sector and State Sector

(Rs. in crore)

Plan	Central Sector Approved Outlay	Actual/Ant. Exp.	State Sector Approved Outlay	Actual/Ant. Exp.
8th Plan(92-97)	293.00	213.16	5684.26	6230.62
1992-93	50.73	15.07	1037.50	994.60
1993-94	48.00	70.91	1174.63	1094.83
1994-95	65.38	34.30	1347.83	1185.15
1995-96	59.00	32.07	1461.15	1408.08
1996-97	82.64	60.81	1633.79	1547.97

4.2.57 The actual expenditure under Central sector during the Eighth Plan was 73 per cent of the approved outlay whereas in the case of State Sector it was 106 per cent. The highest approved outlay was in the case of Bihar (Rs.1021 crore) followed by MP (Rs. 728 crore), Maharashtra (Rs.612 crore), U.P. (Rs.400 crore), Orissa (Rs.389 crore), West Bengal (Rs.370 crore) and Karnataka (Rs.307 crore). However, the actual (anticipated) expenditure was the highest in the case of Maharashtra (Rs.1571.23 crore) followed by M.P.(Rs.634.50 crore), Gujarat (Rs.441.22 crore), U.P. (Rs.351.01 crore), Andhra Pradesh (Rs.370.08 crore), Orissa (Rs.367.68 crore) and Karnataka (Rs.307.80 crore). In the case of Andhra Pradesh, Arunachal Pradesh, Assam, Goa, Gujarat, Haryana, Himachal Pradesh, J&K, Kerala, Maharashtra, Rajasthan and U.P., the anticipated total expenditure during the Eighth Plan period exceeded the approved outlay (Annexure - 4.2.7).

Institutional Finance

4.2.58 Institutional finance plays an important role in implementation of the minor irrigation programme. The Land Development Banks, State Cooperative Banks, NABARD and Commercial Banks provide credit facilities to the farmers and institutions for development of minor irrigation facilities. Normally, the credit is provided directly to the beneficiaries by the banks. Under the second type of loans the refinancing facilities by NABARD are availed by the banking institutions for providing in turn, credit to the farmers/institutions. The institutional investment in minor irrigation increased from Rs.501 crore in 1985-86 to Rs.650 crore in 1989-90, Rs.811.50 crore in 1992-93 and Rs.1003.57 crore in 1994-95. The investment during 1996-97 is estimated at Rs.1440 crore. It is anticipated that the total institutional investment during the Eighth Plan period would be around Rs.5331 crore as per the details in respect of selected States given below :

4.2.59 Bulk, i.e., around 71%, of the total institutional investment made during the Eighth Plan was accounted for by Andhra Pradesh (Rs.1342 crore), followed by Maharashtra (Rs.1135 crore), UP (Rs.807 crore), and Tamil Nadu (Rs.526 crore). Selected State-wise details in this regard are given in Table 4.2.8.

Table 4.2.8

Flow of Institutional Investment in Minor Irrigation

(Rs in crore)

Name of the State	Anticipated Investment during Eighth Plan
Andhra Pradesh	1342.21
Gujarat	209.54
Haryana	150.12
Karnataka	344.97
Kerala	174.71
Madhya Pradesh	151.00
Maharashtra	1135.38
Rajasthan	263.94
Tamil Nadu	525.75
Uttar Pradesh	807.16
Total All States	5329.07
Total UTs	1.62
Total All India	5330.69

Rationalisation of Minor Irrigation Statistics

4.2.60 Minor Irrigation schemes are very large in number and scattered in locations and these are implemented by various Government departments/organisations and private agencies and individuals. In view of the multiplicity of agencies involved in development of minor irrigation programme and lack of proper coordination among them, reliable data on minor irrigation potential and its utilisation is necessary. In order to tackle this problem, a Centrally Sponsored Scheme for Rationalisation of Minor Irrigation Statistics was launched in 1987-88, envisaging the conduct of a census of minor irrigation works on quinquennial basis. The first census with reference to 1986-87 was conducted in all the States/UTs except Rajasthan. The national level report of the census could be published only in November, 1993 due to delay in completion of the census work in some of the States. The second census with reference to 1993-94 is already in progress and most of the States have completed the field work. The data is likely to be available soon.

Minor Irrigation Statistics

In view of the multiplicity of agencies involved in development of minor irrigation programme in the States and lack of adequate coordination among them, the data on minor irrigation potential and its utilisation needs to be further improved as well as updated at regular periodicity for its publication. To address this problem, a Centrally Sponsored Scheme for Rationalisation of Minor Irrigation Statistics has been in operation since 1987-88, envisaging the conduct of a census of minor irrigation works on quinquennial basis.

Minor Irrigation Tanks

4.2.61 The first census (1986-87) of Minor Irrigation schemes showed that there were 5,07,212 minor irrigation tanks in use in the country (except Rajasthan where no census was done). The southern region consisting of Andhra Pradesh, Tamil Nadu, Karnataka and Kerala, accounted for about 60% of the irrigated area under tanks in the country. Besides these, Madhya Pradesh, Maharashtra, U.P. and West

Bengal also have a large number of tanks in their respective States. The above eight States account for about 97% of total tank population. A fresh census is needed to be made to update the data alongwith improvement both quality and scope-wise.

4.2.62 While precise statistics of tanks that have gone out of use due to various reasons are not presently available, the figures show that in 1962-63, the area under tank irrigation reached an all-time high of 47.8 lakh ha. which came down to 30.71 lakh ha. in 1985-86 inspite of addition of thousands of new tanks during this period. It clearly indicates that the upkeep of the tanks has not been attended to properly. From the planning point of view, the estimation is of importance that if just 3% of total land area is used for making such tanks/ponds, it can usefully store about 10% of our total rainfall, i.e., about 400 billion cubic meter (BCM) of water per year.

4.2.63 The basic strategy for development and optimum utilisation of minor irrigation works during the Ninth Plan will be as under :-

- (i) Restoration and improvement of minor irrigation tanks as well as the development of new works as a part of the integrated micro-development projects will be encouraged.

Minor Irrigation Tanks

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(ii) Priority should be accorded to the completion of ongoing schemes and the taking up of new irrigation schemes should be within the availability of financial resources and with the priority for drought-prone areas.

(iii) Formulation of ground water development strategies should be based on sound technical, environmental and economic considerations. Over-exploitation of ground water should be discouraged and necessary corrective measures in this regard should be implemented.

- (iv) Periodic evaluation of the socio-economic and environmental impacts of ground water development will be carried out to ascertain the changes between pre and post implementation stage of ground water schemes.
- (v) Census of ground water extraction structures once in five years and a programme for rehabilitation of ground water structures will be taken up.
- (vi) Involvement of community organisations and NGOs in the management of ground water should be encouraged through legal, financial and policy backups.
- (vii) The overall efficiency of the pumping system will be improved so as to conserve energy and optimise water use.
- (viii) The installation of sprinklers/drip irrigation system should be emphasised, particularly, in water-scarce and drought-prone areas. Necessary changes in cropping patterns, as well as crop diversification, should also be encouraged in favour of low water consuming crops, in lieu of water-intensive crops, particularly in water-scarce areas.
- (ix) Conjunctive use of surface and ground water should be encouraged.
- (x) There is a need to create public awareness on the quality and judicious use of ground water. Such awareness is also essential to take regulative measures for ground water development and management.
- (xi) Encouragement should be given to privately or cooperatively owned/managed tubewells vis-a-vis public owned/managed tubewells.

GROUND WATER

Overview

4.2.64 Ground water plays a crucial role in agricultural development of our country. With the advent of high-yielding varieties and the emphasis on spread of modern technology, the importance of adequate, timely and assured irrigation in accelerating agricultural production has been recognised in the successive development Plans

The contribution of ground water resource to irrigated agriculture, with about 17 million energised wells nationwide, is now as high as around 50 per cent. The share of ground water irrigation is nearly half of total irrigated area in the country and with its higher agricultural productivity, the ground water irrigation contributes significantly to the country's total agricultural output. In addition, ground water is the primary source of water availability in drought years. Nearly 80 per cent of rural water supply and over 50 per cent of urban and industrial water supply demand is met from ground water resource.

4.2.65 As per the re-assessment recently made by the Ministry of Water Resources, the total annual utilisable ground water resource of the country is tentatively placed at 43.19 million hectare metres (mhm). Besides the provision of 7.09 mhm (16.4%) for domestic, industrial and other uses, the ground water resource available for irrigation comes to 36.08 mhm, of which the utilisable quantity is 32.47 mhm, i.e., about 90%, with which the total irrigation potential is estimated at 64.05 million hectares (mha.). The stage of creation of irrigation potential through ground water development upto the Eighth Plan has been about 70 per cent of the ultimate irrigation potential which shows that there is considerable scope for further development of this resource in a judicious manner. In this regard, CGWB has assessed that there is a feasibility of installing 9.1 million ground water structures (6.4 million dug wells, 2.6 million shallow tubewells and 0.1 million deep tubewells in the Eastern region of the country. The availability of replenishable ground water potential in this region and the above structures put together can provide irrigation potential of about 20 m. ha. out of which about 14 m. ha. is from shallow and deep tubewells.

4.2.66 During the last four decades, there has been a phenomenal increase in the growth of ground water extraction structures in the country. During the period 1951-1992, the number of dug wells increased from 3.86 million to 10.12 million, that of shallow tubewells from a mere 3000 to 5.38 million and public tubewells from 2400 to 68000. Similarly, the number of electric pumpsets increased from 21000 to 9.34 million and diesel pumpsets from 66000 to about 4.59 million. Further, it is anticipated that 1.16 million dug wells, 1.14 million shallow tubewells and one lakh deep tubewells have been added during the Eighth Plan period. Similarly, the number of electric pumpsets and diesel pumpsets is anticipated to have increased by 2.02 and 0.4 million respectively during this period.

4.2.67 Out of the 7063 Blocks/Mandals/Talukas/Watersheds in the country, 283 have been categorised as 'Over-exploited', which is also known as "Red" blocks, i.e. the stage of ground water development exceeds the annual replenishable limit and 145 are 'Dark' i.e. the stage of ground water development is more than 85 per cent. Further an analysis shows that during the period 1984-85 to 1992-93, the number of "over exploited" and "Dark" blocks had increased from zero to 310 in Andhra Pradesh, from 6 to 26 in Gujarat, from 31 to 51 in Haryana, from 3 to 18 in Karnataka, from zero to 3 in Madhya Pradesh, from 64 to 70 in Punjab, from 21 to 56 in Rajasthan and from 61 to 97 in Tamil Nadu. Whereas it decreased in Bihar from 14 to 1 and in U.P. from 53 to 31. Thus in the above 10 States the overall increase in "over-exploited" and 'Dark' blocks during the period (1984-93) in the country was from 253 to 383, which is about 51% and this works out to a compound growth rate of about 5.5% per annum. If this trend and the rate of over-exploitation continues, it is estimated that by 2020 A.D. about one-third of the total of the 4272 blocks

(excluding Mandals/Talukas/Watersheds) listed as above may turn "Red" or over-exploited and "Dark". In this situation, regulation of ground water extraction has become imperative.

Regulation of Ground Water Extraction

4.2.68 To avert this situation it is necessary that ground water development is regulated on a scientific basis that permits only judicious development of the resource. The control, so far being exercised, was in the form of indirect administrative measures by institutional finance like technical clearance of the scheme by authorised ground water Departments in various States who in turn would look into the water availability aspects and some spacing criteria between two ground water structures. The other methods of indirect control could be the denial of power connection for the pumpsets and/or loans from banks.

4.2.69 To ensure regulation of ground water in a scientific manner, the Government of India had prepared a model bill in 1970. Subsequently, the same was revised in 1992 by incorporating the comments from a few States and circulated to all the States in June, 1996 but only a few States like Gujarat, Tamil Nadu, Madhya Pradesh and U.T. of Pondicherry and Karikal and Maharashtra have enacted ground water legislation and that too for a particular area or for a limited purpose in their States, whereas a few others are still contemplating. In the meanwhile, the Hon'ble Supreme Court had passed an order in 10.12.96 disposing off an inter-locutory application wherein the direction was issued to the Ministry of Environment & forest (MOEF), to constitute the Central Ground Water Board (CGWB) as an authority under section 3(3) of the Environment Protection Act, 1986 who shall exercise all the powers under the Act necessary for the purpose of regulation and control of ground water management and development. In pursuance of this direction, the MOEF has issued a notification dated 14.1.97 constituting the CGWB as an Authority for a period of one year. The authority shall exercise the powers and perform the functions as follows :

- (i) Exercise of powers under section 5 of the Environment (Protection) Act, 1986 for issuing directions and taking such measures in respect of all the matters referred to in sub-section(2) of Section 3 of the said Act.
- (ii) To resort to the penal provision contained in section 15 to 21 of the said Act.
- (iii) To regulate indiscriminate boring and withdrawal of ground water in the country and to issue necessary regulatory directions with a view to preserve and protect the ground water.

The modus-operandi of the functioning of Central Ground Water Authority is being worked out.

COMMAND AREA DEVELOPMENT PROGRAMME

Overview

4.2.70 The Command Area Development Programme (CADP) presently covers 203 projects, with CCA of about 21 m.ha in 22 States and 2 UTs. However, upto March, 1995, a total irrigation potential of 14.94 million hectares was created in the projects under CAD Programme and the corresponding utilisation was 11.98 million hectares. There has been

an improvement in the percentage utilisation of the potential created from 77 percent in 1991-92 to 80 percent in 1994-95 as shown in the Table 4.2.9.

Table 4.2.9
(In million hectare)

Year	Potential Created (cumulative)	Potential Utilised (cumulative)	Utilisation as % of pot. created.	Gap
1973-74	6.68	5.11	76.50	1.57
1979-80	11.26	7.89	70.07	3.37
1984-85	12.79	10.42	81.47	2.37
1985-86	13.90	10.18	73.24	3.72
1986-87	14.28	11.04	77.31	3.24
1987-88	14.42	10.93	75.80	3.49
1988-89	14.50	11.43	78.83	3.07
1989-90	14.59	11.08	75.94	3.51
1990-91	14.81	10.90	73.60	3.91
1991-92	14.83	11.41	76.94	3.42
1992-93	15.01	11.89	79.21	3.12
1993-94	14.80	11.99	81.01	2.81
1994-95	14.94	11.98	80.19	2.95

4.2.71 As the table indicates, the gap in utilisation which was 1.57 m.ha in 1973-74 increased to 3.37 m.ha. by the end of 1979-80. At that stage, the impact of the CADP which was started in 1974, had not been sufficiently felt. However, after 1979-80, the rise in the gap between potential creation and utilisation was effectively arrested and the gap at the end of 1994-95 was 2.95 m.ha. i.e. an overall reduction of about 12.5 per cent. An analysis also show that there has been an increase in the number of projects from 20 to 31 i.e. by 55%, with higher level of utilisation (more than 80%) Fifteen projects included at the inception of the programme have now cent per cent utilisation of irrigation potential.

The main component-wise physical achievements of CADP upto March, 1997 are given in Table 4.2.10.

Table 4.2.10

(In m. ha.)

Item	During the period		Total upto the end of VIII Plan
	1974-92	1992-97	
1	2	3	4
I Physical			
(i) Construction of Field Channels	12.19	1.77	13.96
(ii) WARABANDI	6.12	2.52	8.64
(iii) Land levelling	1.99	0.11	2.10
(iv) Field drains	0.59	0.19	0.78
II Financial			
(Rs. in crore)			
(a) Central Sector Expd.	1081.22	607.07	1688.29
(b) State Sector Expd.	2091.73	1458.77	3550.50
Total	3172.95	2065.84	5228.79

4.2.72 Yearwise and Statewise details of expenditure during 8th Plan are indicated in Annexure-4.2.8.

4.2.73 The physical progress achieved in respect of construction of field channels has been very high but in the case of WARABANDI, it has been moderate viz, about 60% of the area covered by the field channels. Again, the progress in construction of field drains has been only 0.78 m. ha (against 13.96 m. ha. of field channels) which works out to about 5.5% only and major share of this is in the State of Maharashtra (0.28 m. ha) and U.P. (0.21 m. ha). About 92% of the total achievement of land levelling is in Andhra Pradesh, Gujarat, Karnataka, Maharashtra and Rajasthan. Due to proper levelling of land and its shaping, the cost of OFD work is reduced, besides saving of water and improvement in productivity. Therefore, there is a need for co-ordinated and paripassu implementation of all the OFD activities on field so as to realise the optimum benefits from the CAD Programme.

4.2.74 Farm roads although included in CADP package, is not a part of the Centrally Sponsored CAD Programme. As such, monitoring of this activity is not being done by the Ministry of Water Resources. But wherever needed, it is now being undertaken through the State sector. In the case of the Chambal Project in Rajasthan, farm roads, which act as approach roads to the farmers, have been executed for transporting inputs to the field and bringing out the produce without any difficulty. The roads are being provided along the field drains with a width of 3 metres and height of 30 cm on either side of the drain raised above the surrounding terrain. They are not being provided along the water courses because continuous weathering of farm roads/tracts due to traffic and non-availability of earth for their maintenance near water courses and also because of the chances of earthen water course sections becoming unstable due to disbursement of soil on account of traffic. In the case of IGNP in Rajasthan, the provision of road as a means of access to the vast desert area was regarded as essential and a prerequisite for the utilisation of irrigation

potential created and carriage of inputs and farm produce etc. Since 1974-75 till the end of Eighth Plan, about Rs.110 crore have been spent on this component. Similarly, in Madhya Pradesh also, Rs.30.60 crore have been spent during the Eighth Plan for development of farm roads.

4.2.75 The survey of relevant legal provisions in the existing Irrigation Acts in various States shows that most of the States do not have OFD works included in their Acts. For want of this, the CADP is being implemented by obtaining willful possession of land from the concerned farmers for which no compensation is paid to them. In such a situation, several issues crop up like field channels being undone after sometime without any check and also the field channels being generally aligned on field boundaries resulting in longer zig-zag length and thereby causing higher conveyance loss and cost of implementation etc. Consolidation of holding is another activity which needs attention by the States. To account for the above situations, legal back-up to CADDP is needed. For example, the North India Canal and Drainage Act, 1873, (as applicable to the States of Punjab, Haryana and Uttar Pradesh), the Bengal Irrigation Act 1876 applicable to Bihar and West Bengal), the Bombay Irrigation Act 1979, the Rajasthan Irrigation and Drainage Act, 1954 and Orissa Irrigation Act do not provide for direct/effective OFD works as well as involvement of the beneficiaries in overall management and administration of irrigation systems. Further, some of the State Irrigation Acts provide for people's participation only in a limited way. Therefore, the State Irrigation Acts are required to be suitably and comprehensively amended to cover OFD works and farmer's participation through Water Users' Associations in proper perspective.

Measures for improvement

4.2.76 During Ninth Plan drainage of waterlogged areas which is already in CSS CADP would be accelerated. In addition the modernisation and upgradation of old irrigation systems would be taken up under this programme as both the above activities are very critical for sustenance and optimum utilisation of created potential.

4.2.77 In order to improve the implementation and performance of the CADP, the following steps are needed:-

- (i) There is a need for coordinated and paripassu implementation of all the OFD activities in irrigated Commands. In addition, better integration of the engineering, agriculture and extension functions in managing the system is needed.
- (ii) The monitoring of CADP should be done in such a manner that the evaluation, with the tangible indicators of performance, is carried out on a continuing basis for selected projects preferably representative of each region and corrective measures taken accordingly from time to time.
- (iii) Either the existing Irrigation Acts should be suitably amended or a special legislation should be enacted to provide for legal support to Participatory Irrigation Management.

FLOOD CONTROL

Flood Management - An Overview

4.2.78 In general, substantial areas in the North-Eastern and eastern sectors in the country are affected by chronic and severe floods caused by mighty rivers like the Brahmaputra and the Ganges and the coastal areas by sea erosion and cyclones, etc. The flood prone area in the country, as assessed by the Rashtriya Barh Ayog, is 40 m ha i.e. 1/8th of the country's geographical area, out of which about 32 m ha can be provided with reasonable flood protection by various measures. The National Programme of Flood Management was launched in 1954. It is estimated that an area of 14.2 m ha has been provided reasonable degree of protection as a result of construction of 16199 kms. new embankments, 32003 kms. drainage channels, protection to 906 towns/important villages and raising 4721 villages above flood level at the beginning of the Eighth Plan (excluding 3 m ha already existing before 1954). During the Eighth Plan the additional area benefited is estimated at 1.82 m ha against the (revised) target of 1.366 m ha. Thus, at the end of Eighth Plan, a total area of 19.02 m ha (including 33 M ha before 1954) has been provided with reasonable flood protection which is about 59.4% of the total area protectable in the country. The State-wise outlays and the likely expenditure during the Eighth Plan with overall anticipated expenditure of Rs 1867.31 crore are given in Annexure-4.2.9. The States of Andhra Pradesh, Arunachal Pradesh, H.P., Assam, Haryana, J & K, Karnataka, Kerala, Manipur, Meghalaya, Orissa, Rajasthan and Tripura have, by and large, spent more than the approved outlays.

4.2.79 On the basis of the statistics from 1953 to 1994, the total area affected annually on an average is about 7.56 m ha and the cropped area is about 3.53 m ha with as high as 10.45 m ha in year 1988. On an average, 1504 human lives are lost every year due to floods with 11316 lives lost in the year 1977. The total loss on account of flood damage to crops, houses and public utility is estimated at Rs 41250 crore during the period 1953 - 1994. The maximum flood damage, as estimated, was of the order of Rs.4690 crore in the year 1988. The following Table 4.2.11 shows the Plan expenditure, relief (for floods and cyclones) expenditure vis-a-vis the average damage which brings out that the expenditure for flood measures in the corresponding years is quite less than the expenditure on relief measures.

Table 4.2.11

Year	Plan expdr.	Relief expdr.	Total (2+3)	Average damage (from 1953 to the year)
1	2	3	4	5
1992-93	330.16	893.30	1223.46	977.85
1993-94	364.19	564.00	928.19	962.34
1994-95	308.82	630.00	938.82	982.13
1995-96	348.67	729.40	1078.07	-
1996-97	542.65	-	-	-

Snow Melt Contribution to River Discharge/Floods

4.2.80 It has been observed that the river discharge of Himalayan snow-fed rivers of a unit area is roughly twice that of peninsular contribution from snow melting and glacial drainage. In the case of glacial streams of Punjab rivers, it was found in the Sutlej basin that the snowfall was best related with the longitude, thereby showing the effect of westerly wind of winter precipitation. In the case of the Chenab river system, the data showed that the total annual precipitation was poorly related with the elevation but the ratio of rainfall to snowfall decreased with the increase of elevation. As far as quantitative estimation of snowmelt contribution to the river discharge is concerned, though no definite conclusions may be drawn from the available studies, the annual contributions from ground snowmelt (March-June) may be roughly taken as around 20%, while the melt contribution of snow on glacier ice during July-Sept. may be about 50% of the annual stream flow respectively. Further, it is also to be noted that the latter component of snowmelt contribution continues throughout the year making the river perennial. The period from April to September is accelerated snowmelt period contributing large inflows to the streams, while October to March is the period when snowmelt is delayed and its contribution to the annual volume is small.

Flood Forecasting and Warning and Dissemination of Forecasts

4.2.81 Flood forecasting and prior warning to flood prone areas are among the most important and cost-effective measures for flood management. The Central Water Commission has set up a network of flood forecasting and warning stations, covering most of the inter-State rivers in the country. The forecasting network needs to be extended to the remaining flood-prone rivers, ensuring close coordination and effective participation of India Meteorology Department (IMD), National Remote Sensing Agency (NRSA), Indian Space Research Organisation (ISRO) for using to the best the remote sensing technique and telemetry. The existing arrangements to make the forecasts reach the people in advance of the actual flood need to be strengthened. Currently, 157 flood forecasting stations are in operation and nearly 7500 flood forecasts are issued every year. These forecasts are normally issued 24 to 48 hours in advance so as to give sufficient time to the concerned civil and engineering department authorities for dissemination of information, for providing relief and rescue measures to people, as well as for protecting important engineering works/structures. But much more is required to be done to improve the hydrometeorological networks, automation in data communication, accurate forewarnings, instant dissemination of forewarnings, and modernisation of the flood forecasting system for automatic data acquisition and transmission through VHF and satellite. The flood forecasting model MIKE II for water level forecasting and flood management technique on real time basis has been developed (although the co-relation of the water level with the extent of spread of flood is still to be incorporated) and made operational in Damodar Catchment covering the system reservoirs Yamuna and Upper and Lower Godavari Basins. The experience gathered from these works would be helpful for similar application in other basins.

Strategy during Ninth Plan

4.2.82 The broad strategies/approaches for flood management consist of, (i) modifying the course of flood in order to keep the flood waters away from development areas. (ii)

removing the susceptibility to flood damage by keeping out of the flood-prone areas, the people and development subject to damage. (iii) minimising the extent of loss by reducing the financial and social impact of flood through some measures and (iv) living with floods. Keeping this in view, the strategy for implementation of flood management during the Ninth Plan would be as follows -

- (i) Flood management coverage to additional flood prone areas with due prioritisation/ phasing of flood prone areas.
- (ii) Structural measures in combination with non-structural ones to be considered in the context of flood management in a region/basin.
- (iii) Prioritisation/phasing of works/region(s) to be worked out with respect to the frequency of flooding, its extent, severity and damage potential etc. and regions/areas delineated on flood risk maps accordingly in each basin/sub-basin.
- (iv) Systematic survey to assess the cause(s), extent and nature of waterlogging, saline and alkaline lands in irrigated commands on a priority for undertaking diagnostic measures.
- (v) Investigation in detail by the States for realistic assessment/evaluation of the measures for flood management suggested in various master plans of the river basins/ sub-basins prepared at the pre-feasibility level.
- (vi) Further extension of the coverage of flood forecasting and warning system and dissemination of information in the quickest possible manner covering the widest cross-sections of the population in the flood-prone areas.
- (vii) Undertaking on a priority basis adequate maintenance and restoration of the created assets to ensure sustenance of accrual of the envisaged benefits.

PARTICIPATORY IRRIGATION MANAGEMENT PROGRAMME

Background

4.2.83 After independence, the need for expansion of irrigation facilities was fully recognised for increasing foodgrains production to meet the growing requirements of the population. Despite this, the expansion of irrigation facilities, operation and maintenance of irrigation system and distribution of water have not received due attention. Irrigation sector is today facing the twin issues of sub-optimal sector planning and financial management on the one hand and inadequate water management and maintenance on the other. Involving the farmers in the irrigation systems is one obvious remedy for addressing the management problems. The Irrigation Enquiry Committee, 1938 also known as Visvesvaraya Committee, had recommended entrusting of irrigation to a village or group of villages if the farmers were willing to take up cooperative irrigation. The Command Area Development Programme started in 1974 envisaged the participation of farmer organisations from the start as necessary to run the micro system. The Sixth Plan emphasised the need for participation of farmers in the scientific management of water resources. The Seventh Plan reiterated the need for participation of farmers in the management of irrigation. The National Water Policy, 1987 also stressed the involvement of farmers in various aspects of the management of the irrigation system particularly in water distribution and collection of water rates. The Committee on Pricing of Irrigation Water (1992) also recommended farmers participation in the management of irrigation systems.

4.2.84 In spite of the growing realisation of the urgent need for farmers' participation in the management of irrigation, the progress has been slow so far. It is estimated that today only 8,04,000 hectares are being managed by WUAs. The Table 4.2.12 provides some idea about the extent and performance of farmers' organisations in a few selected States:

4.2.85 Amongst the major reasons considered to be responsible for the tardy progress in the implementation of the PIM, are (a) the prolonged prevalence of government-managed systems has sapped the initiative of the farmers and made them dependent on the Government; (b) non-availability of funds for PIM. At present funds are available to a small extent under CAD programme as one-time subsidy to the WUAs. (c) the farmers are reluctant to adopt participatory approach unless deliveries of water can be made flexible, practical and responsive to the need; (d) there are apprehensions in the minds of farmers that under the new system they might have to incur expenditure on operation and maintenance in addition to increased water rates; (e) there is often a lack of homogeneity in the composition of farmer population and they

Table 4.2.12
Water Users Association

State	No. of WUA	Area covered (ha.)
A.P.	32	17388
Assam	30	15000
Bihar	1	12197
Gujarat	477	48500
Karnataka	196	38400
Kerala	3432	137280
Madhya Pradesh	67	62800
Maharashtra	118	48095
Orissa	52	27589
Tamil Nadu	276	13800
West Bengal	10000	37000

are reluctant to come together, because of differences of castes and classes, to form an association; (f) the present institutional arrangements are not conducive to the introduction of PIM. Properly oriented, trained and motivated officials to implement this programme are lacking and there is no dedicated wing for this purpose; (g) lack of an enabling law for the establishment of WUAs is an important impediment in the introduction of PIM. There is a need to have a separate law for the formation of Water User Farmers' Associations (WUAs). However, till such time as such a law is enacted, any existing law like State Irrigation Act could be used with necessary amendments to define the rights and obligations of the WUAs.

4.2.86 The Union Government has taken several initiatives for expanding the PIM in the country. These, inter-alia, include a National Conference on PIM, held in New Delhi from June 19-23, 1995, which adopted a plan of action envisaging conferences at State level for creation of awareness and understanding of issues, initiation of measures for legal changes necessary to implement PIM, preparation of manuals, training of farmers and officials etc. Following the recommendations of the National Conference State/Regional Level Conferences were held. Training programmes are conducted on PIM at the National level for officers and at State level for officers and farmers. Work on the preparation of manuals for PIM in regional languages has been initiated. The Ministry is in the process of proposing amendments to the irrigation Acts of States to give legal status to Water Users Association. The Ministry has requested the State Governments to set up a High Level Group under the Chairmanship of Chief Secretary to prepare policy guidelines for implementing the PIM. The Governments of Gujarat, Himachal Pradesh, Karnataka, Kerala, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh have already set up such High Level Groups. The Planning Commission had set up a Working Group on Participatory Irrigation Management for the Ninth Plan.

4.2.87 The role of the NGOs in bringing members of different communities together is quite important. They can assist the Associations in organising themselves, drawing up the bye-laws, getting registered as societies, devising rules of working together, maintaining books of accounts, conducting meetings and so on. They can lend support to the Associations in their dealings with the agencies of the State.

4.2.88 For successful implementation of the PIM, the following aspects need special attention.

- (a) Legal aspects - Appropriate Legislative backing should be provided as early as possible.
- (b) Institutional aspects - High Level Committee should be set up to formulate policies for the implementation of PIM and review policy issues from time to time. A Standing Committee for operational and monitoring purposes should be set up. In addition, there is a need for a separate wing for PIM in the Department of Irrigation or Command Area Development. The setting up of training and research institutions like WALMIS where they do not exist has been suggested. Employment of Community Organisers for motivating the farmers and later working with them in setting up WUAs has also been suggested. There is a need to create a separate multi-disciplinary wing for PIM in the Ministry of Water Resources in Government of India. The setting up of National Support Group for PIM can also be considered.
- (c) Financial Aspects - There is an urgent need to ensure that during Ninth Plan the PIM programme is prominently highlighted and adequately funded. Under the Centrally Sponsored CAD Programme, the initial management subsidy of Rs.275 per ha. which was earlier available has been changed to a functional grant of Rs.500 per ha. of which Rs.225 each would be borne by Central and State Governments and Rs.50 by the farmers' association. Also, non-CAD and non-external assistance areas would need some consideration for the functional grant if the PIM is implemented in such areas.

Ninth Plan Programme

4.2.89 As per the Working Group Report, the physical programme of at least 2000 pilot projects should be taken up in the Ninth Plan. Some additional pilot projects can also be taken up in the areas where some upgradation and modernisation of the systems have already been completed under the National Water Management Programme - Phase-I and the Water Resources Consolidation Project. The number of pilot projects taken up should be progressively increased from year to year and should add up to 2000 by the end of the Plan.

4.2.90 There is also a need for constant monitoring and evaluation of the performance of the WUAs for the success of the programme and for its replication in other areas.

SPECIAL ACTION PLAN

4.2.91 In pursuance with the Prime Minister's address on 22nd March 1998 (para 4.2.38) a special action plan relevant to set goal has been envisaged which has three-pronged strategy, i.e., optimisation of existing irrigation capacity utilisation, expansion of irrigation facilities through a time-bound programme including exploitation of ground water potential in the Eastern Region and effective harnessing of inter-state river waters. Besides the above vigorous national campaign needs to be launched through mass education and public awareness using the electronic and print media to convince the people that water is a precious yet finite national resource and therefore it should be used more judiciously by tapping various efficient water saving practices in agriculture, industry and for domestic uses, etc. Optimisation of existing irrigation capacity includes renovation & modernisation of old irrigation projects, accelerated changeover from land irrigation to crop irrigation at least in arid and semi-arid areas, renovation/restoration of old tanks alongwith creation of new tanks in villages and towns and promotion of micro irrigation systems i.e. sprinkler and drip irrigation, particularly in water short areas. Expansion of irrigation facilities include time-bound completion of ongoing pre-Seventh Plan 108 major and 176 medium irrigation projects as well as developing ground water potential of 1.5 lakh ha (out of vast ground water potential of about 20 Mha) as available in the eastern region. Pricing of water for various uses is to be rationalised so as to atleast fully recover the O&M cost of irrigation system by the year 2001-02. Requisite funds for regular and proper maintenance of existing irrigation systems by setting apart certain percentage of plan and non-plan funds in the State Budget every year is also to be ensured. In the context of effective harnessing of inter-State river water available legal instrument i.e. Interstate River Water Disputes Act, 1956 and Inter-State River Board Act, 1956 would be made more effective through suitable amendments ensuring thereby the process of adjudication of inter-State river water disputes, time-bound process. Similarly, the inter-State River Board Act is to be suitably modified to make it effective and meaningful on the one hand and provide unfettered authority to the Central Govt to set up inter-State River Boards equipped with the statutory authority on the other. A comprehensive act is also required for regulation and development of ground water on sustainable basis both in public and private sector. Equally essential and urgent need is to create public awareness for judicious water use on one hand and to go for water conservation including rain water harvesting on the other through electronic and print media campaign.

Annexure-4.2.1

Region-wise Status of Irrigation Development in India

Sl No.	Region	Geographical Area in (Sq.km.)	Total population (1991 census) (in '000 ha)	Total Cultivable Area (in '000 Ha)	Cultivable area as% of geographical area	Total Ultimate Irrgn. (U.I.P.) in th. ha.)		Potential Total	U.I.P. as% of geographical area	U.I.P. as % of total cultivabl area	U.I.P. per 1000 populatio in ha.
						Major & Medium	Minor Irri Surface				
		3	4	5	6	7	8	10	11	12	13
1.	Eastern	425432.00	186518.00	24990.00	58.74	12420.00	16718.00	29138.00	68.49	116.60	156.22
2.	North-Eastern	255083.00	31547.00	6340.00	24.85	1235.00	3011.00	4246.00	16.65	66.97	134.59
3.	Northern	1009133.00	232754.00	56381.00	55.87	21550.00	26267.00	47817.00	47.38	84.81	205.44
4.	Southern	635757.00	196442.00	39531.00	62.18	10000.00	15445.00	25445.00	40.02	64.37	129.53
5.	Western	950885.00	187598.00	56506.00	59.42	13162.00	19941.00	33103.00	34.81	58.58	176.46
	Total	3276290.00	834859.00	183748.00	56.08	58367.00	81382.00	139749.00	42.65	76.05	167.39
6	U.Ts.	10973.00	11444.00	208.00	18.96	98.00	46.00	188.00	17.13	90.38	16.43
	GRAND TOTAL	3287263.00	846303.00	183956.00	55.96	58465.00	81428.00	139937.00	42.57	76.07	183.82

Eastern. Orissa, W.B., Bihar, Sikkim.
 North Eastern Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram,, Nagaland Tripura
 Northern Haryana Himachal Pradesh, J & K, Punjab, Rajasthan, Uttar Pradesh
 Southern Andhra Pradesh, Karnataka, Kerala, Tamil Nadu
 Western Goa, Gujarat, Maharashtra, Madhya Pradesh
 U.T.'s Andaman&Nico, Delhi, Dadar & Nagar Haveli, Daman & Diu, Pondicherry, Chandigarh, Lakshadweep

Annexure-4.2.1 (concl.)

Sl No.	Region	Irrigation development upto March 1997 (in th.ha.)						% of Achievement with respect to U. I. P.	
		Major & Me		Minor Irrigatio		Total		Pot.	Utl.
		Pot.	Utl.	Pot.	Utl.	Pot.	Utl.		
		14	15	16	17	18	19	20	21
1.	Eastern	5804.33	5099.38	9709.31	8398.23	15513.64	13497.61	53.24	46.32
2.	North-Eastern	261.97	192.47	954.67	793.83	1216.64	986.30	28.65	23.23
3.	Northern	14108.77	12653.51	31472.17	29567.10	45580.94	42220.61	95.32	88.30
4.	Southern	6769.94	6365.30	7121.22	6824.72	13891.16	13190.02	54.59	51.84
5.	Western	5993.62	4120.72	7232.54	6620.51	13226.16	10741.23	39.95	32.45
	Total	32938.63	28431.38	56489.91	52204.39	89428.54	80635.77	63.99	57.70
6	U.Ts.	18.51	9.29	111.90	104.05	130.41	113.34	69.37	60.29
	GRAND TOTAL	32957.14	28440.67	56601.81	52308.44	89558.95	80749.11	64.00	57.70

Ninth Five Year Plan 1997-02

Annexure-4.2.2

(Rs. in crore)

Sl. No.	Name of States & U.Ts.	A G R E E D O U T L A Y				
		Major & Medium	Minor	CAD	Flood Control	Total
1	2	3	4	5	6	7
1	Andhra Pradesh	5027.16	775.73	76.50	127.41	6006.80
2	Arunachal Pradesh	2.30	202.48	5.65	69.52	279.95
3	Assam	135.12	429.99	25.07	120.24	710.42
4	Bihar	1450.00	725.00	125.00	400.00	2700.00
5	Goa	237.02	27.31	7.31	6.46	278.10
6	Gujarat	7358.00	963.55	50.00	10.00	8381.55
7	Haryana	1372.43	172.13	68.22	60.41	1673.19
8	Himachal Pradesh	35.00	196.55	7.30	20.00	258.85
9	Jammu & Kashmir \$	183.00	156.00	23.50	85.00	447.50
10	Karnataka	5500.00	500.00	120.00	50.00	6170.00
11	Kerala	650.00	250.00	40.00	88.00	1028.00
12	Madhya Pradesh	1915.76	782.90	18.69	4.67	2722.02
13	Maharashtra	8969.08	1568.56	388.46	2.70	10928.80
14	Manipur	222.00	44.00	12.60	42.00	320.60
15	Meghalaya	15.00	60.00	5.00	18.00	98.00
16	Mizoram	0.40	17.52	0.19	0.00	18.11
17	Nagaland	9.85	40.28	1.50	5.37	57.00
18	Orissa	3084.76	267.32	16.50	20.00	3388.58
19	Punjab	238.25	252.82	384.47	409.70	1285.24
20	Rajasthan	1855.54	196.30	422.86	51.16	2525.86
21	Sikkim \$	0.00	10.00	1.00	30.00	41.00
22	Tamil Nadu	1000.00	357.65	90.00	0.00	1447.65
23	Tripura	60.65	105.36	0.10	28.00	194.11
24	Uttar Pradesh	2600.12	490.00	120.00	80.00	3290.12
25	West Bengal	710.93	347.87	16.33	328.44	1403.57
	Total States	42638.01	8939.32	2026.15	2051.08	55654.56
26	A & N Island	0.00	5.77	0.00	4.23	10.00
27	Chandigarh	0.00	1.20	0.00	0.00	1.20
28	D & N Haveli	4.50	7.00	0.74	0.00	12.24
29	Daman & Diu	1.60	1.02	0.30	2.19	5.11
30	Delhi	0.00	13.03	0.00	120.00	133.03
31	Lakshadweep	0.00	0.00	0.00	17.36	17.36
32	Pondicherry	0.00	17.50	0.00	21.50	39.00
	Total U.Ts.	6.10	45.52	1.04	165.28	217.94
	Total States & Uts.	42644.11	8984.84	2027.19	2216.36	55872.50
	*Central Sector	330.12	385.00	860.00	716.13	2291.25
	Grand Total	42974.23	9369.84	2887.19	2932.49	58163.75

*The Fig of Rs330.12 crore under the Major & Medium component includes a total of Rs. 37.79 Crore for R&D and Rs.8.75 Crore for Sectt. & eco. Services.\$Fig Rs. 716.13 including Rs. 110.00 crore for Farkka Barrage Project under Transport Sector.

\$ The Outlays indicated are proposed by the States

Physical Benefits - Ninth Five Year Plan

Annexure-4.2.3

(000' ha.)

Sl. No.	Name of States & U.Ts.	Targett Proposed by the State for 9th Plan			
		Major & Medium	Minor Irrigation	Pot.	Utl.
		Pott.	Utl.	Pot.	Utl.
1	2	3	4	5	6
1	Andhra Pradesh	579.13	506.28	28.90	28.70
2	Arunachal Pradesh	0.00	0.00	23.00	23.00
3	Assam	6.50	4.00	12.84	12.00
4	Bihar	492.00	518.00	205.25	190.00
5	Goa	16.22	12.00	3.02	1.68
6	Gujarat	1867.00	1892.00	70.10	50.80
7	Haryana	197.71	211.21	80.64	80.64
8	Himachal Pradesh	3.00	1.50	6.00	6.00
9	Jammu & Kashmir	29.90	40.10	21.00	15.00
10	Karnataka	1109.88	887.90	155.00	155.00
11	Kerala	373.12	373.12	50.18	50.18
12	Madhya Pradesh	384.75	195.11	150.00	67.00
13	Maharashtra	1755.00	1700.00	528.00	400.00
14	Manipur	50.38	42.33	15.00	12.00
15	Meghalaya	3.88	3.88	8.82	6.62
16	Mizoram	0.00	0.00	1.85	1.85
17	Nagaland	4.50	4.50	14.30	12.00
18	Orissa	915.39	819.27	89.60	101.07
19	Punjab	126.25	126.25	241.61	241.61
20	Rajasthan	469.26	394.92	39.44	25.67
21	Sikkim	0.00	0.00	4.50	4.00
22	Tamil Nadu	4.80	3.80	11.57	7.38
23	Tripura	22.92	11.05	16.00	16.00
24	Uttar Pradesh	1000.00	600.00	5000.00	3000.00
25	West Bengal	395.00	355.00	450.00	400.00
	Total States	9806.59	8702.22	7226.62	4908.20
26	A & N Island	0.00	0.00	0.56	0.56
27	Chandigarh	0.00	0.00	0.10	0.10
28	D & N Haveli	2.20	0.00	0.55	0.55
29	Daman & Diu	3.00	3.00	2.20	2.00
30	Delhi	0.00	0.00	9.70	9.70
31	Lakshadweep	0.00	0.00	0.00	0.00
32	Pondicherry	0.00	0.00	4.00	4.00
	Total U.Ts.	5.20	3.00	17.11	16.91
	Total States & Uts	9811.79	8705.22	7243.73	4925.11

NOTE:-Above mentioned physical targets are proposed by the States in their Ninth Plan proposals. These are under consideration and are subject to change.

Major & Medium Irrigation Schemes - Physical achievement upto Eighth Plan and Target for Ninth Plan														Annexure 4.2.4	
Sl. No.	Name of States & U.Ts.	Ult. Irrgn. Pot.		Achievement to end of March 92		Eighth Plan Target 1992-97		Achievement 1992-93		Actual Achievement 1993-94		Actual Achievement 1994-95		Actual Achievement 1995-96	
		Pot.	Utl.	Pot.	Utl.	Pot.	Utl.	Pot.	Utl.	Pot.	Utl.	Pot.	Utl.	Pot.	Utl.
Major & Medium														Major & Medium	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	Andhra Pradesh	5000.00	2999.00	2847.00	419.00	208.00	6.30	2.60	9.50	1.80	2.80	3.19	2.60	4.40	
2	Arunachal Pradesh				0.00	0.00					0.00	0.00	0.00	0.00	
3	Assam	970.00	176.00	111.00	120.00	74.80	5.55	5.55	7.77	7.77	6.51	6.51	0.84	0.84	
4	Bihar	6500.00	2766.00	2295.00	315.00	410.00	4.00	3.20	27.50	22.00	0.00	0.00	0.00	0.00	
5	Goa	62.00	13.00	12.00	36.20	14.23	0.02	0.07	0.00	0.00	0.00	0.00	0.00	0.00	
6	Gujarat	3000.00	1246.00	986.00	448.00	404.00	26.00	72.00	21.00	66.00	27.00	35.00	15.00	21.00	
7	Haryana	3000.00	2035.00	1791.00	296.00	270.00	12.00	12.00	18.00	18.00	0.46	8.00	1.33	1.33	
8	Himachal Pradesh	50.00	8.00	4.00	2.64	2.00	0.21	0.20	0.24	0.23	0.25	0.25	0.80	0.40	
9	Jammu & Kashmir	250.00	158.00	136.00	20.50	23.00	14.10	4.10	0.30	4.97	0.50	0.70	0.40	1.00	
10	Karnataka	2500.00	1377.00	1192.00	401.00	361.00	26.72	3.14	69.99	55.99	51.47	137.13	49.47	10.35	
11	Kerala	1000.00	416.00	367.00	148.00	148.00	16.52	16.52	2.62	2.62	24.72	24.72	11.45	11.45	
12	Madhya Pradesh	6000.00	1962.00	1395.00	450.00	300.00	76.20	47.10	55.50	32.70	69.30	33.65	79.60	70.35	
13	Maharashtra	4100.00	2030.00	1036.00	400.00	444.00	35.00	0.00	60.00	58.00	50.00	55.70	70.00	70.00	
14	Manipur	165.00	59.00	50.00	54.16	43.39	0.00	0.00	0.00	0.00	0.00	0.00	3.00	2.00	
15	Meghalaya	20.00	0.00	0.00	3.88	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16	Mizoram		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
17	Nagaland	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18	Orissa	3600.00	1409.00	1326.00	334.00	340.00	17.56	22.05	12.72	17.56	17.85	12.72	46.48	17.85	
19	Punjab	3000.00	2367.00	2309.00	176.42	176.42	14.70	14.70	19.69	18.30	51.77	50.80	39.99	38.06	
20	Rajasthan	2750.00	1999.00	1887.00	288.61	232.13	43.04	31.59	62.47	42.77	60.12	40.40	60.47	44.15	
21	Sikkim	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
22	Tamil Nadu	1500.00	1545.00	1541.00	10.30	10.57	0.00	3.98	0.51	0.00	0.00	0.51	0.00	0.00	
23	Tripura	100.00	2.00	2.00	13.20	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
24	Uttar Pradesh	12500.00	6806.00	5763.00	976.00	600.00	54.00	65.00	62.00	60.00	12.00	62.00	56.00	76.00	
25	West Bengal	2300.00	1353.00	1258.00	170.53	171.56	9.08	10.65	29.00	29.00	13.19	4.46	8.15	5.75	
Total States		58397.00	30726.00	26308.00	5083.44	4248.10	361.00	314.45	458.81	437.71	387.94	475.65	445.58	374.93	
26	A & N Island				0.00	0.00					0.00	0.00	0.00	0.00	
27	Chandigarh				0.00	0.00					0.00	0.00	0.00	0.00	
28	D & N Haveli				0.00	0.00					0.00	0.00	0.00	0.00	
29	Daman & Diu				1.71	1.71	1.00	1.00	1.00	1.00	0.55	0.00	0.00	0.00	
30	Delhi				0.00	0.00					0.00	0.00	0.00	0.00	
31	Lakshadweep				0.00	0.00					0.00	0.00	0.00	0.00	
32	Pondicherry				2.50	2.50	0.13	0.13	0.16	0.16	0.00	0.00	0.00	0.00	
Total U.Ts.		98.00	15.00	7.00	4.21	4.21	1.13	1.13	1.16	1.16	0.55	0.00	0.00	0.00	
Total States & Uts.		58495.00	30741.00	26315.00	5087.65	4252.31	362.13	315.58	459.97	438.87	388.49	475.65	445.58	374.93	

NOTE :- The physical achievements during Eighth Plan as above are anticipated and are likely to change.

Annexure 4.2.4 (concl'd.)										(000' ha.)	
Sl No	Name of States & U.Ts.	Antcd.Achievement 1996-97		1997-98 Target		Ninth Plan Target		Achievement During 1992-97		Achievement Upto March 97	
		Major & Medium	Major & Medium	Major & Medium	Major & Medium	Pot.	Utl.	Pot.	Utl.	Pot.	Utl.
		Pot.	Utl.	Pot.	Utl.	Pot.	Utl.	Pot.	Utl.	Pot.	Utl.
1	2	16	17	18	19	20	21	22	23	24	25
1	Andhra Pradesh	24.90	24.90	115.51	152.78	579.13	506.28	46.10	36.80	3045.10	2883.80
2	Arunachal Pra	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Assam	0.00	6.50	1.15	0.20	6.50	4.00	20.67	27.17	196.67	138.17
4	Bihar	5.00	4.00	25.57	25.50	492.00	518.00	36.50	29.20	2802.50	2324.20
5	Goa	0.00	0.00	3.50	1.00	16.22	12.00	0.02	0.07	13.02	12.07
6	Gujarat	15.00	20.00	65.00	60.00	1867.00	1892.00	104.00	214.00	1350.00	1200.00
7	Haryana	12.00	3.29	45.00	41.00	197.71	211.21	43.79	42.62	2078.79	1833.62
8	Himachal Prad	1.05	0.51	0.30	0.15	3.00	1.50	2.55	1.59	10.55	5.59
9	Jammu & Kashm	0.40	0.80	2.45	5.69	29.90	40.10	15.70	11.57	173.70	147.57
10	Karnataka	91.37	73.09	119.21	95.36	1109.88	887.90	289.02	279.70	1666.02	1471.70
11	Kerala	42.00	42.00	32.23	30.61	373.12	373.12	97.31	97.31	513.31	464.31
12	Madhya Pradesh	75.00	42.15	53.30	23.30	384.75	195.11	355.60	225.95	2317.60	1620.95
13	Maharashtra	68.00	68.00	168.00	150.00	1755.00	1700.00	283.00	251.70	2313.00	1287.70
14	Manipur	1.00	0.00	0.77	1.53	50.38	42.33	4.00	2.00	63.00	52.00
15	Meghalaya	0.00	0.00	0.00	0.00	3.88	3.88	0.00	0.00	0.00	0.00
16	Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Nagaland	0.00	0.00	0.00	0.00	4.50	4.50	0.00	0.00	0.00	0.00
18	Orissa	54.14	46.48	120.63	54.14	915.39	819.27	148.75	116.66	1557.75	1442.66
19	Punjab	19.70	21.48	21.60	21.60	126.25	126.25	145.85	143.34	2512.85	2452.34
20	Rajasthan	48.78	42.48	48.60	46.46	469.26	394.92	274.88	201.39	2273.88	2088.39
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	0.00	0.00	2.18	0.00	4.80	3.80	0.51	4.49	1545.51	1545.49
23	Tripura	0.30	0.30	0.85	0.85	22.92	11.05	0.30	0.30	2.30	2.30
24	Uttar Pradesh	69.00	100.00	140.00	75.00	1000.00	600.00	253.00	363.00	7059.00	6126.00
25	West Bengal	31.66	24.66	74.00	67.00	395.00	355.00	91.08	74.52	1444.08	1332.52
	Total States	559.30	502.16	1039.85	852.17	9806.59	8702.22	2212.62	2123.38	32938.62	28431.38
26	A & N Island	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	Chandigarh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	D & N Haveli	0.00	0.00	0.10	0.40	2.20	-	0.00	0.00	0.00	0.00
29	Daman & Diu	0.67	0.00	0.00	0.00	3.00	3.00	3.22	2.00	3.22	2.00
30	Delhi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	Lakshadweep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	Pondicherry	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.29	0.29	0.29
	Total U.Ts.	0.67	0.00	0.10	0.40	5.20	3.00	3.51	2.29	18.51	9.29
	Total States & U	559.97	502.16	1039.95	852.57	9811.79	8705.22	2216.13	2125.67	32957.13	28440.67

Major & Medium Irrigation Programme - Outlay and Expenditure in Eighth Plan Annexure-4.2.5

								(Rs. in cro)	
Sl. No.	Name of States & U.Ts.	8th Plan Outlay	1992-93 Actual Expdr.	1993-94 Actual Expdr.	1994-95 Actual Expdr.	1995-96 Actual Expdr.	1996-97 Antcd. Expdr.	Total Anti Expdr. 1992-97	Percentage w.r Col.3
1	2	3	4	5	6	7	8	9	10
1	Andhra Pradesh	2066.78	343.47	577.96	613.11	537.71	514.88	2587.13	125.18
2	Arunachal Pradesh	4.71	0.50	0.44	0.50	0.48	0.94	2.86	60.72
3	Assam	86.11	23.64	24.33	25.65	23.83	22.00	119.45	138.72
4	Bihar	1927.17	146.30	140.16	145.90	179.75	192.68	804.79	41.76
5	Goa	114.70	22.03	15.95	29.19	30.28	31.00	128.45	111.99
6	Gujarat	3426.00	408.48	444.58	384.36	651.96	1063.19	2952.57	86.18
7	Haryana	446.67	81.26	88.67	74.62	99.55	201.29	545.39	122.10
8	Himachal Pradesh	16.00	2.69	2.46	2.59	3.43	3.22	14.39	89.94
9	Jammu & Kashmir	70.57	16.93	15.28	17.34	19.06	17.11	85.72	121.47
10	Karnataka	1936.09	294.25	445.12	466.61	681.26	975.89	2863.13	147.88
11	Kerala	437.00	80.80	103.39	113.75	146.56	130.00	574.50	131.46
12	Madhya Pradesh	1791.29	314.76	318.89	366.59	316.67	297.58	1614.49	90.13
13	Maharashtra	2391.54	457.36	471.83	904.49	1153.82	642.89	3630.39	151.80
14	Manipur	125.00	20.94	26.91	28.82	33.37	32.21	142.25	113.80
15	Meghalaya	11.10	1.37	0.95	0.46	1.86	1.50	6.14	55.32
16	Mizoram	1.00	0.10	0.08	0.04	0.02	0.00	0.24	24.00
17	Nagaland	2.00	0.00	0.45	0.00	0.30	0.30	1.05	52.50
18	Orissa	2614.33	189.07	157.44	152.18	195.09	327.74	1021.52	39.07
19	Punjab	257.73	31.68	41.68	57.05	69.38	75.84	275.63	106.95
20	Rajasthan	1310.08	165.82	196.74	279.04	291.05	287.79	1220.44	93.16
21	Sikkim	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Tamil Nadu	260.00	66.52	74.04	83.23	52.86	186.16	462.81	178.00
23	Tripura	35.00	8.38	5.55	3.68	4.19	5.49	27.29	77.97
24	Uttar Pradesh	2599.34	284.74	309.00	300.80	373.00	415.66	1683.20	64.75
25	West Bengal	380.00	50.24	78.00	84.45	105.80	100.00	418.49	110.13
Total States		22310.21	3011.33	3539.90	4134.45	4971.28	5525.36	21182.32	94.94
26	A & N Islands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	Chandigarh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	D & N Haveli	5.23	3.21	1.14	1.00	0.68	0.91	6.93	132.53
29	Daman & Diu	1.60	0.20	0.35	0.55	0.55	0.55	2.20	137.50
30	Delhi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	Lakshadweep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	Pondicherry	2.49	0.72	0.00	0.00	0.00	0.00	0.72	28.92
Total U.Ts.		9.32	4.13	1.49	1.55	1.23	1.46	9.85	105.70
States & Uts.		22319.53	3015.45	3541.39	4136.00	4972.51	5526.82	21192.17	94.95
Central Sector		95.00	31.68	30.02	23.05	26.51	537.71	648.97	683.13
Grand Total		22414.53	3047.13	3571.41	4159.05	4999.02	6064.53	21841.14	97.44

mm97

NOTE :- The expenditure during Eighth Plan as in Col.9 are anticipated and are likely to change.

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MINOR IRRIGATION - PHYSICAL DETAILS									ANNEXURE-4.2.6			(000 ha.)		
Sl. No.	Name of States & U.Ts.	Ult. Irrgn. Pot.	Achievement to March 92	Event of March 92	Eighth Plan Target		Achievement 1992-93		Actual Achievement 1993-94		Actual Achievement 1994-95		Actual Achievement 1995-96	
		Pot.	Util.	Pot.	Util.	Pot.	Util.	Pot.	Util.	Pot.	Util.	Pot.	Util.	Pot.	Util.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Andhra Pradesh	6260.00	2877.34	2662.63	500.00	400.00	7.40	7.40	6.00	6.00	3.48	3.48	3.20	3.20
2	Arunachal Pradesh	168.00	64.89	55.84	20.00	20.00	3.22	1.60	3.14	1.75	3.90	2.00	4.00	2.15
3	Assam	1900.00	575.28	466.97	180.00	120.00	7.58	7.58	3.07	3.07	4.05	4.05	2.27	2.27
4	Bihar	6847.00	4876.90	4357.19	1832.00	1466.00	60.00	55.00	65.00	60.00	64.00	64.51	30.69	27.00
5	Goa	54.00	18.41	16.71	4.00	3.00	0.48	0.24	0.43	0.22	0.50	0.25	0.35	0.17
6	Gujarat	3103.00	1900.30	1804.22	180.00	150.00	7.00	4.00	4.00	3.00	5.00	5.00	8.40	16.40
7	Haryana	1512.00	1524.47	1483.72	100.00	90.00	10.00	10.00	10.00	10.00	10.50	8.40	11.80	9.50
8	Himachal Pradesh	303.00	141.61	122.45	25.00	20.00	2.44	1.59	1.50	1.50	1.62	1.02	1.61	0.26
9	Jammu & Kashmir	1108.00	363.62	352.31	40.00	40.00	2.23	1.01	1.54	1.56	2.48	1.56	2.40	2.36
10	Karnataka	3474.00	1435.48	1395.51	220.00	200.00	21.08	21.08	22.00	22.00	20.33	18.00	12.02	12.02
11	Kerala	1679.00	518.04	482.41	100.00	85.00	7.30	7.30	7.17	7.17	14.33	14.33	13.37	13.37
12	Madhya Pradesh	11932.00	2560.52	2375.02	500.00	375.00	16.00	7.00	26.00	13.00	20.00	10.00	15.00	7.00
13	Maharashtra	4852.00	2457.40	2212.10	400.00	325.00	32.00	25.00	31.50	25.00	31.50	25.00	33.40	27.00
14	Manipur	469.00	49.57	41.21	15.00	12.00	1.91	1.91	2.21	1.37	1.80	1.80	2.40	2.40
15	Meghalaya	148.00	42.51	37.19	12.00	8.00	0.29	0.22	0.50	0.38	0.71	0.53	0.84	0.63
16	Mizoram	70.00	10.54	9.03	6.00	4.00	0.48	0.48	0.51	0.51	0.51	0.51	0.37	0.37
17	Nagaland	75.00	65.10	55.93	13.00	10.00	0.75	0.70	0.35	0.30	0.32	0.30	0.36	0.35
18	Orissa	5203.00	1245.38	1126.18	150.00	150.00	14.88	18.08	22.25	14.97	26.46	22.25	19.11	26.46
19	Punjab	2967.00	3290.45	3238.19	76.00	76.00	11.15	11.15	7.00	3.94	14.09	13.93	17.58	14.70
20	Rajasthan	2378.00	2388.71	2316.63	300.00	280.00	6.73	4.04	6.87	4.12	6.16	4.32	6.84	4.11
21	Sikkim	50.00	22.19	17.07	5.00	4.00	0.65	0.55	0.72	0.62	0.66	0.53	1.15	1.02
22	Tamil Nadu	4032.00	2107.91	2102.52	110.00	107.00	1.82	2.10	1.62	1.82	1.65	1.62	1.65	1.65
23	Tripura	181.00	87.38	78.83	27.00	16.00	1.26	1.26	0.95	0.95	1.22	1.22	0.69	0.69
24	Uttar Pradesh	17999.00	18870	17340	5439.00	5000.00	961.00	961.00	775.00	650.00	1013.00	1057.00	1193.00	1206.00
25	West Bengal	4618.00	2772.37	2309.90	450.00	400.00	60.00	36.00	90.00	81.00	100.00	33.00	95.00	57.00
Total States		81382.00	50266.37	46459.76	10704.00	9355.00	1237.65	1186.3	1089.33	914.25	1348.27	1294.61	1477.50	1438.08
26	A & N Island						0.09	0.09	0.10	0.10	0.10	0.10	0.15	0.15
27	Chandigarh						0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03
28	D & N Haveli						0.05	0.05	0.13	0.07	0.02	0.07	0.03	0.03
29	Daman & Diu						1.19	1.19	1.12	1.12	0.25	0.00	1.14	1.19
30	Delhi						4.20	3.54	4.00	3.62	4.68	4.01	4.58	4.05
31	Lakshadweep								0.00	0.00	0.00	0.00	0.00	0.00
32	Pondicherry						0.33	0.33	0.33	0.33	0.27	0.27	0.61	0.61
Total U.Ts.		46.00	81.92	77.66	7.00	5.00	5.88	5.22	5.70	5.26	5.34	4.47	6.54	6.06
States & U.Ts		81428.00	50348.29	46537.42	10711.00	9360.00	1243.53	1191.5	1095.03	919.51	1353.61	1299.08	1484.04	1444.14

		ANNEXURE-4.2.6 (concl.)								(000 ha.)	
Sl. No.	Name of States & U.Ts.	Antcd. Achievement 1986-97		Achievement During 1992-97		Achievement Upto March 1997		Target Ninth Plan		Target 1997-98	
		Pot.	Util.	Pot.	Util.	Pot.	Util.	Pot.	Util.	Pot.	Util.
1	2	16	17	18	19	20	21	22	23	24	25
1	Andhra Pradesh	4.45	4.45	24.53	24.53	2901.87	2687.16	28.90	28.70	5.30	5.30
2	Arunachal Pradesh	4.27	2.20	18.53	9.70	83.42	65.54	23.00	23.00	4.35	2.25
3	Assam	0.51	0.51	17.48	17.48	592.76	484.45	12.84	12.00	7.98	7.98
4	Bihar	11.65	10.00	231.34	216.51	5108.24	4573.70	205.25	190.00	8.71	7.00
5	Goa	0.35	0.18	2.11	1.06	20.52	17.77	3.02	1.68	0.27	0.20
6	Gujarat	10.60	7.00	35.00	35.40	1935.3	1839.62	70.10	50.800	9.50	7.50
7	Haryana	10.0	10.00	52.30	47.90	1576.77	1531.62	80.64	80.64	18.00	18.00
8	Himachal Pradesh	1.60	1.60	8.77	5.97	150.38	128.42	6.00	6.00	1.80	1.80
9	Jammu & Kashmir	2.35	2.36	11.00	8.88	374.82	361.18	21.00	15.00	3.60	5.00
10	Karnataka	20.10	20.10	95.53	93.20	1531.01	1488.71	155.00	155.00	14.00	14.00
11	Kerala	12.91	12.91	55.08	55.08	573.12	537.49	50.18	50.18	12.84	12.84
12	Madhya Pradesh	20.00	10.00	97.00	47.00	2657.52	2422.02	150.00	67.00	25.00	11.00
13	Maharashtra	33.40	27.00	161.80	129.00	2619.20	2341.10	528.00	400.00	152.00	130.00
14	Manipur	2.50	2.50	10.82	9.98	60.39	51.19	15.00	12.00	3.00	3.00
15	Meghalaya	0.70	0.52	3.04	2.28	45.55	39.47	8.82	6.62	3.27	2.45
16	Mizoram	0.32	0.32	2.19	2.19	12.73	11.22	1.85	1.85	1.36	1.36
17	Nagaland	0.36	0.35	2.14	2.00	67.24	57.93	14.30	12.00	1.03	1.00
18	Orissa	29.39	19.11	112.09	100.87	1357.47	1227.05	89.60	101.07	66.08	29.39
19	Punjab	13.90	14.21	63.72	57.93	3354.17	3296.12	241.61	241.61	19.75	19.75
20	Rajasthan	5.93	3.56	32.53	20.15	2421.24	2336.78	39.44	25.67	8.70	5.21
21	Sikkim	0.86	0.80	4.04	3.52	26.23	20.58	4.50	4.00	0.90	0.80
22	Tamil Nadu	0.57	1.65	7.31	8.84	2115.22	2111.36	11.57	7.38	1.68	0.57
23	Tripura	1.08	1.08	5.20	5.20	92.58	84.03	16.00	16.00	4.20	4.20
24	Uttar Pradesh	783.00	709.00	4725.00	4583.00	23595.00	21923.00	5000.00	3000.00	269.00	1000.00
25	West Bengal	100.00	60.00	445.00	267.00	3217.37	2576.90	450.00	400.00	150.00	150.00
Total States		1070.80	921.41	6223.55	5754.64	56489.9	52214.4	7226.62	4908.20	792.32	1440.60
26	A & N Island	0.12	0.12	0.56	0.56	0.55	0.55	0.56	0.56	0.10	0.10
27	Chandigarh	0.03	0.03	0.12	0.12	0.12	0.12	0.10	0.10	0.02	0.02
28	D & N Haveli	0.03	0.03	0.26	0.25	0.26	0.25	0.55	0.55	0.09	0.09
29	Daman & Diu	1.69	1.44	5.39	4.94	5.39	4.94	2.20	2.00	0.50	0.00
30	Delhi	4.18	3.30	21.64	18.52	21.64	18.52	9.70	9.70	4.74	4.09
31	Lakshadweep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	Pondichery	0.48	0.48	2.02	2.01	2.02	2.01	4.00	4.00	0.48	0.48
Total U.Ts.		6.53	5.40	29.99	26.41	111.91	104.07	17.11	16.91	5.93	4.78
States & UTs		1077.33	926.81	6253.54	5781.05	56601.8	52318.5	7243.73	4925.11	798.25	1445.38

Annexure-4.2.7

Minor Irrigation Programme - Outlay and Expenditure during Eighth Plan

(Rs. in crore)

Sl. No.	Name of States & U.Ts.	8th Plan Outlay	1992-93 Actual Expdr.	1993-94 Actual Expdr.	1994-95 Actual Expdr.	1995-96 Actual Expdr.	1996-97 Antcd. Expdr.	Total Antcd. Expdr. 1992-97	Percentage Col.9 w.r.t. Col.3
1	2	3	4	5	6	7	8	9	10
1	Andhra Pradesh	234.68	60.53	95.29	66.90	84.36	63.00	370.08	157.70
2	Arunachal Pradesh	53.69	10.77	12.25	14.40	15.84	14.38	67.64	125.98
3	Assam	183.45	44.07	38.00	40.17	46.65	62.77	231.66	126.28
4	Bihar	1021.30	69.47	34.75	35.04	24.02	36.30	199.58	19.54
5	Goa	13.10	3.98	3.90	2.91	3.80	3.50	18.09	138.09
6	Gujarat	240.00	45.61	39.18	77.74	119.85	158.84	441.22	183.84
7	Haryana	134.45	28.49	47.00	30.57	51.25	47.70	205.01	152.48
8	Himachal Pradesh	95.25	21.42	17.14	21.61	26.96	36.76	123.89	130.07
9	Jammu & Kashmir	84.20	16.05	16.77	19.64	24.07	23.31	99.84	118.57
10	Karnataka	306.91	44.05	63.39	73.87	62.45	64.04	307.80	100.29
11	Kerala	130.00	15.03	21.17	32.11	38.68	45.35	152.34	117.18
12	Madhya Pradesh	728.37	125.82	131.09	118.68	121.43	137.48	634.50	87.11
13	Maharashtra	612.17	203.99	215.21	338.82	427.35	385.86	1571.23	256.67
14	Manipur	25.00	3.00	4.75	5.34	6.02	6.21	25.32	101.26
15	Meghalaya	29.03	5.78	4.19	3.86	5.65	5.25	24.73	85.19
16	Mizoram	11.75	2.54	2.60	2.37	2.40	2.73	12.64	107.57
17	Nagaland	21.00	2.41	3.49	2.26	3.38	1.92	13.46	64.11
18	Orissa	389.40	53.35	56.65	61.97	81.15	114.56	367.68	94.42
19	Punjab	113.20	17.16	21.68	28.11	29.35	33.26	129.56	114.45
20	Rajasthan	171.92	34.53	32.13	32.67	50.09	45.23	194.65	113.22
21	Sikkim	11.50	2.10	1.99	1.96	2.56	2.56	11.17	97.10
22	Tamil Nadu	250.00	41.63	40.70	39.52	38.85	36.99	197.69	79.08
23	Tripura	31.50	6.59	4.62	4.66	4.76	8.88	29.51	93.68
24	Uttar Pradesh	400.60	70.08	46.45	54.67	74.12	105.69	351.01	87.62
25	West Bengal	370.00	45.27	62.97	34.18	24.10	38.00	204.52	55.28
Total States		5662.47	973.72	1017.36	1144.03	1369.14	1480.57	5984.81	105.69
26	A & N Island	4.24	2.01	2.16	2.19	1.39	1.64	9.39	221.49
27	Chandigarh	1.00	0.21	0.25	0.25	0.32	0.20	1.23	122.99
28	D & N Haveli	3.00	0.81	0.55	1.05	0.56	1.05	4.02	133.90
29	Daman & Diu	0.44	0.03	0.10	0.20	0.09	0.12	0.54	123.02
30	Delhi	8.00	1.32	2.13	1.40	1.80	0.64	7.29	91.10
31	Lakshadweep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	Pondicherry	5.11	1.43	1.37	1.73	2.71	2.94	10.19	199.32
Total U.Ts.		21.79	5.81	6.56	6.82	6.87	6.59	32.65	149.85
States & Uts.		5684.26	979.53	1023.92	1150.85	1376.01	1487.16	6017.46	105.86
Central Sector		293.00	15.07	70.91	34.30	32.07	60.81	213.16	72.75
Grand Total		5977.26	994.60	1094.83	1185.15	1408.08	1547.97	6230.62	104.24

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NOTE:- The expenditure during Eighth Plan as in Col.9 are anticipated and are likely to change.

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Command Area Development Programme - Outlay and Expenditure

Annexure-4.2.8

(Rs. in crore)

Sl. No.	Name of States & U.Ts.	8th Plan Outlay	1992-93 Actual Expdr.	1993-94 Actual Expdr.	1994-95 Actual Expdr.	1995-96 Actual Expdr.	1996-97 Antcd. Expdr.	Total Antc Expdr. 1992-97	Percentage Col.9 w.r.t. Col.3
1	2	3	4	5	6	7	8	9	10
1	Andhra Pradesh	55.00	17.66	24.94	27.53	10.00	7.20	87.33	158.78
2	Arunachal Pradesh	1.70	0.34	0.40	0.40	0.45	0.88	2.47	145.12
3	Assam	16.79	2.15	2.50	3.41	5.28	2.78	16.12	96.01
4	Bihar	70.65	10.00	5.77	7.27	10.26	11.28	44.58	63.10
5	Goa	6.40	1.53	1.60	1.17	0.89	0.90	6.09	95.16
6	Gujarat	80.00	9.10	9.58	12.89	12.20	9.25	53.02	66.28
7	Haryana	45.77	7.07	41.26	11.71	11.69	13.90	85.63	187.09
8	Himachal Pradesh	2.45	0.49	0.65	0.77	0.95	1.10	3.96	161.63
9	Jammu & Kashmir	10.00	1.65	1.93	2.29	3.08	2.70	11.65	116.50
10	Karnataka	130.00	14.86	16.15	20.44	24.80	18.02	94.27	72.52
11	Kerala	60.00	8.93	10.00	11.54	11.38	12.00	53.85	89.75
12	Madhya Pradesh	128.05	11.06	9.61	8.82	8.24	6.21	43.94	34.31
13	Maharashtra	323.93	43.30	44.36	80.02	103.17	0.00	270.85	83.61
14	Manipur	7.00	1.16	0.74	1.33	1.72	2.01	6.96	99.43
15	Meghalaya	0.00	0.59	0.48	0.10	0.11	0.70	1.98	0.00
16	Mizoram	0.00	0.00	0.00	0.04	0.05	0.05	0.14	0.00
17	Nagaland	0.50	0.10	0.03	0.00	0.03	0.14	0.30	60.00
18	Orissa	33.40	3.68	3.88	3.74	3.53	4.00	18.83	56.38
19	Punjab	140.00	10.56	10.17	29.88	39.86	37.00	127.47	91.05
20	Rajasthan	412.69	58.23	53.74	63.92	81.31	97.50	354.70	85.95
21	Sikkim	1.50	0.00	0.05	0.03	0.06	0.06	0.20	13.33
22	Tamil Nadu	45.00	9.23	9.74	10.82	11.52	12.32	53.63	119.18
23	Tripura	0.50	0.05	0.03	0.06	0.05	0.02	0.21	42.00
23	Tripura	0.50	0.05	0.03	0.06	0.05	0.02	0.21	42.00
24	Uttar Pradesh	90.00	16.29	19.72	28.26	21.94	27.00	113.21	125.79
25	West Bengal	18.00	0.86	1.50	1.89	2.33	0.75	7.33	40.72
Total States		1679.33	228.89	268.83	328.33	364.90	267.77	1458.71	86.86
26	A & N Island	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	Chandigarh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	D & N Haveli	0.20	0.00	0.00	0.05	0.00	0.01	0.06	30.00
29	Daman & Diu	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	Delhi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	Lakshadweep	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	Pondicherry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total U.Ts.		0.80	0.00	0.00	0.05	0.00	0.01	0.06	7.50
States & Uts.		1680.13	228.89	268.83	328.38	364.90	267.78	1458.77	86.83
Central Sector		830.00	104.45	116.22	123.68	124.40	138.32	607.07	73.14
Grand Total		2510.13	333.34	385.05	452.06	489.30	406.10	2065.84	82.30

NOTE:- The expenditure during Eighth Plan as in Col.9 an anticipated and are likely to change.

Flood Control Programme - Outlay and Expenditure							Annexure-4.2.9		
							Rs. in CRORE		
Sl No	Name of States & U.Ts.	8th Plan Outlay (1992-97)	1992-93 Actual Expdr.	1993-94 Actual Expdr.	1994-95 Actual Expdr.	1995-96 Actual Expdr.	1996-97 Antcpd. Expdr.	Total Antcd Expdr. 1992-97	Percentage Col.9 w.r Col.3
1	2	3	4	5	6	7	8	9	10
1	Andhra Pradesh	143.54	118.11	126.87	55.75	13.14	10.00	323.87	225.63
2	Arunachal Pradesh	4.71	1.04	1.43	2.48	3.19	3.27	11.41	242.21
3	Assam	86.85	19.38	17.40	19.53	21.11	20.17	97.59	112.37
4	Bihar	251.71	39.08	30.41	24.56	35.48	41.35	170.88	67.89
5	Goa	0.90	0.81	0.30	0.22	0.31	0.80	2.44	271.11
6	Gujarat	10.00	3.62	2.46	3.60	1.92	1.60	13.20	132.00
7	Haryana	52.00	11.33	12.59	9.08	11.76	11.00	55.76	107.23
8	Himachal Pradesh	6.00	1.03	1.38	1.49	2.03	3.54	9.47	157.83
9	Jammu & Kashmir	40.75	8.26	8.83	11.07	13.44	15.71	57.31	140.64
10	Karnataka	11.00	5.64	11.05	8.53	9.24	10.00	44.46	404.18
11	Kerala	65.00	9.32	27.56	26.19	26.55	35.50	125.12	192.49
12	Madhya Pradesh	8.53	0.69	0.48	0.57	0.71	1.08	3.53	41.38
13	Maharashtra	1.46	0.31	0.31	0.62	0.47	103.21	104.92	7186.30
14	Manipur	20.00	3.41	2.61	6.81	7.39	6.96	27.18	135.90
15	Meghalaya	8.54	1.07	0.96	0.86	1.55	1.43	5.87	68.74
16	Mizoram	0.25	0.18	0.10	0.00	0.00	0.00	0.28	112.00
17	Nagaland	1.50	0.20	0.05	0.00	0.10	0.16	0.51	34.00
18	Orissa	42.05	6.27	7.79	7.90	9.25	13.00	44.21	105.14
19	Punjab	125.00	14.15	10.85	13.40	34.16	65.90	138.46	110.77
20	Rajasthan	25.30	4.41	5.72	5.50	18.73	43.45	77.81	307.55
21	Sikkim	0.00	0.15	0.12	0.12	0.34	2.34	3.07	0.00
21	Sikkim	0.00	0.15	0.12	0.12	0.34	2.34	3.07	0.00
22	Tamil Nadu	30.00	0.70	0.82	0.15	0.38	1.59	3.64	12.13
23	Tripura	8.00	2.27	2.20	1.88	2.13	2.04	10.52	131.53
24	Uttar Pradesh	70.00	8.00	9.00	14.71	10.96	10.81	53.48	76.40
25	West Bengal	280.00	21.05	32.00	38.65	47.81	35.00	174.51	62.33
Total States		1293.09	280.48	313.29	253.67	272.15	439.91	1559.50	120.60
26	A & N Islands	0.05	0.04	0.01	0.01	1.46	1.00	2.52	5038.00
27	Chandigarh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	D & N Haveli	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	Daman & Diu	1.17	0.20	0.32	0.32	0.22	0.35	1.41	120.51
30	Delhi	40.00	9.02	9.73	8.97	12.49	14.32	54.53	136.32
31	Lakshadweep	2.60	1.25	1.60	2.35	2.19	1.86	9.25	355.81
32	Pondicherry	4.44	1.10	2.00	2.75	4.31	3.77	13.93	313.67
Total U.Ts.		48.28	11.61	13.66	14.40	20.67	21.30	81.64	169.09
States & Uts.		1341.37	292.09	326.95	268.07	292.82	461.20	1641.14	122.35
Central Sector		282.00	38.07	38.78	39.75	55.85	53.72	226.17	80.20
Grand Total		1623.37	330.16	365.73	307.82	348.67	514.92	1867.31	115.03

NOTE:- The expenditure in Eighth Plan as in Col.9 are anticipated and are likely to change.
* Provisional

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Annexure-4.2.10						
Eighth Five Year Plan outlay & anticipated expenditure (1992-97).						
(Rs. In crore)						
Sl. No.	Name of States & U Ts.	Major & Medium Irrigation	Minor Irrigation	CAD	Flood Control	Total
1	2	3	4	5	6	7
1	Andhra Pradesh	2587.13	370.08	87.33	323.87	3368.41
2	Arunachal Pradesh	2.86	67.64	2.47	11.41	84.38
3	Assam	119.45	231.66	16.12	97.59	464.82
4	Bihar	804.79	199.58	44.58	170.88	1219.83
5	Goa	128.45	18.09	6.09	2.44	155.07
6	Gujarat	2952.57	441.22	53.02	13.20	3460.01
7	Haryana	545.39	205.01	85.63	55.76	891.79
8	Himachal Pradesh	14.39	123.89	3.96	9.47	151.71
9	Jammu & Kashmir	85.72	99.84	11.65	57.31	254.52
10	Karnataka	2863.13	307.80	94.27	44.46	3309.66
11	Kerala	574.50	152.34	53.85	125.12	905.81
12	Madhya Pradesh	1614.49	634.50	43.94	3.53	2296.46
13	Maharashtra	3630.39	1571.23	270.85	104.92	5577.39
14	Manipur	142.25	25.32	6.96	27.18	201.71
15	Meghalaya	6.14	24.73	1.98	5.87	38.72
16	Mizoram	0.24	12.64	0.14	0.28	13.30
17	Nagaland	1.05	13.46	0.30	0.51	15.32
18	Orissa	1021.52	367.68	18.83	44.21	1452.24
19	Punjab	275.63	129.56	127.47	138.46	671.12
20	Rajasthan	1220.44	194.65	354.70	77.81	1847.60
21	Sikkim	0.00	11.17	0.20	3.07	14.44
22	Tamil Nadu	462.81	197.69	53.63	3.64	717.77
23	Tripura	27.29	29.51	0.21	10.52	67.53
24	Uttar Pradesh	1683.20	351.01	113.21	53.48	2200.90
25	West Bengal	418.49	204.52	7.33	174.51	804.85
	Total States	21182.32	5984.82	1458.72	1559.50	30185.36
26	A & N Islands	0.00	9.39	0.00	2.52	11.91
27	Chandigarh	0.00	1.23	0.00	0.00	1.23
28	D & N Haveli	6.93	4.02	0.06	0.00	11.01
29	Daman & Diu	2.20	0.54	0.00	1.41	4.15
30	Delhi	0.00	7.29	0.00	54.53	61.82
31	Lakshadweep	0.00	0.00	0.00	9.25	9.25
32	Pondicherry	0.72	10.19	0.00	13.93	24.84
	Total U. Ts.	9.85	32.66	0.06	81.64	124.21
	Total States & Uts.	21192.17	6017.48	1458.78	1641.14	30309.57
	Central Sector	648.97	213.16	607.07	226.17	1695.37
	Grand Total	21841.14	6230.64	2065.85	1867.31	32004.94

4.3 Food and Nutrition Security

4.3.1 At the time of independence the country faced two major nutritional problems; one was the threat of famine and acute starvation due to lack of national and regional food security systems; the other was chronic under-nutrition due to low dietary intake because of lack of purchasing power among the poorer segments of the population.

4.3.2 One of the first efforts of the country was to build up a food security system to ensure that the threat of famine no longer stalks the country. Investment in agriculture and the green revolution have ensured that the food production has kept pace with the population growth and by and large India remained self sufficient in food. Establishment of adequate buffer stocks has ensured availability of food stuffs within affordable cost even during the times of drought. The fact that the country has not witnessed famine and acute starvation on a massive scale in the last five decades is the most eloquent testimony for the success of these efforts.

4.3.3 Even though self sufficiency in food production has been achieved, the population still lacks access to balanced food. It is a matter of concern that the even though cereal production has kept pace with the increasing requirements and average percapita intakes of cereal have remained satisfactory, there has been a fall in the percapita consumption of pulses. It is important not only to improve pulse production but also make them available at affordable cost. The production and consumption of vegetables and fruits continue to remain low. Specific efforts have to be made to improve production and improved access to vegetables especially green-leafy vegetables at affordable cost both in rural and in urban areas.

4.3.4 Poverty and lack of purchasing power have been identified as two major factors responsible for low dietary intake. The concern over the economic factors resulting in chronic undernutrition led to the use of calorie intake as the basis of estimating poverty and the development of food for work programmes as one of the remedial measures to alleviate this problem. The food for work programme and employment assurance scheme are aimed at improving household food availability in Below Poverty Line (BPL) families especially in seasons during the employment and food availability in rural areas are low. To some extent these measures have helped in improvement in the household food availability but the problem of equitable distribution of available food and need based intrafamilial distribution of food persisted.

4.3.5 Public Distribution System (PDS) providing foodgrains at affordable prices is one of the key elements of the Government's Food Security system. In spite of obvious limitations PDS did play a role improving in regional food security specially in drought prone areas. In an attempt to improve availability of food to population living in most vulnerable areas (remote, tribal and drought-prone regions) the revamped public distribution system gave priority for establishment of PDS in such vulnerable areas. In spite of mounting food subsidies evaluation studies indicate that supply of subsidised food given through PDS has not resulted in improvement in household level food security. Self-sufficiency of foodgrains at national level and availability of foodgrains at affordable cost at local level have not got translated into household level food security for the poor. In an attempt to limit the mounting cost of food subsidy and at the same time ensure that people below poverty line do get subsidised foodgrains the targetted public distribution system providing food grains at subsidised cost only the people below poverty line was initiated. If successfully implemented the targetted PDS is expected to achieve better household food security for families living below poverty line without substantially increasing food subsidy costs.

4.3.6 Inter-relationship between undernutrition and ill health has been well documented. Low dietary intake and continued heavy physical activity lead to negative energy balance resulting in chronic undernutrition. Chronic undernutrition may be associated with reduction in the work capacity and increased susceptibility to infections. Infections in turn can further worsen the existing undernutrition. Undernutrition and its adverse health consequences are more often seen in pregnant and lactating women, infants and preschool children.

4.3.7 In an effort to reduce chronic undernutrition and its health hazards, food supplementation programmes to identified vulnerable groups such as women and children were taken up initially by the Deptt. of Social Welfare and later Deptt. of Women and Child Development; in the Integrated Child Development Scheme an attempt was made to provide essential health and nutrition inputs to the women and children and pre-school education to children both in urban and rural areas. Food supplementation to the school children in the form of Mid day meal programmes were taken up in many states. Programmes for prevention of iodine deficiency disorders, anaemia and blindness due to Vit A deficiency were initiated by the Deptts of Health and Family Welfare.

4.3.8 A review of the nutritional scenario in the eighties showed that there has been a marked reduction in the severe grades of undernutrition and mortality due to severe undernutrition; however the existing food supplementation programmes failed to achieve significant reduction in proportion and number of persons with mild and moderate degrees of chronic under-nutrition, because the programmes tried to provide food supplements to the identified segments of the community and not to identified person/ family of persons suffering undernutrition. Specific micro-nutrient deficiencies as such anaemia (due to deficiency of iron, folic acid), iodine and vitamin A deficiencies continued to remain major public health problems because they cannot be tackled through food supplementation programmes and the prophylaxis programmes were not aimed at detection and correction of the deficiency in the individuals. With the alteration dietary intakes and life styles newer problems such as obesity and noncommunicable diseases has surfaced especially among the urban middle and upper income groups during the last decade. Tackling all these problems through intersectoral cooperation between the concerned Departments including Deptts. of Health, Family Welfare, Women and Child Development, Education, Agriculture, Food Processing, Rural and Urban Development will receive due attention during the Ninth Plan period.

4.3.9 The present chapter has two sections. The sections on the food security deals with the perspectives, problems and proposed initiatives to ensure food adequacy at the national, regional and household level. The section on Nutrition deals with the nutritional problems due to lack or excess of macro and micro nutrients especially among infants, women and children, the health consequences of these and the efforts to combat them.

Food Security

Introduction

4.3.10 The National Agenda for Governance of the new Government has promised to ensure food security for all, create a hunger free India in the next five years and reform and improve the PDS so as to serve the poorest of the poor in rural and urban areas. The concept of food security includes peoples' access to basic food products, both physically and economically. The problem of access to basic foods is particularly acute for the vulnerable sections of the society and in the deficit and inaccessible regions of the country.

4.3.11 Food security implies a situation where everyone has access, at all times, to the food needed for an active and healthy life. Thus, the essential elements of food security are (a) adequate availability of food, (b) efficient distribution through trade and / or public distribution system, and (c) availability of adequate purchasing power in the hands of the people.

4.3.12 A judicious combination of domestic production and food trade can provide a reasonable degree of stability in food availability, especially in a situation where food production is characterised by seasonal and annual fluctuations. Seasonal and annual instability in domestic supplies can also be reduced through buffer stocking operations involving accumulation and offloading of public stocks of foodgrains in years of good and bad harvests respectively.

4.3.13 An approach to national food security, which relies largely on domestic production of food needed for consumption as well as for building buffer stocks, can be described as a strategy of self-sufficiency. However, a strategy for food security should not preclude external trade in food. Trade may take place on the margin and according to need: exports in surplus situations and imports in deficit periods.

4.3.14 At the household level, food security implies having physical and economic access to foods that are adequate in terms of quantity, quality and affordability. Thus defined, household food security depends on an adequate income and assets, including cultivable land - owned and/or leased - which ensure that each household is able to produce or procure the food it needs. The root cause of household food insecurity is poverty. Poverty may be chronic, seasonal or transitory. These situations differ only in degrees. All the poor have inadequate access to natural resources, jobs, incomes or social support.

4.3.15 A strategy for food security based largely on self sufficiency in food production has the advantage of promoting both productivity and purchasing power among small peasants and agricultural labourers. In general, policies for improving household food security should include: (i) development strategies and macro-economic policies that would create conditions for growth with equity; (ii) accelerating growth in the food and agricultural sectors which provide direct sources of food and income with which to buy food; (iii) promoting rural development that focuses on the poor; (iv) improving access to land and other natural resources; (v) providing cheap credit for poor households; (vi) increasing employment opportunities; (vii) introducing income transfer scheme, including provision of public distribution of subsidised cheap food; (viii) stabilising food supplies and food prices; (ix) improving emergency preparedness planning for providing food aid during natural disasters like drought, flood, earthquakes etc

India's Food Security System

4.3.16 Ensuring food security for the country has been a major pre-occupation of the Government since independence. Over the last five decades, policies and programmes have been designed to ensure availability of foodgrains to all sections of the society, particularly the weaker sections. The basic food security system currently consists of, apart from policies to promote domestic foodgrains output, minimum support prices, procurement and storage, public distribution, maintenance of buffer stock and open market sales. Trade in foodgrains, which is highly regulated even now, was never a strategic

instrument of food security system in India. Nevertheless, trade in cereals did take place on the margin depending on the extent of domestic shortages/surpluses in a particular year. With few exceptions, net imports of cereals have either been negative or negligibly positive since the 1970s. These policies have been successful to a large extent in ensuring food security for the country. The country has succeeded in achieving self-sufficiency in the production of foodgrains. The food economy by and large remained insulated from the very large fluctuations in the world food prices. For example, in the 1970s fluctuations in world prices of wheat and rice as represented by their respective coefficient of variations (CV) of indices of prices were almost double than those of India. In the 1980s, though the difference of values of CVs narrowed down considerably, the Indian CVS were still lower than those of the world. In the 1990s so far, fluctuations in Indian foodgrains prices appear to be larger than those of the major producing countries, largely due to sustained acceleration in Indian prices. Overall, both the farmers and the consumers have benefited considerably from the relative price stability.

4.3.17 The successes in terms of self-sufficiency in production and relative price stability have not however, been without significant costs to the economy. The system of food security, as it evolved over time, has tended to consume substantial budgetary resources on account of high levels of subsidies. Food subsidy, which was less than Rs.20 crore in 1970-71 rose to Rs.662 crore in 1980-81, accounting for about 0.5% of GDP. By 1996-97, food subsidy bill jumped by a multiple of ten to over Rs.6000 crore (0.5% of GDP). A significant proportion of food subsidy represents the cost of carrying buffer stocks. The cost of carrying buffer stocks in recent years has been on an average about 25% of the food subsidy bill. However, these costs have to be seen against the cost of food insecurity which is incalculable.

4.3.18 The Ninth Plan will lay emphasis on developing strategies integrating the food production and distribution systems with the employment and poverty alleviation programmes. In particular, the Public Distribution System (PDS) will be restructured in order to provide foodgrains at substantially lower prices to the poor in a targeted manner and to ensure availability of such commodities in the remote and deficit areas of the country. The structure of incentives for the producers of food would be reviewed. While incentive pricing would continue to remain an important element of the policy for boosting agricultural production in general, and foodgrains production in particular, the focus would be more on devising cost-saving and yield-raising technologies and on creating rural infrastructure. This will require increased investments in research, extension and infrastructure, which might involve reduction and diversion of resources away from subsidies.

4.3.19 Self-sufficiency in production of foodgrains is often advocated as a first step towards attaining food security for a country of India's size for a number of reasons. First, the world foodgrains market is narrow as compared to India's domestic production and consumption. For example, the size of the international rice market is about 12-13 million tonnes. Though the world wheat market is comparatively large at 110-120 million tonnes, it is cartelised. India produces about 65 million tonnes of wheat and 80 million tonnes of rice. Under such a situation, large scale imports of say 10% of its requirements can make India vulnerable to sharp rises in world prices of foodgrains. Second, the strategy of self-sufficiency in food subserves the goals of national security. Dependence on food aid or largescale imports may entail unacceptable compromises on national security policies. Third, the country is thickly populated and food production is the

predominant means of livelihood for a large section of peasant cultivators and agricultural labourers, who are not easily shiftable to other occupations, at least for quite sometime. The process of production of food in this predominantly small-holding agricultural economy ensures employment, income as well as food security simultaneously. Last, but not the least, the country continues to produce most of the times cheaper foodgrains, particularly cereals, as compared to CIF cost of imports. So, except during the years of severe shortfall in production, imports could not be a normal supplement to domestic supplies. On the other hand, there have been hardly a few years of surplus production supporting a sustained level of exportable supplies.

4.3.20 Significant strides have been made in domestic production of foodgrains and towards ensuring self-reliant food security. During the last decade (1986-87 to 1996-97), foodgrains production registered an annual compound growth rate of over 3 percent. During the Eighth Plan period, production of foodgrains increased by about 30 million tonnes, that is from about 168 million tonnes in 1991-92 to about 199 million tonnes in 1996-97, representing an annual compound growth rate of over 3.4 percent. The Sub Group on Demand Projections for the Ninth Plan has estimated that the per capita consumption elasticity for foodgrains is about 0.3. Assuming 7% of growth of GDP and using estimated elasticity of private consumption with respect to GDP at 0.88 and annual population growth of 1.7%, the per capita final consumption growth rate works out to be 4.5% ($0.88 \times 7 + 1.7$). Based on these parameters, the annual growth of demand for foodgrains during the Ninth Plan is expected to be around 3% ($4.5 \times 0.3 + 1.7$). This means that growth in domestic production of foodgrains during the Ninth Plan will have to be maintained at the rate achieved during the Eighth Plan.

4.3.21 Much of the high growth in the output of agriculture in general, and foodgrains in particular, experienced during the Eighth Plan was the outcome of successive good monsoons in a row, a circumstance which cannot be assumed to obtain in the longer run. Fundamentally, Indian agriculture continues to remain vulnerable to weather-induced aberrations. Determined efforts would have to be made to reduce this vulnerability. This cannot be achieved without accelerating agricultural investment, which has not witnessed significant growth in real terms since the beginning of the 1980s. For example, fixed capital formation in agriculture which was Rs.4537 crore in 1980-81 increased in real terms to only Rs.6133 crore in 1995-96, representing an annual compound growth of about 2.0 percent. Public investment in agriculture actually declined in real terms from Rs.1796 crore in 1980-81 to Rs.1329 crore in 1994-95. Secondly, in view of the constant, and perhaps even declining, areas available for cultivation, agricultural growth in general and growth of foodgrains output in particular, can come about only through rapid increases in productivity. These require substantial investments in water and land improvement, besides technology development and its dissemination.

4.3.22 Provided the required investments are made and adequate credit availability ensured, the country's agro-climatic situation and the present stage of agricultural development do provide opportunities for substantial increases in the production of foodgrains, even without expanding the net sown area under foodgrains. For example, it is possible to increase the intensity of farming and achieve higher yields on current land under foodgrains in the Eastern States of the country, where the use of HYV seeds, irrigation and fertilizer has been less than their potential. Currently, about 65% of the area devoted to foodgrains are cultivated under rain-fed conditions. These areas have the potential to double their yields under appropriate dry farming technologies and extension of irrigation facilities.

4.3.23 In the Ninth Plan, with the GDP expected to grow by about 6.5%, the population growing by about 1.7% and the per capita final consumption by about 4%, the demand for foodgrains is expected to grow by 2.5 to 3.00% per annum. Therefore, efforts will need to be made to achieve a secular growth rate of output of foodgrains of over 3% in order to prevent large-scale imports during the years of weather-induced shortfalls in production, and also to plan for regular exports in normal years. It will be feasible to realise this target growth rate through a well-designed regionally differentiated strategy based on agronomic, climatic and environmental conditions and supported by research efforts in the areas of bio-technology, microbiology, plant genetics etc.

4.3.24 While an annual 3% growth of foodgrains output should be enough to feed the growing population, the new Government has formulated an Action Plan for doubling of food production (cereals, pulses, oils and fat, sugar, fruits and vegetables, milk, meat & fish) in order to make India hunger free in the next 10 years. This means that growth of food production will have to be accelerated at a compound rate of over 7 per cent per annum.

4.3.25 Availability of foodgrains through increased production is a necessary condition for food security but not a sufficient one. In order to ensure access to food for all, the prices must be affordable. Prices are determined by demand-supply balance and price stability over time is conditioned by sustained balance between demand and supply. Such a balance may be disturbed for two reasons. First, there could be occasional weather-induced declines or stagnation in the production of foodgrains. Second, in a growing economy with rising per capita income, the growth of demand for foodgrains could incipiently outstrip the growth of domestic supply. In the first situation, the prices would witness a sudden rise. In the absence of any in-built corrective mechanism, the prices may even spiral due to speculation by the traders and panic buying by the consumers. In the second situation, the prices of foodgrains will have the tendency to rule higher than normal. Both the situations are liable to erode food security, particularly of the poor.

4.3.26 In order to combat the sudden spurt in prices arising out of occasional weather-induced declines in production, it is essential to design an effective buffer stocking programme. While a buffer stocking programme with a large public storage system exists in the country, it is essentially designed to safeguard the floor prices of the farmers during bumper harvests. It has rarely been used successfully to contain the spurts in open market prices, which have followed occasional harvest failures. With some re-orientation the existing buffer stocking programme can be utilised not only to smoothen the year-to-year fluctuations in production, but also to curb speculative spurt in prices that occasionally afflicts the foodgrains market. Towards this end, the current practice of restrictive and discretionary open market sales out of the public stocks needs to be reviewed. The correct policy to combat speculation by the traders and panic buying by the consumers should be for the Government to be ready at all times to intervene in the market. Instead of holding back the stocks, which the Government often does for fear of depleting the stocks meant for public distribution, the Government should release the stocks in adequate quantities at market related prices. Simultaneously, the Government should replenish the stocks, or at least announce its intention to do so, through imports. If too little quantities are released for open sales at much below the market-rates, which is the current practice, these are likely to be cornered by the hoarders. As far as possible, open sales should be conducted through auction instead of the present practice of sales to a chosen few. Close monitoring of prices should obviously be an important element of this strategy.

4.3.27 In the second situation where the prices of foodgrains rule higher than normal in a sustained manner and which indicates a trend of demand outstripping domestic supply, it may be necessary to relax the policy of self-sufficiency. It should be realised that by allowing grain prices to rule higher than normal, consumption can be curtailed, production can be stimulated and the requirements of imports foreclosed. Achievement of self-sufficiency in this manner would clearly not be consistent with the aim of ensuring affordability. Sacrificing food imports on the altar of self-sufficiency will do nothing to guarantee that the poor have enough to eat. Banning food imports may even be counter productive. An engineered terms of trade, favorable to foodcrops, may result in a loss of acreage under non-food crops. In such an event, the country may end up spending more foreign exchange on the import of, say, cotton or sugar. Similarly, there is a strong case for liberalising export of foodgrains, especially when there are surpluses and public stocks pile up. Restricting exports as a matter of policy may be counter productive in terms of depressed prices and lower production, eventually forcing the Government to incur larger expenditure on higher support prices. As a matter of fact, import and export of foodgrains and other agricultural commodities should be allowed as a normal market operation.

4.3.28 In general, there is a strong case for liberalising the trade not only in foodgrains but also in all other agricultural commodities. The virtually closed nature of Indian agricultural trade, on both import and export side, has led to high protection for the oilseeds & sugar subsector and taxation of foodgrains and cotton. On the import side, opening up India's agriculture to more competition would result in important efficiency gains for all crops and improve incentives to producers of foodgrains and cotton. On the export side, opportunities of exports of foodgrains and other rainfed agricultural products such as cotton & fruits will open up. Measures of opening up should include shifts from the use of quotas and restrictions to appropriate import tariffs and export taxes, maintaining consistent export policies to allow the development of overseas markets, ending "stop and go" restrictions and eliminating domestic market and price controls. Though India is unlikely to be more than a marginal importer/exporter of basic agricultural commodities, greater openness will increase India's efficiency and competitiveness, particularly in the foodgrains sector. This will strengthen the food security system.

4.3.29 Thus the objective of ensuring access to food, embodied in the concept of affordability, involves convergence of policies on at least four fronts: production, buffer stock operation imports and exports of foodgrains. While the importance of production and trade in ensuring food security is easily understood, the complementary role of a strong buffer stock management system is not.

4.3.30 Fluctuating foodgrains production is a world-wide phenomenon and therefore, shortages and surpluses are the recurring themes for individual countries. Facing a shortage situation at home, many countries desperately buy in a rising market, thus pushing the prices higher. Similarly, facing a surplus situation at home, many countries try to sell aggressively in a soft market in the fear that prices will fall further. Because of the cumulative actions of several countries, particularly if their requirements are large, prices do fall or rise violently. This kind of market behaviour tends to inflate the import bill or to deflate the export earnings. In order to avoid paying more than necessary for import and receiving less than due on export, it is essential to build up sufficient capacity to hold back from purchases or sales for a short period. This capacity is essentially a derivative of a strong buffer stock management system. However, it needs to

be pointed out that too large a buffer stock can be expensive since it involves costs in the form of interest payments, storage charges and storage losses. Excessive stocking can also be harmful since stocks beyond a limit may constrict the supply stream and thereby trigger an unwarranted spurt in prices. Hence, keeping the buffer stock down to a minimum size and relying on imports in the years of lean output and exports in the years of excess production appears to be a less costly option.

4.3.31 Several Committees, set up by the Government in the past, have tried to determine the levels of stocks in India for minimising the fluctuations in supply arising out of uncertainty in production. A Technical Group set up by the Government in 1975 recommended a buffer stock of 12 million tonnes of foodgrains over and above the operational stocks which should range between the minimum of 3.5 to 3.8 million tonnes on the 1st April of the year and maximum of 8.2 to 8.8 million tonnes on the 1st July. In 1981, another Technical Group reviewed the buffer stocking policy. On the basis of this Group's report, the Government in 1984 took the decision to maintain public buffer stocks of 10 million tonnes, in addition to the operational stocks which, on different dates of the year, were to range between the lowest figure of 6.5 million tonnes on 1st April and the highest figure of 11.4 million tonnes on 1st July. Yet another Technical Group set up in 1988 recommended minimum levels of stocks on different dates of a year to be maintained by public agencies during the Eighth Plan. This Group was of the opinion that the buffer stocks and the operational stocks cannot, in practice, be maintained as separate physical entities. According to this Group's recommendations which were accepted by the Government and which are still in force, the total stocks to be maintained are 14.5 Million Tonnes on 1st April, 22.3 Million Tonnes on 1st July, 16.6 Million Tonnes on 1st October and 15.4 Million Tonnes on 1st January. The assumption behind the stocks recommended by all these Technical Groups was that shortfalls in normal supply would be met entirely out of the stocks. Needless to say that the prescribed volume of stocks would get reduced to the extent that the country decides to import foodgrains during scarcity.

4.3.32 As a matter of fact, the Government can take advantage of the international 'futures' in foodgrains, primarily rice and wheat, as a medium of buffer stock management at a relatively low volume. The 'futures' can ensure a stable equilibrium in the prices of foodgrains even in a situation of low domestic stocks. For example, if the domestic situation demands physical imports of foodgrains, the agent of the Government (FCI, STC or MMTC) having a futures contract can exercise appropriate option and arrange for taking delivery of foodgrains for actual shipments. If the physical imports are not necessary, the agent can exercise the option for not taking delivery by paying the required fees. However, to be effective, the Government through its agencies must have a sustained presence in the international futures market.

Integrating Production and Distribution Systems

4.3.33 Adequate availability of food at the national level does not necessarily lead to adequate availability in all the regions, especially in the deficit and inaccessible regions, of the country. Market imperfections (due to lopsided availability of credit and insurance, transport bottlenecks, inadequate storage capacities etc) and governmental restrictions hamper free movement of foodgrains across intra-national borders. These explain the regional scarcities and large regional spreads in foodgrains prices. Regional spreads of prices of cereals in major markets could be as high as 25%, which cannot be fully accounted for by the transport cost differentials. Minimising the restrictions, such as stock limits and penal

provisions of the Essential Commodities Act and introduction of 'futures' in grain trade would greatly facilitate the development of a common market in the country. A common market is the best guarantee for establishing an efficient distribution network.

4.3.34 Apart from strengthening and expanding the market, there is a need to disperse the foodgrains production base in the deficit regions in order to ensure physical access to food for all at affordable prices. The association between regional self-sufficiency in production and the level of regional prices is quite strong. This means that the consumers in the deficit regions have to pay substantially higher prices for foodgrains than those in the surplus regions. The data on per capita consumption of cereals and the corresponding values reported in the NSS 43rd Round Quinquennial Survey on Consumer expenditure show that the consumers in the rural areas of many deficit States paid significantly higher unit prices than their counterparts in the surplus States (Table 4.3.1). For the poor consumers in the deficit regions higher prices of foodgrains may imply lower consumption of food and consequent poor intake of nutrition. While these problems will get minimised over time with greater market integration, in the short run an important element of food security strategy should be to expand food production in the deficit regions which, otherwise, would remain as pockets of food deprivation amidst plenty at the national level.

Table 4.3.1

Monthly Per Capita Consumption and Unit price of Cereals in Rural areas of Selected States - 1987-88			
States	Attribute	Monthly Per Capita Consumption (Kg)	Price (per kg)
North			
Haryana	Surplus	15.02	2.2
H P	Surplus	16.06	2.65
J & K	Deficit	17.26	2.95
Punjab	Surplus	12.41	2.15
U. P.	Surplus	15.32	2.35
West			
Gujarat	Deficit	12.00	2.6
M . P.	Surplus	15.39	2.6
Mahara- shtra	Deficit	13.03	2.35
Rajasthan	Surplus	16.62	2.3
East			
Assam	Deficit	14.23	3.7
Bihar	Deficit	15.39	3.4
Orissa	Surplus	15.72	3.35
W. Bengal	Deficit	15.12	3.65
South			
A . P.	Surplus	14.35	2.75
Karnataka	Surplus	13.25	2.65
Kerala	Deficit	10.36	3.65
T. Nadu	Deficit	12.24	3.5

Notes:1 The attribute of surplus/deficit is based on the comparison of State specific annual production and annual consumption.

Highlights of the system of Payment of wages in the form of foodgrains to JRY/EAS workers

- * Foodgrains to the beneficiaries of EAS/JRY will be specially subsidised. The issue price will be roughly half the market price.
- * 1 kg of rice or wheat, as desired, will be issued for each manday's work.
- * A beneficiary under EAS/JRY, will be entitled to get 10 to 15 Kgs of specially subsidised foodgrains per month.
- * Since only the really poor offer themselves for work under EAS/JRY, it is a good self-targeting measure.
- * The entitlement of specially subsidised foodgrains under EAS/JRY is in addition to 10 kgs of foodgrains a poor family is entitled to get per month under the restructured PDS.
- * In addition to the price incentive, the Government has proposed to make the system administratively more attractive. The proposal is to give the workers food coupons which they can exchange for foodgrains at the Fair Price Shops to which their normal family card is attached.
- * Since the scheme of food coupons is meant only for JRY/EAS workers and is optional, it will be small in size. Because of smallness of size it will be administratively feasible to operate.

4.3.35 The strategy of dispersal of production base has several other spin-off benefits. First, hitherto deficit regions will increasingly contribute to incremental production, since yield rates in the traditional surplus regions have plateaued. Second, large transaction costs involved in transporting foodgrains from a few surplus pockets to all corners of the country can be avoided. For example, distribution cost consisting of handling and storage charges, freight, interest, transit and storage losses and administrative overheads typically constitute about 20% of the pooled economic cost of foodgrains. Freight charges alone account for about 8% of economic cost. Rail freight ex-North to the Southern States typically accounts for 10% of the economic cost. Third, widely dispersed employment and income effects, implicit in such a strategy, will subserve the objective of poverty alleviation.

Linking Production and Distribution Systems with Employment and Poverty Alleviation Programmes

4.3.36 Increasingly higher production of food and its dispersal through an efficient marketing infrastructure, including the Public Distribution System, is no guarantee for ensuring the food security of the poorest segments of the population. The poor must have adequate entitlements to access food either from the market or through the PDS. Entitlements are better created and preserved through employment programmes such as JRY, or income generation schemes such as IRDP, since these are less prone to leakages. These programmes, which already exist and will continue during the Ninth Plan, can be increasingly linked to creation of rural assets such as, irrigation and drainage channels, wells and tanks, check dams & bunds, roads & mandis; etc. These will strengthen the production base and enhance productivity of the agricultural sector.

4.3.37 A system of payment of wages in the form of foodgrains to JRY/EAS workers already exists in the country. However, for various reasons, partly administrative and partly behavioural, the system did not become popular with the workers. As a part of the restructuring exercise regarding PDS, the Government has proposed to make the system of payment of wages in the form of foodgrains more attractive to the workers. The highlights of the restructured system are given in Box.

Restructuring Public Distribution System

4.3.38 A well targeted and subsidised Public Distribution System (PDS) is an important constituent of the strategy for poverty alleviation. A subsidised PDS should essentially be viewed as a mechanism for income transfer to low income segments of the population. While conceptually the function of income transfer to the low income groups can be better performed by food coupons, for several reasons it may not be workable in the Indian situation. First, dismantling of the PDS implicit in food coupons system may not be acceptable. Second, PDS is linked to the system of support prices and procurement operations as a part of the current agricultural price policy. The time is not yet ripe to disband the price support operations and therefore, the PDS which provides an outlet for offloading the foodgrains procured from surplus areas to deficit areas. Third, food coupon system is fraught with unmanageable administrative problems associated with security printing of coupons, fraud prevention, fresh issue of stamps due to periodic indexation etc. Fourth, food coupons have characteristics similar to cash and are liable to be misused. Fifth, and more important, it has been argued that coupons (equivalent to cash) would typically enhance the demand for highly subsidised foodgrains (due to shift in the demand curve to the right) while the supply remains the same. This will cause food prices to rise. Increase in food price would mean deterioration in the well being of those who are left out of the coupon programme. Under the circumstances, a poverty-based targeting of PDS is a better option from the point of view of ensuring the food security of the poor. The PDS that existed till recently has been widely criticised for its failure to serve the population below the poverty line (BPL), its urban bias, inequitous distribution as reflected in the poor coverage in the States with the highest concentration of the poor, lack of transparent and accountable arrangements for delivery and the consequent heavy leakages. Realising this, the Government has streamlined the PDS by targeting it to the BPL population at specially subsidised prices and with better monitoring of the delivery system. The new system, named Targeted Public Distribution System (TPDS), has come into operation with effect from 1st June, 1997.

4.3.39 The principles of TPDS was spelt out earlier in the Report of the Working Group (WG) on National Policy on Public Distribution system (June, 1996) set up in the Planning Commission in August, 1995. In view of the fact that the poor devote a substantial part of their expenditure on foodgrains, it is essential to protect them from a continuous upward pressure on foodgrains prices, a phenomenon in-built in our system of procurement prices, which need an annual increase as an incentive for increasing production. If the poor are not protected from the impact of ever increasing prices of foodgrains, the effects of many of the poverty alleviation measures and programmes would get neutralised. In other words, a system of food subsidy becomes an essential element of food security. The challenge, however, is to contain the total food subsidy to the minimum necessary through a system of targeting, so that the subsidies benefit only those sections whom the State wants to protect.

4.3.40 The Working Group after discussing various forms and experiences of targeting, such as, through wage employment programmes (JRY, EAS etc), area based targeting (ITDP, RPDS), exclusion of non-poor and the system of food coupons prevalent in some countries, suggested a scheme of allocation of foodgrains out of the Central Pool to the States at two sets of prices, namely, a highly subsidised price for the poor (BPL) and near open market prices for the non-poor (APL).

4.3.41 Based on detailed calculation, the Working Group in effect recommended an issue price for the poor at half the normal Central Issue Price (CIP). The Working Group hoped that over a period of time, the absence of appreciable difference between the open market prices and the near open market prices for the non-poor would reduce the demand for increased allocations over and above those meant for the poor. Detailed calculations showed that a scale of 20 kgs of foodgrains per BPL family per month and priced at half the normal CIP could be accommodated within a sustainable limit of annual subsidy and within historically available quantity of foodgrains.

4.3.42 The principles enunciated by the Working Group were adopted by the Government while implementing the TPDS. However, by the time TPDS was implemented the numbers (population, BPL population, economic costs etc) underwent substantial escalation. As a consequence, the Government had to reduce the scale of allocation to BPL families. Under the TPDS, a quantity of 10 kgs of foodgrains per family per month is being issued to the States on the basis of the number of BPL families. The number of BPL families has been determined on the basis of provisional estimates for 1993-94 made by the Planning Commission, based on the methodology of the Expert Group under Professor Lakadawala. Poverty-based targeting under TPDS is a major improvement over the erstwhile PDS.

4.3.43 While the objective of TPDS is to restrict the benefits of subsidised foodgrains to the poor, allocations of foodgrains out of the Central Pool is being continued for the above poverty line (APL) population who were the beneficiaries of the erstwhile PDS. This is a transitory measure to soften the shock of sudden withdrawal of entrenched benefits of the erstwhile universal system. However, the transitory allocations have been restricted to the past 10 years' average lifting which is in excess of the requirement of the BPL population in each State. The unit subsidy for APL has also been substantially reduced.

Innovative features of the TPDS

- * Allocation of 10 kgs per month, per BPL family is on an entitlement basis and is guaranteed by the Centre. No such guarantee has been given to the APL families with regard to either entitlement or scale of ration.
- * The Centre has committed to provide 10 kgs of foodgrains per BPL family per month at about half the Central Issue Prices (CIP), which has been linked to economic cost.
- * Allocations to the APL families will be at full CIP.
- * The States have been asked to keep the end retail price at the Fair Price Shop level for the BPL population at no more than 50 paise per kg. over the issue price for the BPL population. In other words, expenses towards transport and retailers' margin cannot exceed 50 paise per kg for the BPL population. For the APL population, no such limit has been prescribed and the States have been given the freedom to fix the margin.

4.3.44 A number of innovative features have been introduced in the TPDS in order to provide differential treatment to the BPL population vis-a-vis the APL population.

4.3.45 In order to make the TPDS transparent and accountable and thereby plug the leakages, a number of steps have been taken. These include: (a) release of foodgrains to the States subject to satisfactory completion of identification of eligible families; (b) involvement of the Panchayats/Nagar Palikas in the identification exercise as well as for supervision of the work of the Fair Price Shops, (c) constitution of Vigilance Committees at FPS, Taluk, District and State level and (d) a system of monitoring and reporting on the working of TPDS.

NUTRITION

Introduction

4.3.46 At the time of Independence the country faced two major nutritional problems - one was the threat of famine and acute starvation due to low agricultural production and lack of appropriate food distribution system. The other was chronic energy deficiency due to poverty, low-literacy, poor access to safe-drinking water, sanitation and health care; these factors led to wide spread prevalence of infections and ill health in children and adults. Kwashiorkor, marasmus, goitre, beri beri, blindness due to Vitamin- A deficiency and anaemia were major public health problems. The country adopted multi-sectoral, multi-pronged strategy to combat the major nutritional problems and to improve nutritional status of the population

4.3.47 Green revolution resulted in increased food production sufficient to meet the needs of growing population, establishment of adequate buffer stocks and PDS have ensured adequate per capita food availability and distribution at the national level. Improvement in per capita income, poverty alleviation programmes including food for work and Employment Assurance Scheme have resulted in improvement of purchasing power and household food availability. Food supplementation programmes were initiated to meet the extra food requirement of vulnerable groups namely pregnant and lactating mothers and preschool children. Programmes for prevention of iodine deficiency disorders, anaemia and blindness due to Vit. A deficiency was initiated by the Deptts. of Health and Family Welfare.

4.3.48 During the last 50 years considerable progress has been achieved in many of these programmes. Famines no longer stalk the country. There has been substantial reduction in moderate and severe undernutrition in children and some improvement in nutritional status of all segments of population. Kwashiorkor, marasmus, beri beri and blindness due to Vitamin-A deficiency have become rare. However, it is a matter of concern that milder form of chronic energy deficiency (CED) continues to be widely prevalent in adults and children. Undernutrition continues to be a major problem in pregnant and lactating women; over one-third of the new-borns still weigh less than 2.5 kg at birth. Even though there has been a marked reduction in blindness due to Vitamin-A deficiency, the less severe forms of Vitamin-A deficiency persist. Universal access to iodised salt has not been achieved and there has not been marked reduction in iodine deficiency disorders. There is no decline in prevalence or severity of anaemia and its health consequences. During the last two decades, there had been major alterations in the life styles and dietary intake especially among urban middle and upper income group population. As a result newer problems such as obesity in adolescents and adults and increased risk of non-communicable diseases are emerging.

4.3.49 India is currently undergoing demographic, economic, social, educational, agricultural and health transition. These factors individually and collectively can bring about substantial alteration in health and nutritional status of the population. If through effective planning and inter-sectoral coordination, appropriate synergy is brought about, it will be possible to achieve substantial improvement in nutritional and health status of the population.

Major Nutritional Problems of Public Health Importance are:

- Chronic energy deficiency and undernutrition
- Chronic energy excess and obesity
- Micro-nutrient deficiencies:
 - (a) Anaemia due to iron and folate deficiency
 - (b) Vitamin -A deficiency and
 - (c) Iodine deficiency disorders

4.3.50 Achievement of Food and Nutrition Security is one of the nine major objectives of the Ninth Plan. The strategy for achieving improvement in Nutritional Status during the

Ninth Plan period will be through effective implementation of the National Nutrition Policy and National Nutritional Action Plan with emphasis on inter-sectoral coordination.

4.3.51 The Special Action Plan has accorded high priority to increasing food production and making India hunger free in ten years, it envisages a mission mode approach for planning and implementation, with appropriate co-ordination between Centre, State and Panchayati Raj institutions so that set goals are achieved within the defined time frame.

Objectives during the Ninth Plan

4.3.52 Objectives during the Ninth Plan are to achieve :

- 1) Freedom from hunger through increase in food production, effective distribution, improvement in purchasing power of the population;
- 2) Reduction in undernutrition and its health consequences through: universalisation of ICDS, screening 'at risk groups', growth monitoring, better targeting of food supplements to those suffering from undernutrition, close monitoring of under-nourished persons receiving food supplements; effective intersectoral coordination between health and nutrition workers to ensure early detection and management of health problems associated with or leading to undernutrition;
- 3) Prevention, early detection and effective management of micronutrient deficiencies and the associated health hazards.

Review of Nutrition Programmes during the Earlier Eight Plan Periods

4.3.53 Nutritional status of the population is affected by a wide variety of factors. Coordinated interventions from all the sectors are required for improving the nutritional status and reducing the disease burden due to nutritional problems. Interventions to improve nutritional status can be classified as direct and indirect interventions. Planners, economists, and agricultural scientists drew up indirect interventions to improve nutritional status, such as programmes to improve the per capita income, food production, purchasing power, equitable distribution of food and income and poverty alleviation. The Nutritionists, Health and Family Welfare professionals focussed their attention on direct interventions such as:

1. Tackling adverse health consequences of nutrition-infection and nutrition-fertility interactions.
2. Programmes for prevention, early detection and effective management of health problems associated with nutritional deficiencies.
3. Detection, correction and prevention of micronutrient deficiencies.
4. Food supplementation to specifically identified vulnerable segments of population to prevent or correct chronic energy deficiency.

Nutrition Intervention Programmes (1951-1992)

Period	Nutrition Situation	Nutrition Services
1950s	Food Shortages	Food Production Phase: Technological advancement to improve food production Food fortification measures to improve nutritive value.
1960s	Malnutrition most prevalent in lower economic strata. IDD as a Public Health problem	Community Development Phase: Launching of Applied Nutrition Programme Mobile Food and Nutrition Extension Services Iodisation of salt
1970s - early	Recognition of Chronic Energy Deficiency, Anaemia, Vitamin A deficiency as major nutritional problems of public health importance	Direct Nutritional Interventions: Special Nutrition Programme Prophylaxis against Anaemia and Vitamin A deficiency
Mid 1970s	Recognition that infection and undernutrition were major causes of morbidity and mortality among infants and children	Multi Sectoral Indirect Interventions Phase: Integrated Child Development Services (ICDS) Universal Immunisation Programme (UIP) Oral Rehydration Therapy (ORT) Nutrition Promotion through poverty alleviation, Public Distribution of Food, Health and Family Welfare measures, Adult Education.
1980s	Felt need for nutritional bias in sectoral policies and programmes	Efforts for adoption of a National Nutrition Policy
1990s	Recognition that Malnutrition is an impediment to national development; its use as indicator of Development Processes	Finalisation of the National Nutrition Policy

Source: Department of Women and Child Development, Government of India, New Delhi.

4.3.54 The initiatives and programme taken up during the last fifty years by the centre and state for improving nutritional status are described in detail in the respective chapters; to avoid duplication these are not discussed in this section. The major focus of discussion in this section will be on food supplementation programmes, which have been initiated at the state and national level to combat chronic energy deficiency especially in women and children.

Major initiatives to improve nutritional status (during last fifty years were:

- Increasing food production
- Improving food distribution
- Increasing household food availability through:
 - (a) Food subsidy direct or indirect
 - (b) Improving purchasing power
- Efforts of health sector to tackle:
 - (a) Micronutrient deficiencies
 - (b) Infection and unwanted fertility which increases CED

Prevention and management of chronic energy deficiency (CED)

4.3.55 It has long been recognized that pregnant and lactating women and pre-school children are nutritionally the most vulnerable segments of the population and undernutrition in them is associated with major health problems. Small-scale research studies in India and elsewhere had shown that food supplementation is a feasible and effective method of improving nutritional and health status of these groups. Based on these findings, India and many developing countries initiated food supplementation programmes. A number of different programmes have been in operation either exclusively as feeding programmes such as mid day meal programme or as integrated health and nutrition package for vulnerable groups (such as expectant and nursing mothers and under-five children) as in the Integrated Child Development Services (ICDS).

The Applied Nutrition Programme (ANP)

4.3.56 ANP was started in 1963 to promote production of protective food such as vegetables and fruits and ensure their consumption by pregnant or nursing mothers and children. Nutrition education was the main focus and efforts were directed to teach rural communities through demonstration how to produce food for their consumption through their own efforts.

Major Food Supplementation Programmes are :

- Applied Nutrition Programme
- Special Nutrition Programme
- Tamil Nadu Integrated Nutrition Project I
- Tamil Nadu Integrated Nutrition Project II
- Integrated Child Development Services Scheme
- Mid - day Meal Programme

The Special Nutrition Programme (SNP)

4.3.57 This was started in 1970; the objectives was to provide 500 K Cal and 25 g of protein to expectant and nursing mothers and 300 K Cal and 10 g of protein to children six days a week. The programme was taken up in rural areas inhabited predominantly lower socio-economic groups, in tribal areas and urban slums.

Tamil Nadu Integrated Nutrition Project

4.3.58 The Tamil Nadu Integrated Nutrition Project (TINP) was an externally assisted health and nutrition intervention that offered a package of health and nutrition services to young children and pregnant and lactating women in rural Tamil Nadu.

4.3.59 TINP-I was targeted at 6-36 month old children, and pregnant and lactating women. Project activities were started in October 1980 in one pilot block and extended gradually to cover 177 out of a total of 385 rural blocks in the State, by 1989/90. Of these, 31 rural blocks have been subsequently converted to ICDS blocks, so that a total of 146 blocks were covered by TINP-I. The poorest districts not covered by ICDS were selected for coverage under TINP-I

TINP's main goals were:

- to halve malnutrition among children under four years of age;
- to reduce infant mortality by 25%;
- to reduce vitamin A deficiency in the under fives from about 27% to about 5%; and
- to reduce anaemia in pregnant and nursing women from about 55% to about 20%.

4.3.60 The project had four major components: nutrition services, health services, communications, and monitoring and evaluation. The main strategies were to provide food supplements, nutrition education and primary health care to pregnant and lactating women and children (6-36 month); to monitor the growth of children in this age group through monthly weighing and growth charting, and to provide supplementary feeding and health checks to children with growth faltering, as well as intensive counselling to their mothers. To provide these services, nutrition centres staffed by part-time women community nutrition workers were set up in about 9000 villages. They were assisted by local women's groups created under the project; in addition outreach and referral services for health care was improved.

TINP-II

4.3.61 TINP-II was designed to cover in a phased manner, 316 of the total 385 rural blocks in Tamil Nadu, with an estimated total population of 32.8 million. The target population was children from birth until six years of age (as against 6-36 month old children in TINP I) and pregnant and lactating mothers. The goals of TINP-II include:

- increasing the proportion of children classified as "nutritionally normal" by 50% in new and 35% in TINP-I areas;
- reduction in infant mortality to 55 per thousand live births;
- 50% reduction in incidence of low birth weight.

With the universalisation of ICDS all the TINP blocks will be converted into ICDS blocks.

The Integrated Child Development Services Scheme (ICDS)

4.3.62 Experience gained from ANP and SINP showed that it is important to provide health and nutrition inputs and health and nutrition education as an integrated package of services. Therefore, the ICDS programme was initiated in 1975 with the following objectives: -

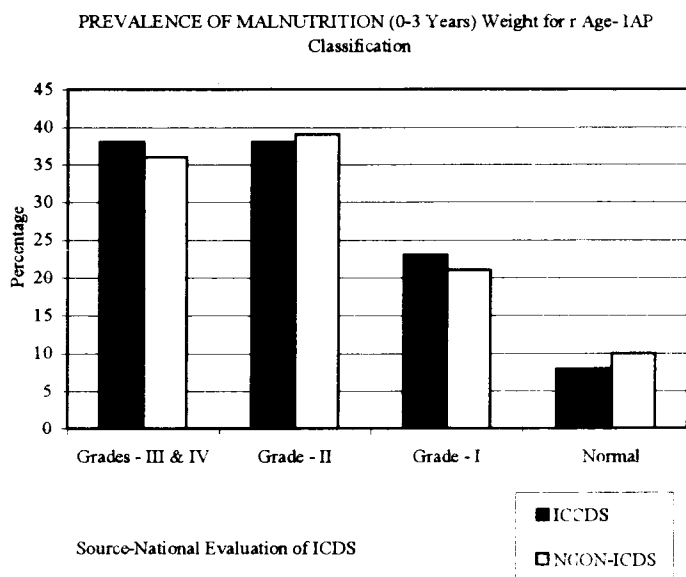
1. To improve the health and nutrition status of children 0-6 years by providing supplementary food and by coordinating with state health departments to ensure delivery of required health inputs;
2. To provide conditions necessary for pre-school children's psychological and social development through early stimulation and education;
3. To provide pregnant and lactating women with food supplements;
4. To enhance the mother's ability to provide proper child care through health and nutrition education;
5. To achieve effective coordination of policy and implementation among the various departments to promote child development.

4.3.63 The anganwadi workers (AWW) provide supplementary food to children under 6 years of age, pregnant and nursing women, pre-school education to children between 3 and 6 years of age and health and nutrition education. Health and family welfare workers (ANM) deliver a package of services including immunization, health check-up, and organise referral services.

4.3.64 The target group receiving food supplementation is children between the age of 6 months to 6 years and pregnant and lactating mothers. Efforts are made to provide 300 calories and 10 grams of proteins per child, 5000 calories and 15 to 20 grams proteins for pregnant/nursing women and 600 calories and 20 grams of proteins to severely malnourished children as food supplements. It is expected that about 40% of the target population will utilise the services. It was believed that the programme will be self-targetting and the poorest and the most needy will access the benefits. Experience gained during the last two decades indicate that the most needy may not access the facility and even when they do the food provided acts more as a substitute than as a supplement. The beneficiaries receive the supplements through ICDS infrastructure, which is funded by the Dept. of Women and Child Development. The State Government and UTs meet the cost of food supplements through the State Plan budget. The funding constraints in the states come in the way of regular assured supply of food to the anganwadis. The inputs from the health sector are often suboptimal; referral care for those with severe undernutrition is often not available.

4.3.65 ICDS was initiated in 1975 on an experimental basis in 33 blocks. The initial geographic focus was on tribal, drought-prone areas and blocks with a significant proportion of scheduled caste population. Even though the programme envisages special targetting towards malnourished children, who are to be given double the quantity of the supplement, in practice most beneficiaries of supplementary feeding are not selected through nutritional screening. Over the last two decades the ICDS coverage has progressively increased. As of 1996, there are 4,200 ICDS blocks with 5,92,5571 anganwadis in the country; the number of beneficiaries rose from 5.7 million children and 1.2 million mothers in 1985 to 18.5 million children and 3.7 million mothers in 1996.

Figure-1



Evaluation of food supplementation programmes

4.3.66 Concurrent and independent evaluations are being carried out for all ongoing and completed food supplementation programmes so that lessons could be learnt from both successful and unsuccessful programmes. National Nutrition Monitoring Bureau (NNMB) has carried out evaluation of the:

- 1 Applied nutrition programme (1977-78)
- 2 Vit A prophylaxis programme (1977-78)
- 3 Supplementary Nutrition Programme(1980-81)
- 4 World food programme assisted supplementary nutrition programme (1981-82)
- 5 Tamil Nadu Integrated Nutrition programme

Reasons for lack of improvement in Nutritional status in ICDS areas include:

- Inadequate coverage of children below three years of age who are at greatest risk of malnutrition;
- Irregularity of food deliveries to anganwadis and hence irregular feeding and inadequate rations;
- Poor nutrition education (of mothers and communities) to improve feeding practices at home;
- Inadequate training of workers in nutrition, growth monitoring, and communication;
- Poor supervision
- Poor co-ordination and linkage with health workers
- Lack of community ownership and participation

Nutrition Foundation of India (NFI) and National Institute of Public Cooperation and Child Development (NIPCCD) had conducted evaluation of ICDS. Data from the evaluation conducted by NIPCCD indicates that there was a reduction in severe CED in ICDS areas from 15.3% during 1976-78 to 8.7% during 1986-90. The nutritional status of

children in ICDS areas was found to be better than that of children in non-ICDS areas (Fig 1). While 25 percent of nursing mothers in ICDS areas introduced semi-solids supplements to their breast fed infants at 6 months, only 19 percent did so in non-ICDS areas. These evaluations have shown the gains in terms of improvement in nutritional status from the ICDS programme have not been very impressive.

4.3.67 One of the major problems responsible for poor performance is the lack of funds from the States for providing food supplements on a regular basis. During the Ninth Plan in addition to the funds that are available through the State Plan and the externally assisted projects, the funds from ACA for BMS will also be available to fill critical gaps. The focus

will be on detection of undernourished children and women who will receive available supplements on priority basis.

ICDS in Ninth Plan

4.3.68 ICDS today is perhaps the largest programme of its kind in the world. ICDS programme is being modified to eliminate problems identified by the evaluation studies. During the Ninth Plan every effort will be made a) to eliminate bottlenecks; b) improve the regularity and quality of services c) ensure effective inter sectoral coordination between health, family welfare and nutrition programmes. Growth monitoring, targetted nutritional supplements to children and mothers with CED, nutrition

During Ninth Plan efforts will be made to improve performance under ICDS through:

- Elimination of bottlenecks
- Improvement in quality and regularity of services
- Effective inter-sectoral coordination
- Growth monitoring
- Targetted nutritional supplements to children and mothers with CED
- Improvement in Nutrition and health education
- Active community/ PRI participation

and health education will be intensified through joint coordination of activities of Anganwadi Workers/ANMs; active community/ PRI participation in planning, implementation and monitoring of ICDS activities at village level will be ensured. Mahila Mandals will be actively involved in implementing various supplementary feeding programmes. By 2002, it is planned to universalise ICDS programme in 5614 blocks with 804671 anganwadis; 57.9 million beneficiaries are to be covered by these anganwadis.

The Mid day Meal Programme

4.3.69 Tamil Nadu was the first state to initiate a massive noon meal programme to children. Under the scheme children between the ages of 2-14 years attending Balwadis/ schools are fed daily through 63,000 Noon Meal Programme centres, at an expense of Rs.0.44-0.90 per beneficiary. This programme has been sustained by the state for nearly two decades. Andhra Pradesh initiated a similar mid day meals programme (MDM) in 1980 which was extended to cover all school children in the state in grade 1 to 5 in 1982-83. These programmes cater only to Balwadi/school children thereby excluding the poorest who cannot attend school. The target age group does not include nutritionally the most vulnerable 6-24 months old children.

The National Programme for Nutritional Support to Primary Education

4.3.70 In order to improve the nutritional status and school retention rates among primary school children, the programme for Nutritional Support to Primary Education (popularly known as the Mid-day Meal Scheme) was launched in 1995 as a 100% Centrally funded, Centrally Sponsored Scheme. Under this scheme, all school children in the primary schools in government and government aided schools are to be covered. It was envisaged that children will get pre-cooked food for 10 months in a year; where this is not possible, ready to eat foods or food grains are to be provided. The Food Corporation of India delivers the food grains for this programme directly at the district level under instructions from the central Department of Education

The National Nutrition Policy

4.3.71 The National Nutrition Policy adopted in 1993 advocates a comprehensive inter-sectoral strategy for alleviating the multi-faceted problem of malnutrition and achieving an optimal state of nutrition for all sections of the society. The Policy seeks to strike a balance between the short term measures like direct nutrition interventions and the long-term measures like institutional/structural changes and thus create an enabling environment and necessary conditions for improving nutritional and health status.

4.3.72 The National Nutrition Goals envisaged under the Policy to be achieved by 2000 AD include: reduction in the incidence of moderate and severe malnutrition among pre-school children by half; reduction in the chronic undernutrition and stunted growth among children; reduction in the incidence of low birth weight to less than 10 percent; elimination of blindness due to Vitamin "A" deficiency; reduction in the iron deficiency anaemia among pregnant women to 25%; universal iodization of salt for reduction of iodine deficiency disorders to below the endemic level; due emphasis to geriatric nutrition; annual production of 250 million tonnes of food grains; improving household food security through poverty alleviation programmes; and promoting appropriate diets and healthy lifestyles.

National Nutrition Policy

Direct Short Term Interventions	Indirect Long Term Interventions
<ul style="list-style-type: none"> • Universalisation of ICDS • Nutrition education of mother • Better coverage of expectant women • Reaching the adolescent girls • Control and elimination of micronutrient malnutrition • Popularisation of low cost nutritious foods • Fortification of food • Universal coverage of IFA, Vit. A and IDD Control Programme 	<ul style="list-style-type: none"> • Ensuring household food security • Improving dietary pattern • Improving purchasing power • Strengthening PDS • Land Reforms • Better health and family welfare coverage • Basic nutrition and health education • Nutrition surveillance • Information, education and communication • Research • Education and literacy • Improving status of women

4.3.73 The Policy also prescribed a series of action points/initiatives to be undertaken by various Ministries/Departments of the Government. Accordingly, a National Plan of Action on Nutrition (NPAN) was formulated in 1995 with sectoral commitments to be undertaken by the 14 nutrition-related Ministries/Departments viz., Agriculture, Food Production, Civil Supplies and Public Distribution, Education, Forestry, Information and Broadcasting, Health

and Family Welfare, Labour, Rural Development, Urban Development, Welfare, Women and Child Development etc. The Ministry/Department-wise Action Points, as laid down in the NPAN, are summed up in the following page:

Sectoral Commitments under National Plan of Action on Nutrition (NPAN)

	Sector	Sectoral Commitments in the NPAN
1.	Agriculture	To ensure national level food security including buffer stocks and nutritional considerations in Agricultural policy
2.	Civil Supplies & Public Distribution	To ensure food security at the household level by making the essential foods available through the Public Distribution System to the people particularly to the disadvantaged sections.
3.	Education	To provide convergent services under Education Sector to enhance the nutritional and health status of the community with special emphasis on girls' education and improved status of women.
4.	Forestry	To popularise the growing of plants/trees supplying food stuffs/fruits with special emphasis on Beta carotene (Vitamin A) rich species in the social forestry programmes with a view to create nutritional awareness and promote the consumption of nutritious foods.
5.	Health	Prevention and control of infections, micronutrient malnutrition, diseases related to inappropriate diets, creating health awareness among the people and ensuring adequate primary health care for all.
6.	Family Welfare	To improve the nutritional status of women and children through nutrition prophylaxis programmes, health and nutrition education and promotion of small family norm.
7.	Food	To ensure food security in the country.
8.	Food Processing Industries	To meet the nutritional needs of the people by giving nutrition orientation to the projects in food processing sector.
9.	Information and broadcasting	To create a climate of awareness in the country about the importance of nutrition for the well being of the people and ways and means of preventing various forms of malnutrition through its different units
10.	Labour	To protect and promote the nutrition of various types of labour-agricultural, construction, industrial etc. with special emphasis on children and women at work, through formulation and enforcement of appropriate labour laws.
11.	Rural Development	To improve purchasing power of the people in rural areas through employment generation and poverty alleviation programmes with a view to improve food security at the household level.
12.	Urban Development	To ensure access to social services relating to health care, nutrition, women and child development, preschool and non-formal education and physical amenities like potable water supply, sanitation, sewerage, drainage etc., with a view to improve the nutritional level of the urban poor.
13.	Welfare	To improve nutrition of the disadvantaged sections of society by ensuring implementation of nutritional components of various welfare programmes.
14.	Women and child development	To ensure appropriate development of human resources both through direct nutrition interventions for specially vulnerable groups as well as through various development policy instruments for improved nutrition as laid down in the National Nutritional Policy. Improving nutrition and health of women and children through strengthening and extension of ICDS programme and setting up of appropriate systems for monitoring the follow-up actions under National Plan of Action for Children

Source: National Plan of Action on Nutrition (NPAN), Dept. of WCD, Government of India, New Delhi, 1995.

Sectoral Progress under NPAN

4.3.74 The Ministry of Agriculture achieved record production of 198.17 million tonnes of food grains and 24.46 million tonnes of oil seeds in 1996-97. The Ministry also intensified its activities towards gender-specific nutritional initiatives under 'Women in Agriculture Programmes', besides setting up a Nutrition Cell in the Ministry to take care of the commitments under NPAN. Also, a new scheme called 'Horticulture Intervention for Human Nutrition' was being formulated. Under National Watershed Development Project for Rained Areas (NWDPPRA), training programmes relating to kitchen garden, home garden, backyard garden, rearing of goat, sheep, pig, rabbit, poultry, fish culture, etc. were conducted to promote production of nutritious foods at the household level.

4.3.75 The Ministry of Civil Supplies, which has the commitment to ensure household level food security, expanded its areas of operation to the most backward and remote areas. It has also sought the intervention of the State machinery in procuring as well as distributing the essential commodities like iodized salt, pulses, ORT packets etc. The rise in expenditure on account of food subsidy from Rs.2, 000 crores per annum in 1986-87 to Rs.6, 114 crores in 1996-97 clearly indicates the priority accorded to the food security system in the country. Further, to make the present Public Distribution System more effective, the programme was recast as Revamped PDS and launched in 2,446 Blocks of the Area Development Projects, specially to cover the population in the drought-prone Areas, desert development areas, integrated tribal development project areas and other remote areas. Later, in February 1997, the programme of RPDS was further recast as Targetted Public Distribution System (TPDS) to ensure household food security with a special focus on the people living below the poverty line. It also accorded importance to people's participation in general and participation of women in particular, by giving priority/reservation to women in allotting Fair-Price Shops and including them in the vigilance committees. To ensure effective supply of essential food items to the disadvantaged sections of the society, as many as 4 lakh Fair Price Shops were set up to cater to 16 crore families distributing the food worth more than Rs.15, 000 crores by the end of 1996-97.

4.3.76 In the education sector, a nation-wide programme of Nutritional Support to Primary Education (Mid-Day Meal Scheme) was launched in 1995 to give a boost to Universalisation of Primary Education by increasing enrollment, retention and attendance and simultaneously impacting upon nutritional levels of primary school children. By March 1997, the programme was expanded to cover a total of 5.57 crore primary school children in 4426 Blocks with a focus on low Female Literacy Blocks.

4.3.77 While the strength of the nutrition programmes of the Ministry of Forests and Environment lies in involving the local communities at district level in growing nutrition-rich plants/fruits like Mango, Ber, Amla, Tamarind, Guava, Orange, Apple etc., it also distributed seedlings of high quality plants and fruits rich with B Carotene and Vitamin A. Steps were also taken to create employment avenues for the rural labourers as a direct response to NPAN. In fact, 70 per cent of the total allocation of the Ministry was spent for employment generation and raising the income levels of the poor. People's participation in the Joint Forestry Management Programme initiated by the Ministry could provide rights to the local tribal communities to collect various forest products for their consumption besides ensuring improvement in the nutritional status of those living below the poverty line.

4.3.78 The Ministry of Health and Family Welfare is implementing programmes for prevention, detection and management of chronic energy deficiency, anaemia, vitamin A deficiency and iodine deficiency disorders. The Department of Family Welfare funds the National Prophylaxis programme against nutritional blindness aims at providing massive dose Vitamin "A" to infants and children between 9-36 months of age. In order to improve the coverage the first dose of Vitamin "A" is administered at the time of Measles Immunization and the next dose administered along with the Booster dose of DPT and OPV. It has been reported that under the modified regimen, there has been substantial improvement in the coverage with first dose (50-75%). However, coverage for the subsequent doses is low.

4.3.79 The Department of Family Welfare also funds the National Prophylaxis Programme against Nutritional Anaemia aimed at Iron and Folic Acid supplementation to pregnant women. The IDD Control Programme of the Department of Health aims at prevention, early detection and appropriate management of IDD. The programme of health and nutrition education to pregnant women has achieved 90-95 per cent coverage. Breast-Feeding provides optimum nutrients and promotes growth during infancy. It also protects against infections. Hence, breast-feeding is promoted at all levels, in the community and in the hospitals. IEC to promote and protect breast feeding, timely and appropriate semi-solid supplements to breast fed infants are taken up. Early detection and prompt treatment of infection and growth faltering in infancy and childhood are other major initiatives.

4.3.80 The Ministry of Food ensures protection of quality and nutritive value of food grains right from the collection to ultimate consumption. In this process, it procured as much as 91.94 lakh tonnes of rice and 81.83 lakh tonnes of wheat till January, 1997. About 803.3 tonnes of rice and 596.00 tonnes of wheat were distributed for the benefit of weaker sections through the programmes of RPDS, JRY, MDM, NP etc. To train/equip the local farmers with the knowledge of scientific storage of food grains to prevent the nutritive losses in storage, special storage structures have been developed by the Indian Grain Storage Institute, Hapur, Uttar Pradesh.

4.3.81 The Ministry of Food Processing Industries, in-charge of manufacturing ready-to-eat nutritious foods and cooked food, has set up an exclusive Task Force for translating the Nutrition Policy directives into concrete plan of action to bridge effectively the calorie gap and micro-nutrient deficiencies prevalent amongst children in general and the school-going children, in particular, through Mid-Day Meals Programme.

4.3.82 The Ministry of Information and Broadcasting which is the nodal agency in the area of mass communication was closely involved in creating nutritional awareness and the importance of balanced diet, measures to prevent nutritional deficiencies etc. through various media channels of AIR, Doordarshan and Field Publicity Units. The Ministry made special efforts to reach the messages concerning health and nutrition to the masses through appropriate jingles, filmlets, and advertisements with proper screening and punch lines. Doordarshan has been effectively telecasting messages daily, at prime time, on nutrition, family welfare and other related themes, free of charge. The Ministry was also actively involved in developing communication and executional strategies to increase the consumption levels of micronutrients viz., Vitamin "A" and Iron of various nutrition programmes.

4.3.83 The Ministry of Rural Areas and Employment is trying to improve the purchasing power of the rural people through various poverty alleviation, employment and income

generation programmes. The on-going programme of DWCRA which extends credit and employment opportunities for women was further strengthened to fill the critical gaps in the areas of nutrition, immunization and other child care services. Since its inception in 1983, 1.36 lakh Self-Help Groups were formed benefiting 21.82 lakh women till March, 1997. The other major programme of JRY extends employment avenues to agricultural labourers, SCs/STs, women and freed bonded labourers etc., during the lean seasons of agriculture. The Employment Assurance Scheme reserves 30 per cent of employment for the benefit of women. In order to provide self-employment opportunities to rural youth in general and adolescent girls in particular, the scheme of TRYSEM was engaged in equipping them with technical know-how of many modern trades and entrepreneurial skills. Of the total of 38.20 lakh persons trained under TRYSEM, 19.49 lakh persons have already been employed through self/wage-employment. By the end of 1995-96, about 82 percent of rural population have been provided with safe drinking water. Thus, out of the 13.18 lakh 'No - Source' habitations, 12.01 lakh (91.1%) habitations were provided with safe drinking water.

4.3.84 The Ministry of Urban Development has a commitment to improve the nutritional levels of urban poor by ensuring access to social services like nutrition, health care, education, potable water etc. In these efforts, it paid special attention to the weaker sections through the programme of Urban Basic Services for the Poor (UBSP). During the Eighth Plan, the programme has already crossed the target of covering 70 lakh population and reached an achievement of 82 lakh urban poor which includes infants, pre-school children, expectant and nursing mothers. In order to eliminate Iodine deficiency, the Ministry was also successful in initiating/monitoring the availability of iodized salt in a phased manner through UBSP Groups. The Ministry awarded top priority to supply potable water to the slum dwellers and the other poor population living around the slums. Already 85.0 percent of the urban population gained access to safe drinking water. This, in fact, has fulfilled the achievement of the set target viz. covering not less than 3/4th of urban population by 1997 and universal access by 2000 A.D.

4.3.85 The Ministry of Welfare made special efforts to ensure that adequate food and nutrition services reach the vulnerable groups viz., SCs, STs, OBCs, Minorities and the Disabled living below the poverty line as they are a nutritionally vulnerable group. In this direction, it has also launched a special programme called Grain Banks to ensure the availability of food stocks in the most inaccessible tribal areas inhabited by primitive tribes. It also laid special emphasis on extending adequate nutrition services as the vital component for prevention/rehabilitation of a number of preventable disabilities.

4.3.86 The Department of Women and Child Development (WCD), is the nodal agency responsible for implementation of the National Nutrition Policy (NNP), and is committed to improve the nutritional status of the population and thus reduce the incidence of malnutrition prevalent amongst pre-school children, adolescent girls, expectant and nursing mothers. The scheme of Integrated Child Development Services (ICDS) extends a package of essential services comprising supplementary nutrition, immunization, health check-up, referral services, pre-school education and nutrition and health education to children and expectant and nursing mothers.

4.3.87 The Food and Nutrition Board (FNB) along with its 43 Community-Food and Nutrition Extension Units, was actively involved in effective dissemination of nutrition-cum-health related information besides educating the target population in 27 States. Under the programme of Integrated Nutrition Education, FNB organized more than 500 camps to

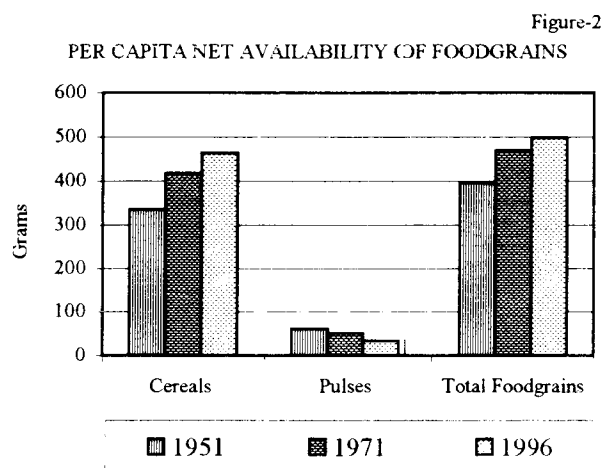
expand intensive practical orientation to 38,000 grass-root level functionaries. It also organized 63708 demonstration camps and 4205 training courses during the Eighth Plan period. FNB also put in special efforts to generate nutritional awareness amongst rural masses by using multi-media strategy including print and electronic soft-ware. Nutrition messages were disseminated through 37 million printed post cards. During the Eighth Plan period, 12 new Dairies were established to fortify milk with Vitamin 'A' and fortified 6088 MT salt with Iron. During 1996-97, 35 voluntary organizations have been assisted to organize 6000 nutrition education camps and 24 Mini-Exhibitions to create mass awareness about the importance of nutrition and health in everybody's life.

4.3.88 The National Institute of Nutrition (NIN), Hyderabad has developed palatable low-cost recipes for supplementary feeding in children. It also developed sample kits to monitor Iodine content in salt. In addition to this, the Institute is also responsible to bring forth messages, education programmes, and audio-visual aids in building nutrition awareness in the general population. NIN has successfully completed 3 years of operational research on horticultural intervention for promoting Vitamin nutrition in rural areas, which has enhanced the micronutrient consumption at domestic household level. The National Nutrition Monitoring Bureau has been conducting surveys in 10 States since 1972 and carrying evaluation of ongoing nutrition programmes.

4.3.89 The Central Food Technology Research Institute (CFTRI), Mysore was actively engaged in developing cost-effective enriched food products, designing and fabricating food processing industries and conducting studies to develop various low cost, appropriate nutritionally rich recipes from locally available food stuffs. The Institute also developed low cost supplementary food from roasted cereals and pulses with 450-600 Kcal and 12-20g protein for ICDS programme. Institute has also prepared food mixes for diabetics, geriatric population, and various ready-to-eat food items in conformity with the Indian recipes and food habits especially for the benefit of working women.

Progress during 1951-1996 and Initiatives during the Ninth Plan

Food Production



4.3.90 One of the major achievements in the last fifty years has been the green revolution and self-sufficiency in food production. Food grain production has increased from 50.82 million tons in 1950-51 to 198.8 million tons in 1996-97. It is a matter of concern that while the cereal production has been growing steadily at a rate higher than the population growth rate, the coarse grain and pulse production has not shown a similar increase. Consequently there has been a reduction in the per capita availability of pulses (from 60.7 grams to 34 grams per day) and coarse grains (Table-4.3.2, Fig 2).

Table-4.3.2

Production of Food grains – Average Annual Growth						
(Milliom Tonnes)						
Year	Rice	Wheat	Coarse Cereals	Pulses	Total Food Grains	Compound Annual Growth (Percent)
1950-51	20.58	6.46	15.38	8.41	50.82	-
1960-61	34.58	11.00	23.74	12.70	82.02	3.22
1970-71	42.23	23.83	30.55	11.82	108.42	1.72
1980-81	52.63	36.31	29.02	10.63	129.59	2.08
1990-91	74.29	55.14	32.7	14.26	176.39	3.54
1997-98*	83.52	66.38	31.15	13.08	194.13	1.73
*Estimated						
Source: - Economic Survey 97-98						

4.3.91 Reduction in per capita pulse availability may adversely affect the protein intake. Coarse grains that are inexpensive and can provide substantially higher calories for the same cost. If made available through PDS at subsidised rates, these will be self-targetting and improve calorie intake and reduce "hunger" among the poorest segments of population. Efforts to increase production of pulses and coarse grain and distribution of coarse grain through PDS might be taken up during Ninth Plan period.

4.3.92 Yet another area of concern is the lack of sufficient focus and thrust in horticulture; because of this, availability of vegetables especially green leafy vegetables and yellow/red vegetables throughout the year at affordable cost both in urban and rural areas has remained an unfulfilled dream. Health and nutrition education emphasising the importance of consuming these inexpensive rich sources of micronutrients will not result in any change in food habits unless there is harnessing and effective management of horticultural resources in the country to meet the growing needs of the people at affordable cost. Efforts in this direction are being taken up in the Ninth Plan period.

Per capita income and expenditure on food

4.3.93 Poverty and lack of purchasing power has been identified as the two major factors responsible for low food intake. The per capita Net National Product at 1980-81 prices has increased from Rs. 1127 in 1951 to Rs 2449 by 1995. Food for work programme, EAS, DWCRA have also helped in improving purchasing power of the population. During the last five decades there has been a marked improvement in the incomes. Especially among the middle and upper income group population in urban areas, there has been substantial diversification in the household food basket and consequent improvement in the quality of food consumed. Life styles have become more sedentary and as a result the energy (calorie) requirement has declined. Simultaneously there has been an improvement in the availability and utilisation of health care. As a result of all these factors there is a substantial reduction in severe grades of undernutrition and severe deficiency diseases among the vulnerable pre-school children and perceptible improvement in nutritional status of the entire population

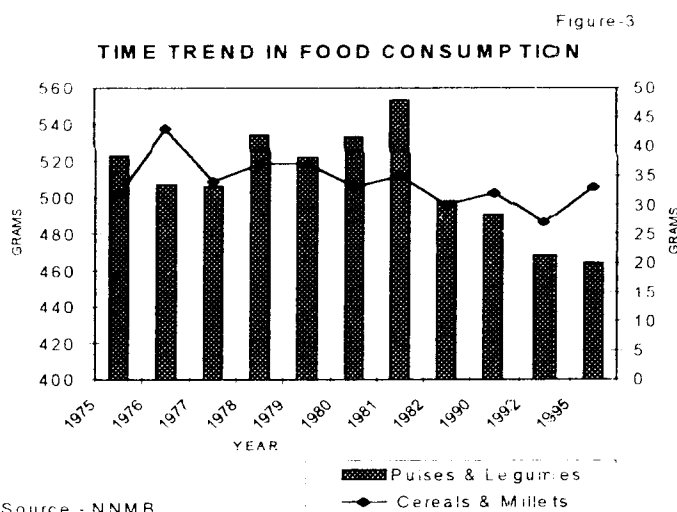
Food Intake

4.3.94 The data from NSSO 43 & 49/50 rounds indicate that both in urban and rural population there has been a small reduction in cereal and pulse consumption and an increase in milk and edible oil consumption (Table-4.3.3)

Table-4.3.3

**Time trends in consumption of food stuffs
(Consumption per person in kgs/month)**

	RURAL		URBAN	
	1987-88	1993-94	1987-88	1993-94
Cereals	14.40	13.40	11.20	10.60
Pulses	0.25	0.24	0.34	0.33
Edible oil	0.33	0.37	0.54	0.56
Milk	3.20	3.94	4.26	4.89

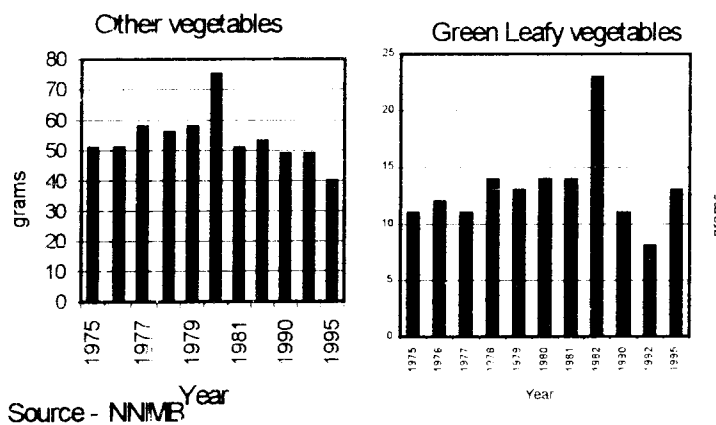


4.3.95 Data from the National Nutrition Monitoring Bureau (NNMB) which has been monitoring food intake and nutritional status in ten States since 1973 also showed that there has been small but progressive reduction in intake of cereal, millets and pulses, over the last two decades (Fig.3), vegetable consumption remained unaltered (Fig.4). In addition the NNMB data showed that at the overall National level: (1)

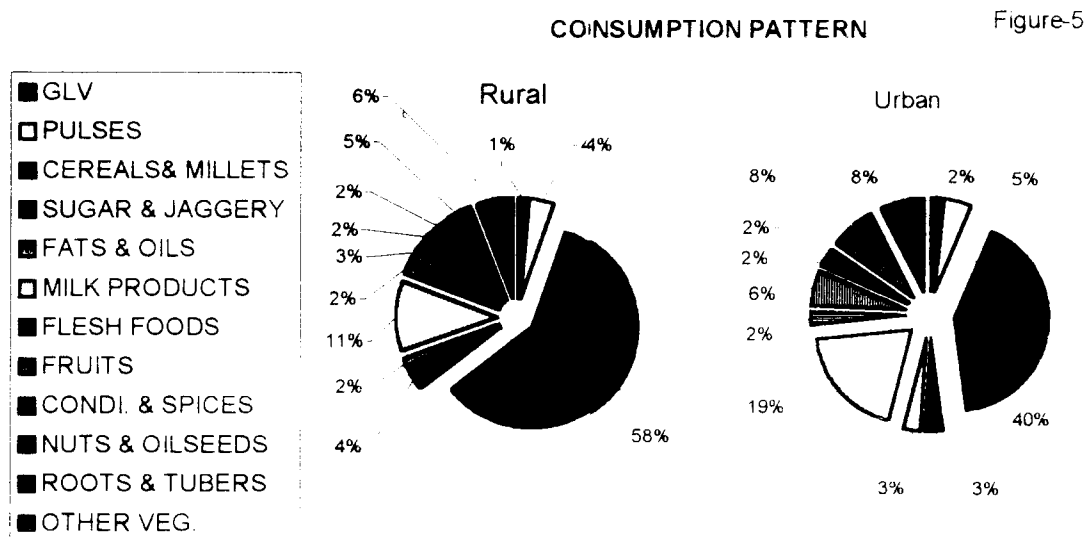
household intake of cereals and millets remained above or at the level of RDA (2) Pulses and legumes have been marginally below the RDA (3) Green leafy vegetables (major inexpensive source of vitamins and minerals) consumption has been only one-third of RDA (4) Overall vegetable intake has been marginally below the RDA and has remained essentially unaltered (Fig 3 & 4)

Consumption of Vegetable

Figure-4



4.3.96 Data from NNMB indicates that there are differences in the consumption of foodstuffs between urban and rural areas. There is relatively lower consumption of cereals and millets in urban area. Green leafy vegetables consumption is very low both in urban and rural areas (Fig.5). In view of the fact that milder forms of micronutrient deficiencies are widespread in urban and rural areas, it is imperative that steps are taken to improve



Source - NNMB

availability of green leafy vegetables. There are substantial differences in the type of foodstuffs consumed between income groups in urban areas. Cereals and millets constitute more than 50% of the total food among the low income group (LIG), industrial labour and slum dwellers, while for the high income group (HIG) and middle income group (MIG), these food groups form about one-fourth and one third of the total food, respectively.

4.3.97 Cereal intake is lowest among the HIG and shows a decreasing trend with better economic status (Fig 6). On the other hand, income status bears a positive relation with consumption of pulses, milk, fruits, flesh food, oil and sugar. Among these foods, milk tended to show sharp differentials between the income groups. Analysis of data collected by Food and Nutrition Board and NNMB shows that there are large differences in cereal and pulse consumption between states (Fig.7a & 7b). The intake of cereals varies from 369g/CU in Kerala to about 628g/CU in Orissa. In Kerala and Tamil Nadu, the mean intake is below 460g/CU but in majority of states the intake is around 460g/CU (recommended intake-ICMR).

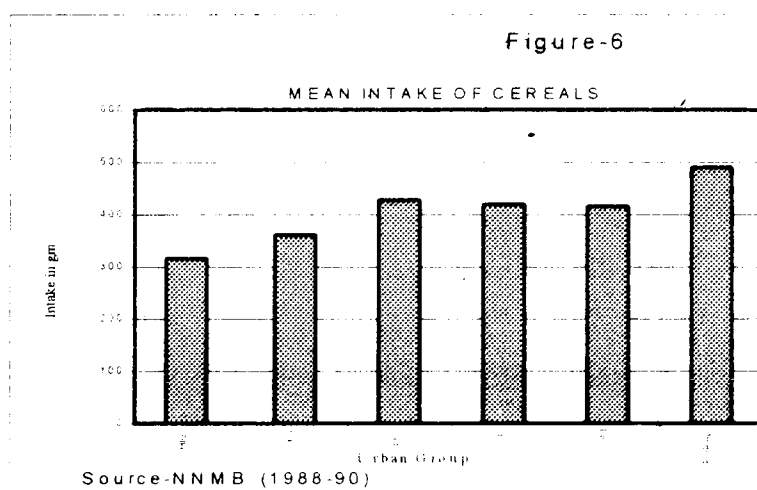


Figure -7a

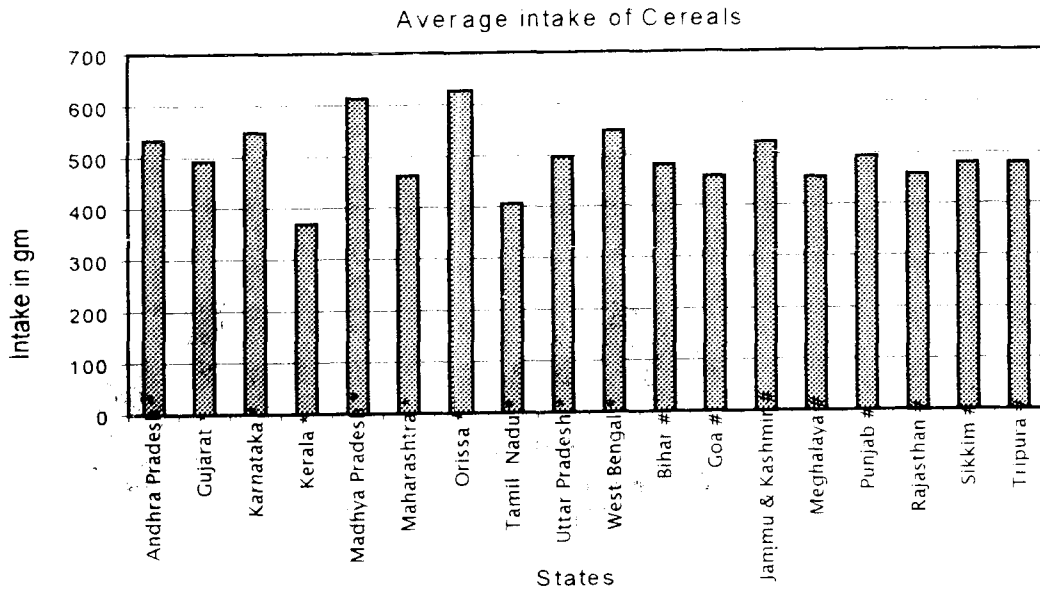
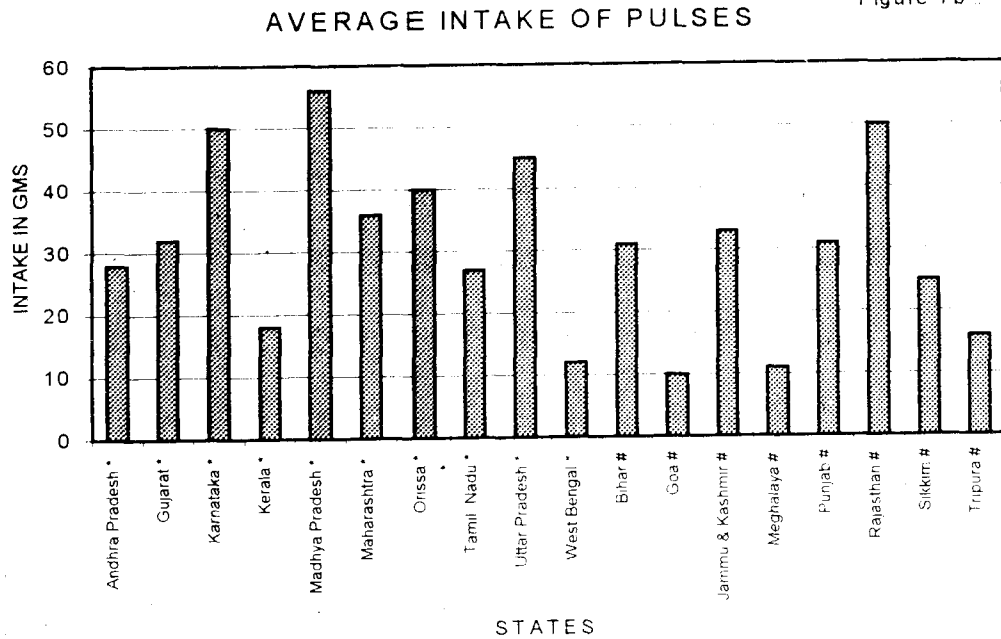


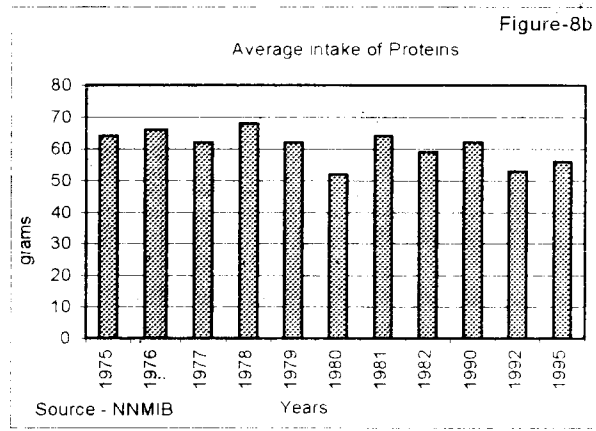
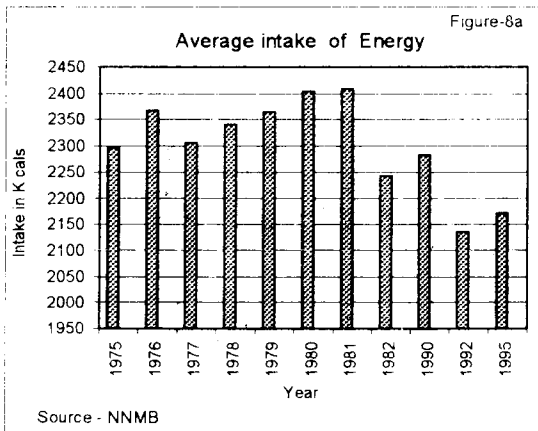
Figure-7b



Source- * NNMB (1981-1991), # FN B (1980-86)

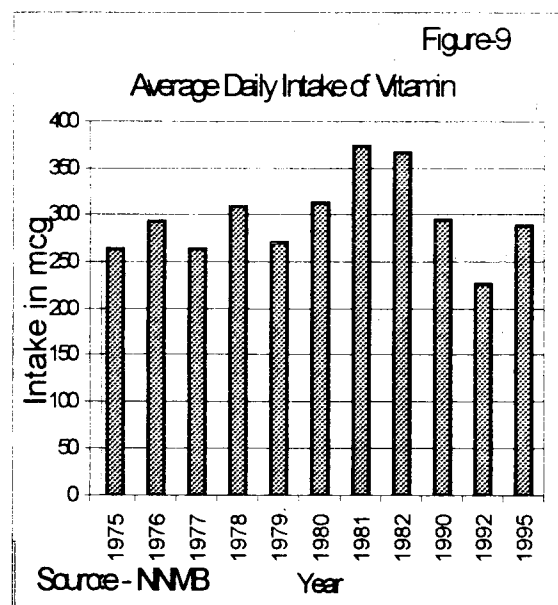
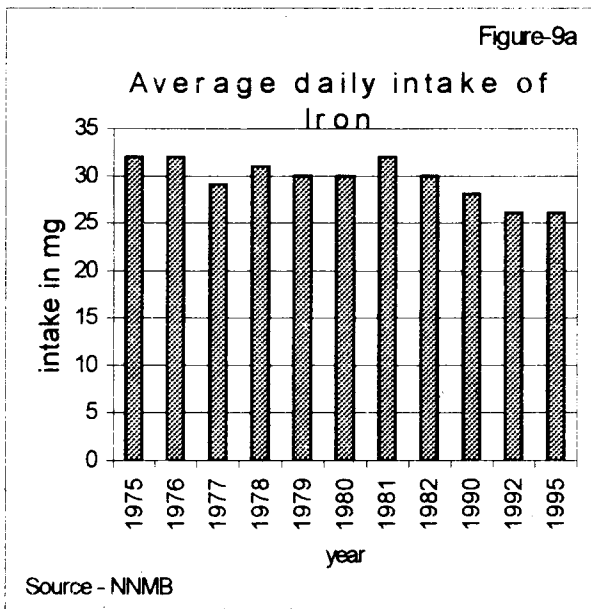
4.3.98 The recommended intake of pulses is 40g per day. Only in Karnataka, Madhya Pradesh, Rajasthan and Uttar Pradesh is the mean intake above this level (Figure – 7b) In other words, a larger percentage of the population consumes an inadequate level of pulses as compared to cereals. This observation is in line with the per-capita availability of these foodstuffs. Unless appropriate steps are taken to substantially augment the production of pulses in the country, the quality of dietaries may further deteriorate.

Intake of Nutrients



4.3.99 The major source of information on nutrient intake covering more than one state and over the last two decades is the NNMB. Figures 8a & 8b indicate time trends in energy and protein intake over the last two decades. There has been a slight decline in energy and protein intake over the years but average national intake for protein and energy remained at or near RDA.

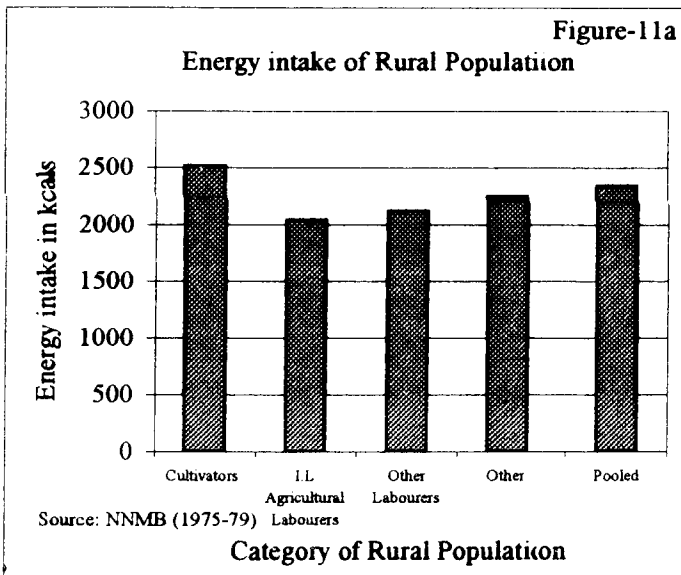
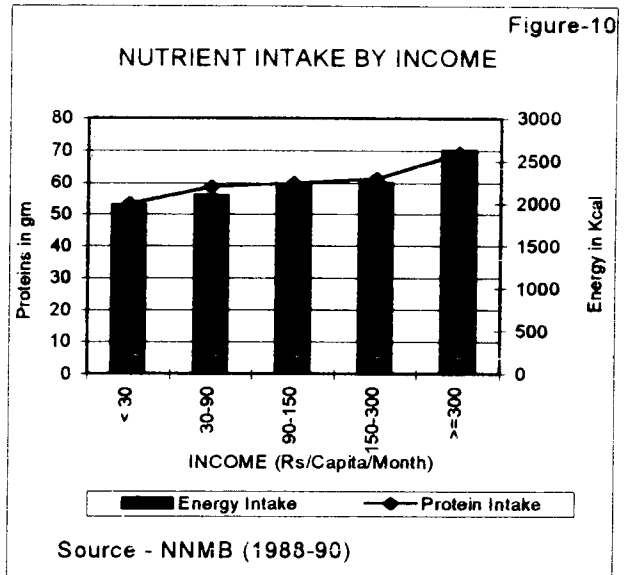
4.3.100 In contrast Vitamin A intakes has remained far below the RDA (Figure - 9b). It is however noteworthy that there has been decline in both the severe and milder clinical manifestation of vitamin A deficiency over the last two decades. Iron intake has shown a marginal decline over time (Figure - 9a). Because of the poor bioavailability from Indian diets, the iron availability has remained suboptimal and anaemia continues to remain a public health problem.



4.3.101 The mean energy intake varies from 2,206 kcal in the lowest income group to about 2,600 kcal in the highest. The two lowest income categories show a difference of 150 kcal in intake, but those with incomes between Rs. 30 and Rs. 90/capita/month show a similar intake. Only families belonging to the highest income group have an average calorie intake above the

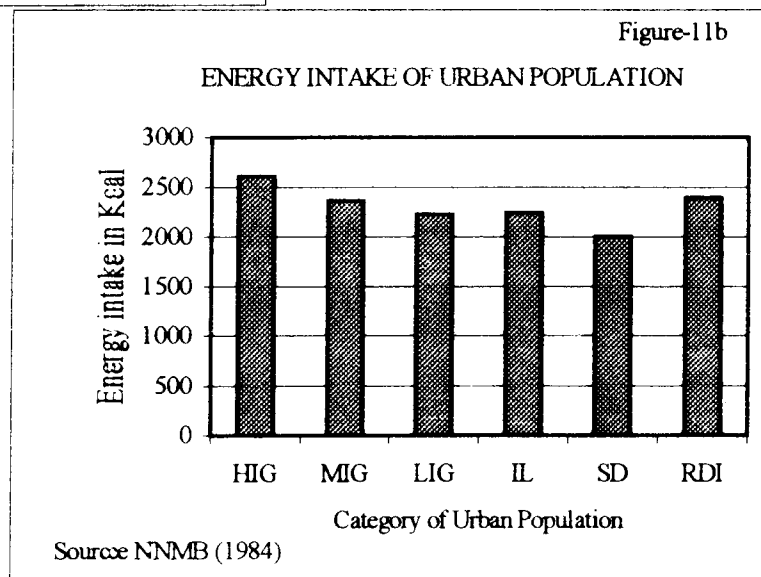
RDA of 2,400 (Fig.10). In rural area the average protein intake varies 53g/cu in the lowest income group with less than Rs.30 per capita per month, to 70g/cu among those with Rs.300 and more. However, the average intake is close to the RDI of 60g only in the top three income categories.

4.3.102 Energy intake among major rural group of cultivators, landless agricultural labourers, non-agricultural labourers and others is shown in Fig.11a. Except in the cultivators group where intake is close to RDA of 2400, in all other groups the level is below RDA.



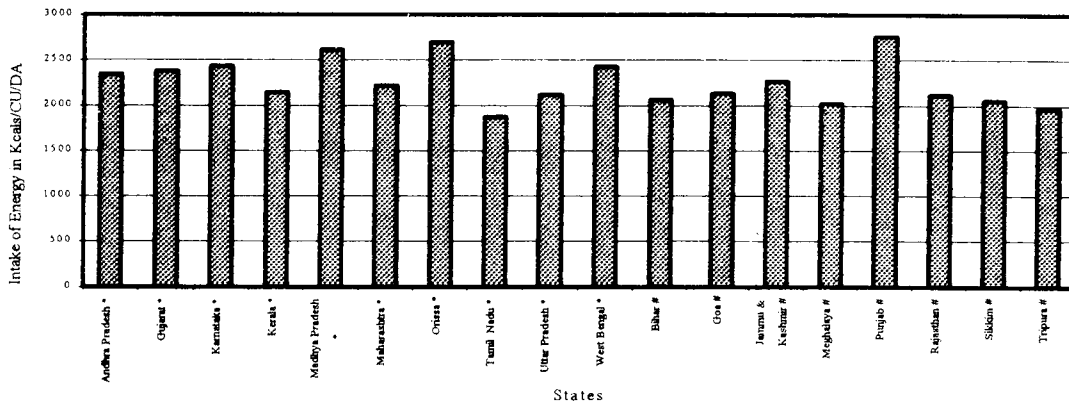
4.3.103 Among urban population groups differences in calorie consumption are far more obvious. Females in slums consume 2000 Kcal as against 2600 Kcal consumed by those belonging to HIG. Average intake of MIG is just around RDA of 2400 Kcal while the LIG and IL groups show a deficit of about 160 Kcal per CU (Fig.11b). Urban families belonging to lower income group consume even lower energy than rural families.

4.3.104 Energy consumption in labourers (urban and rural low-income groups) is low; persons performing manual labour require higher energy intake to meet their energy needs. Poor environmental sanitation and lack of safe drinking water renders them more prone for infections. As a result of this dual insult, chronic energy deficiency continues to be a problem in this segment of the population.



Average intake of Energy

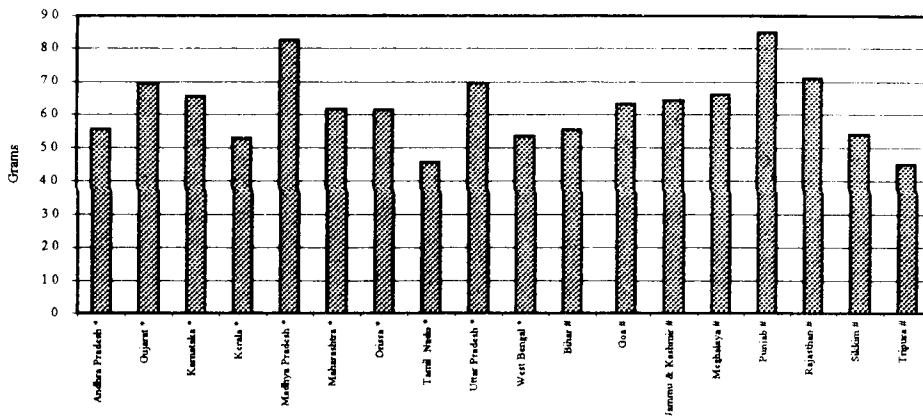
Figure-12



Source: * NNMB (1981-91), # FNB (1980-86)

Average intake of Proteins

Figure-13



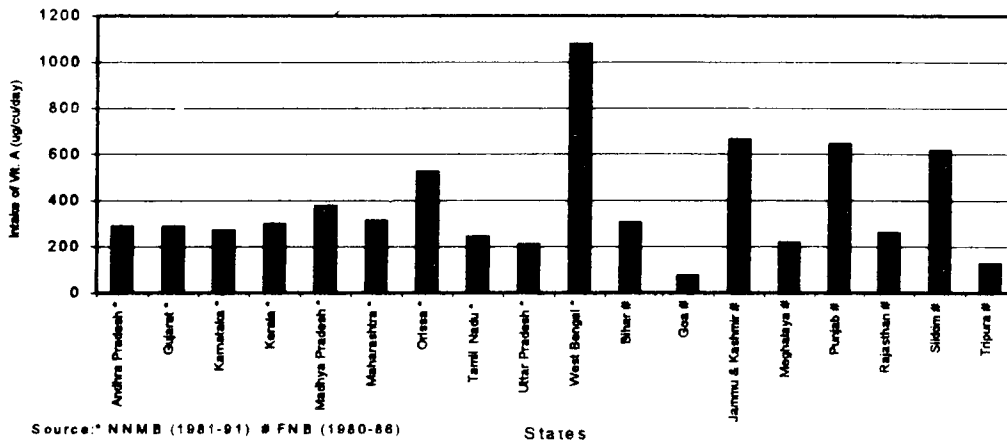
Source: * NNMB (1981-91), # FNB (1980-86)

Interstate differences

4.3.105 Data from the NSSO and NNMB show that there are substantial interstate differences in food consumption, energy, protein and vitamin intake (Fig.7, 12,13,14). Nutrient intake in each State was higher in urban as compared to rural population.

Average Intake of Vitamin A

Figure-14



Source: * NNMB (1981-91) # FNB (1980-86)

4.3.106 Data on nutrient intake among tribals is shown in Fig.15a, b, c & d. It is obvious that the tribals in different States have different level of nutrient intakes. In most States, the intake of most of the nutrients was lower among tribals than the non-tribal rural population.

Figure-15a

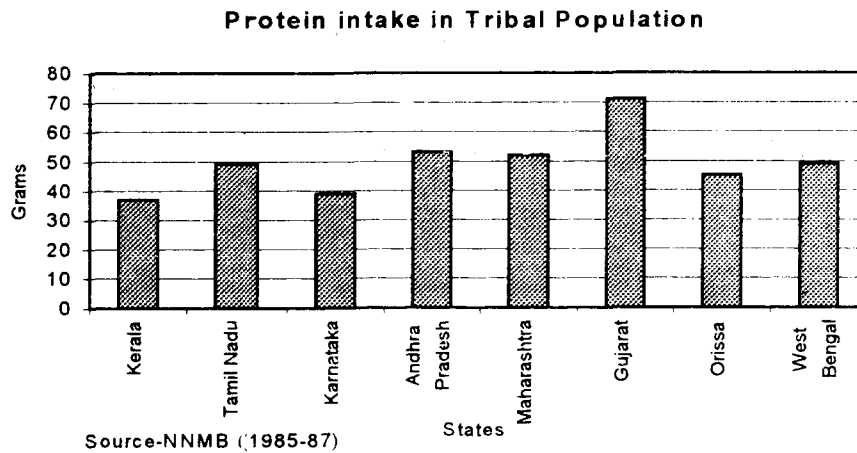


Figure-15b

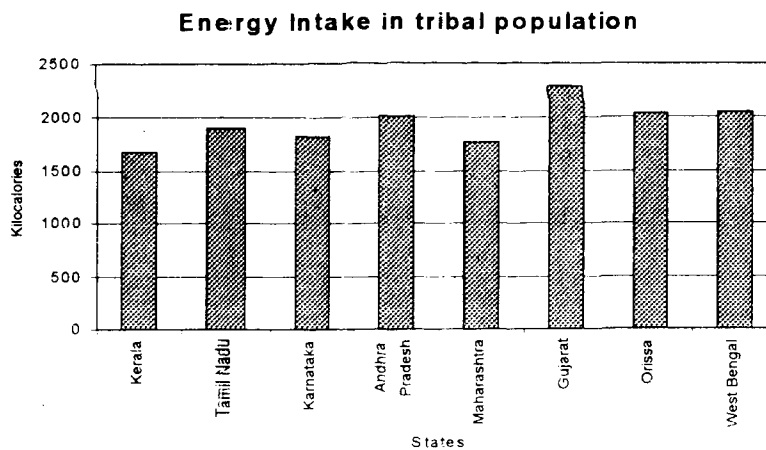
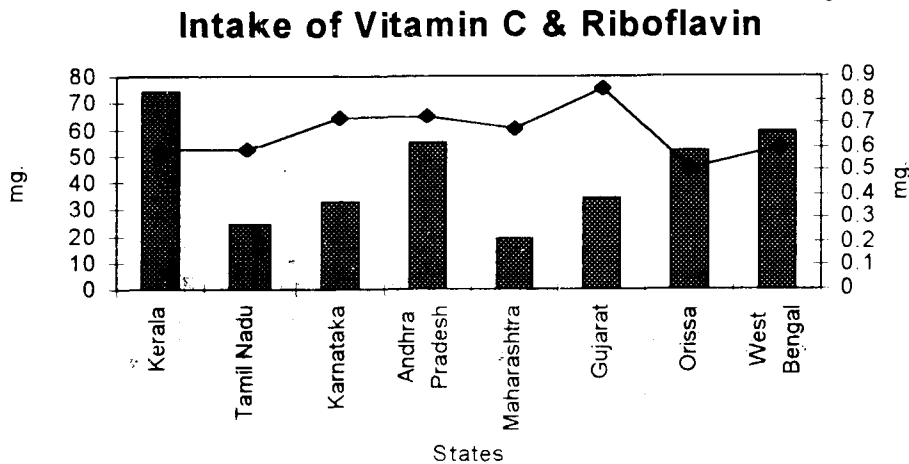


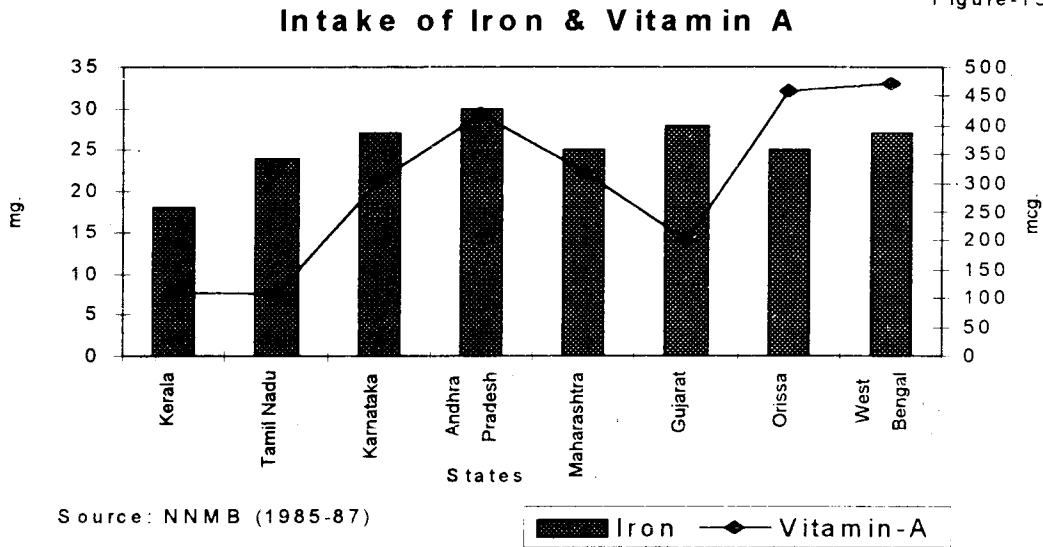
Figure-15c



Source: NNMB (1985-87)

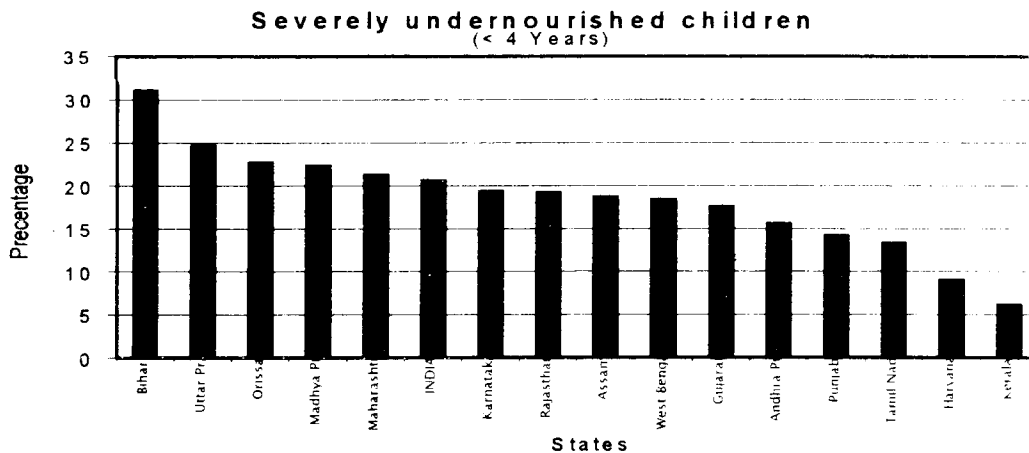
■ Vitamin-C ◆ Riboflavin

Figure-15d



4.3.107 Available data from National Family Health survey on percentage of severely undernourished children in these States are shown in Fig. 16.

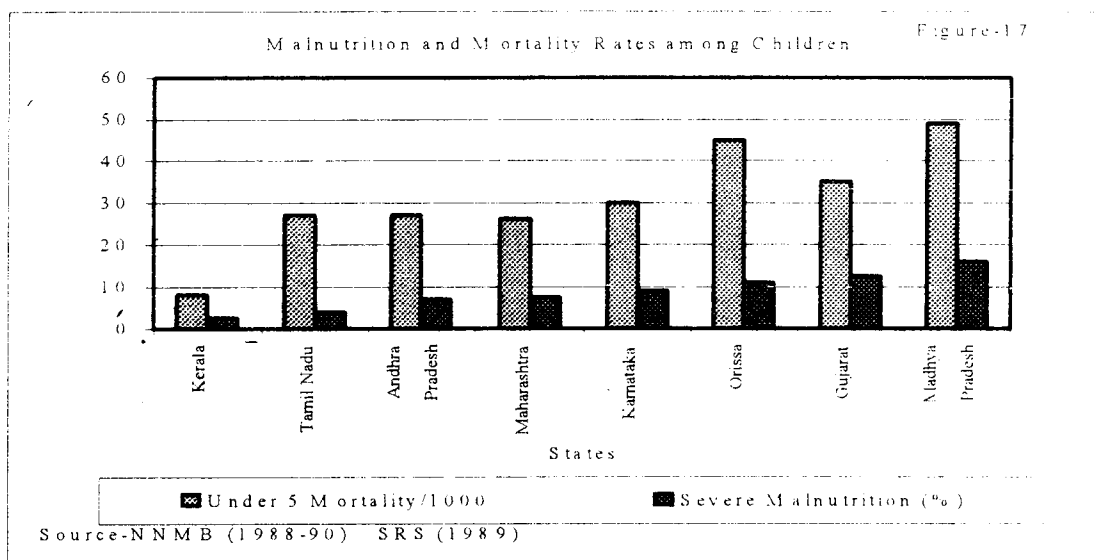
Figure-16



It is obvious that there are substantial differences in the nutritional status of children between the states, especially in the prevalence of moderate and severe chronic energy deficiency in under five children. Kerala has the lowest energy and protein consumption and also the lowest prevalence of severe undernutrition. Madhya Pradesh and Orissa have relatively higher energy intakes but have higher prevalence of severe CED.

4.3.108 Statewise data regarding prevalence of severe CED and under five mortality is shown in Fig.17. In States with higher prevalence of severe undernutrition also have higher under five mortality data (Fig.17). Ample data exists to show that undernutrition increases susceptibility to infection and infection aggravates undernutrition. This vicious cycle, if allowed to continue ends in death. Ready access and utilisation of health care in Kerala which cuts the vicious cycle of undernutrition and infection might be the most important

factor accounting for low undernutrition rates in Kerala. It is therefore imperative that health and nutrition programmes are co-ordinated to achieve optimal synergy between the two interventions so that there is improvement in nutritional and health status.



Intrafamilial distribution of food

4.3.109 It is widely believed that in India especially among rural poor food distribution is not based on the 'need'; the bread winner gets sufficient food, the children the next share and the remains taken by the women. In times of scarcity dietary intake of women and children are likely to be most adversely affected. Several small studies in different States have reported

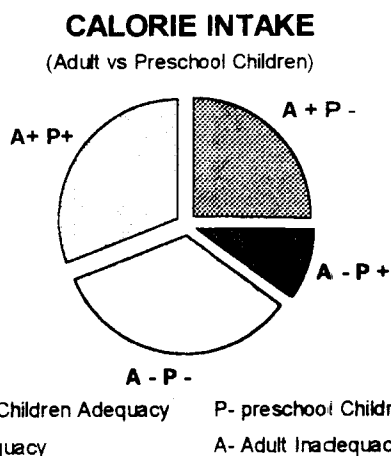


Figure-18

Source-Brahmam et al., 1988

that intrafamilial distribution of food follows this traditional pattern even today. However, this may not be applicable to all States and all strata of society. Analysis of data from diet survey by 24 hours dietary recall method carried out by NNMB in 1975-80 given in (Fig.18). This data shows that in 31% of households energy consumption was adequate in all members of the family. In 19% of households energy consumption was inadequate for all members of the family. It is noteworthy

that in 25% of households energy intake was adequate among adults but not among the preschool children (Fig. 18). Maternal education (high school and above) enabled the mothers to achieve a better intrafamilial distribution of food (Table 4.3.4).

Table-4.3.4

Percentage distribution of calorie adequacy status and female literacy					
Energy Status of			Female literacy status		
Adult		Pre-school children	Illiterate	Primary+ Secondary	High school and above
Male	Female				
+	+	+	29.6	35.6	54.1
+	+	-	27.8	21.2	17.0
-	-	-	18.9	18.7	11.9
Others			23.7	24.5	17.0

+ Indicates adequacy, - Indicates inadequacy; Sample size - 1956

The importance of nutrition education through all channels of communication regarding appropriate infant and child feeding practices are of paramount importance in ensuring that the preschool children especially the children from age groups 6-24 months get adequate food from the family pot; care and time spent on feeding the young child can pay rich dividends in term of sharp reduction in undernutrition in this age group

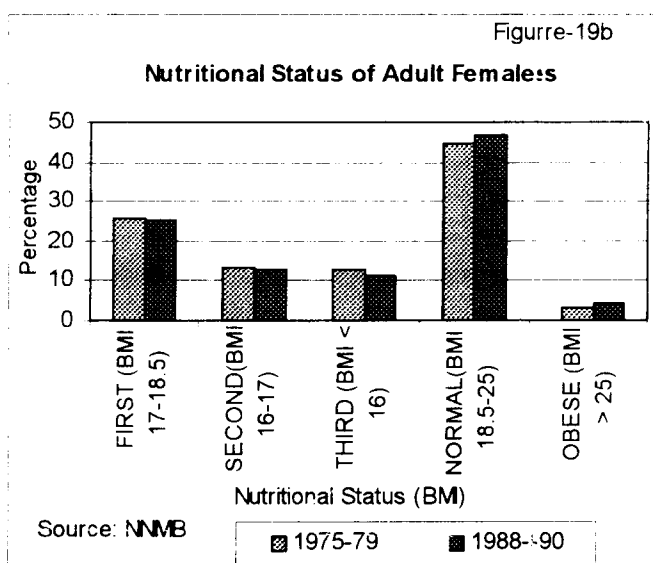
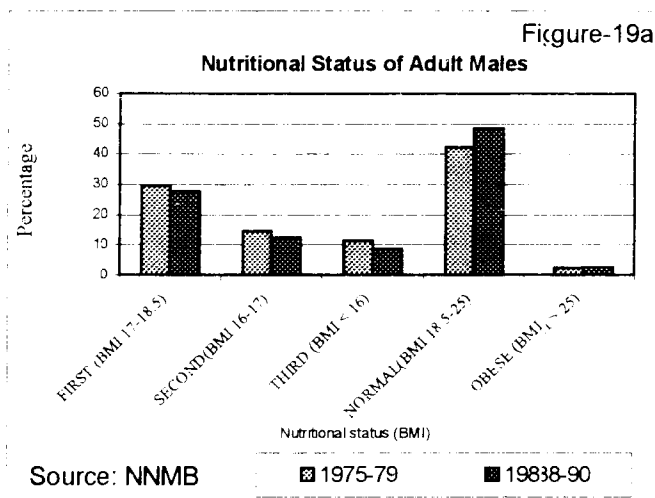
4.3.110 Diet surveys carried out in urban and rural areas among poorer segments of the population indicate that dietary intake remains unaltered in women irrespective of physiological status; the extra needs of pregnancy and lactation are usually not met. Nutrition education to all the family members is required to ensure that pregnant and lactating women do eat 1/5th or 1/6th more than their habitual diet. This is a critical input in the efforts to reduce low birth weight and give the child a good start at birth.

Assessment of Nutritional Status

4.3.111 Collecting data on food intake and computing of nutrient intake of household and individual level are difficult and time consuming. These data, do give some idea about 'at risk' states, sub segments of population such as tribal, households or vulnerable groups within households; however, these parameters cannot accurately indicate nutritional status of the individual or identify persons suffering from nutritional deficiencies. Anthropometric indices (Height, Weight, midarm circumference etc.), haemoglobin estimation and clinical signs of nutritional deficiencies provide accurate and reliable information on nutritional status of the individual. These parameters are used in clinical practice for screening and detection of persons suffering from nutritional deficiencies. These are also useful indices for assessment of nutritional status at community level and have been widely used in monitoring of nutritional status both of individuals and of communities. Body mass index (weight in kg/height in cm²) is the most widely used index for assessment of nutritional status of adults. In children weight for height (wasting), weight for age (underweight) height for age (stunting) are used for assessing nutritional status. The NNMB has been the major source of data on nutritional status of the population in ten Southern and Western States. In '92-93 the National Family Health Survey (NFHS) had collected information on nutritional status in children in all States.

Nutritional Status of Adults

4.3.112 Indian men and women are shorter and lighter than their developed country counterparts. Persons with BMI value less than 18.5 are considered to suffer from chronic energy deficiency (CED). The CED group is further classified into different degrees: first (17 to 18.5), second (16 to 17) and third (below 16). NNMB data on rural population in ten states showed that the average BMI values were similar for both males and females. Only half the adults had normal nutritional status while the rest suffered from different degrees of CED. CED grade II & III are associated with lowering of work capacity. A positive shift in the distribution of BMI values, noted during the 1970s and 1980s, is suggestive of an improvement in nutritional status of rural adults. Data from NNMB repeat survey in 1996-97 confirms that there has been small reduction in severe grades of CED; there is a small but significant increase in obesity both in men and women (Fig.19). Thus, the country has to gear up to face the health problems of both undernutrition and obesity in future.



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4.3.113 NNMB does not have data from Northern and Eastern states. During the Ninth Plan efforts will be made to collect data on nutritional status from these states many of which have high morbidity, fertility, low literacy so that appropriate interventions can be planned and implemented.

4.3.114 Ninth Plan operational strategy to improve the dietary intake of the family and improve nutritional status of the adults; includes:

- 1) Adequate agricultural production of cereals, pulses, vegetables and other food stuffs needed to fully meet the requirement of growing population.
- 2) Improvement in purchasing power through employment generation and employment assurance schemes;
- 3) Providing subsidised food grains through TPDS to the families below poverty line.

Explore feasibility of providing subsidised millets to families Below Poverty Line (BPL) ; use of millets might ensure better self targeting and that the millets do really reach the

targetted families; if millets are used, the amount of millets provided could be increased without increasing total cost of food subsidy. Details of these initiatives are dealt with in the respective chapters.

Nutritional status of vulnerable groups

Pregnant and lactating women

4.3.115 Traditional belief is that pregnant and lactating women require additional dietary intake to meet their own nutritional requirements and also supply nutrients to the growing foetus and the infants; low dietary intake especially in already chronically undernourished women will have adverse effects on health and nutritional status of both the mother and her offspring.

4.3.116 Studies undertaken during the eighties have shown that in pregnancy :

1. Basal metabolic rate is reduced during the second and third trimester of pregnancy.
2. There is a reduction in the physical activity
3. There might be some increase in the as yet unmeasured "efficiency of energy utilisation".

The saving in nutrients due to all these might to be sufficient to meet the increased requirements of the growing fetus and physiological changes during pregnancy in well nourished women. In habitually well nourished women, optimum weight gain during pregnancy and good obstetric outcome can be achieved over a wide range of habitual dietary intake. In these well nourished women additional dietary intake in pregnancy and lactation may in fact lead to obesity.

4.3.117 In sharp contrast, in chronically undernourished and overworked women, continued low dietary intake during pregnancy might pose a serious threat to the welfare of the mother and the fetus in utero. Part of the observed association between poor maternal nutrition and poor obstetric outcome is also attributable to the higher prevalence of maternal risk factors during pregnancy and poor antenatal care.

4.3.118 Small scale research studies had shown that food supplements improve maternal nutrition and birth weights in poorer segments of population. Encouraged by such data, almost all developing countries have embarked on food supplementation programmes for pregnant and lactating women. Very few of these programmes have been evaluated for the impact of food supplements on birth weight. Available data, however, suggest that the impact, if any, is very limited. One of the major problems in food supplementation programmes is that even when the logistics of reaching the food to women have been meticulously worked out and efficiently carried out, food sharing within the family of the recipient results in the 'target' women not getting the supplements in significant quantities. Obviously this might be an important factor responsible for the demonstrated lack of beneficial effect. The lack of adequate antenatal care and continued physical work during pregnancy are two other factors responsible for lack of impact.

4.3.119 Research studies in India and elsewhere have shown that combining adequate antenatal care with effective food supplementation and some reduction in physical activity results in marked improvement in outcome of pregnancy, reduction in low birth weight and neonatal mortality. Operationalisation and implementation of this approach through inter-sectoral co-ordination under existing conditions need be taken up and evaluated. During the next decade there will be progressive increase in the economic constraints; in view of their high cost and limited impact it might not be possible to sustain the food supplementation programmes for all pregnant women in the country. Under these circumstances the feasibility of identifying the situations where there might be deterioration in maternal nutritional status and outcome of pregnancy and targeting the food supplementation programme appropriately should be explored. Research studies have shown that there are readily identifiable situations, which result in further deterioration of maternal nutrition and have adverse impact on outcome of pregnancy. Some such situations are:

1. reduction in habitual dietary intake (drought, preharvest season)
2. increase in work (newly inducted manual laborers)
3. combination of both the above (food for work programmes)
4. adolescent pregnancy
5. pregnancy in a lactating woman
6. pregnancy occurring within two years after last delivery

4.3.120 The local health workers as well as the community can readily identify these women requiring additional food. The panchayat or similar local self-govt. institution can then be given the responsibility of organising the efforts to reach the food to these women. For obvious reasons these women are too busy and cannot spend hours in the anganwadi for

Situations leading to deterioration of maternal nutrition during pregnancy

- Reduction in habitual dietary intake
- Increase in work
- Combination of both the above
- Adolescent pregnancy
- Pregnancy in a lactating woman
- Pregnancy occurring within two years after last delivery

Interventions to combat these include:

- Identification of at risk group individual
- Increase dietary intake
- Reduce physical activity
- Provide appropriate ANC

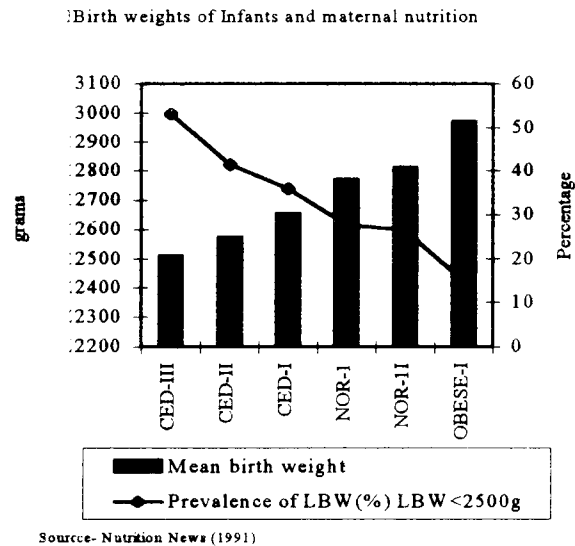
receiving the cooked food supplements. The method to provide food supplementation to these women may vary from place to place and time to time; some may conveniently be provided food at the work site; in other situations provision of subsidised food grain distributed through the Public Distribution System might be the feasible option. In some other situations it might in fact be possible to envisage linkage between antenatal care and free food grains for pregnant and lactating women, in a pattern similar to the one that is envisaged in the mid day meal scheme for primary school children linking provision of the free food grain through PDS to school attendance; the ANM/PHC medical officer certifies that the woman has had antenatal care as required in the previous month and based on this the free food grain from the public distribution system may be provided to the pregnant woman. With the Panchayati Raj and

Nagar Palika institutions it might be possible to monitor these programmes at the local level and consequently achieve better coverage. The feasibility, utilisation, cost and impact of such well directed, innovative strategies involving close local monitoring need be assessed.

New born

4.3.121 Birth weight, an important determinant of child survival and growth, is influenced by the nutritional and health status of the mother. Available data indicate that the mean birth weight in India about 2.7 Kg.; nearly one-third of new-borns weigh less than 2.5 kg. Mortality rates in infants below 2 kg. are several folds higher and low birth weight is one of the most important causes of neonatal mortality. There has hardly been any change in birth weight in the past three decades. A gender difference has been noted in mean birth weights, female infants tending to be lighter than male counterparts. The incidence of low birth weight is highest in low -income groups. There is a good correlation between birth weights and BMI of mother (Fig 20).

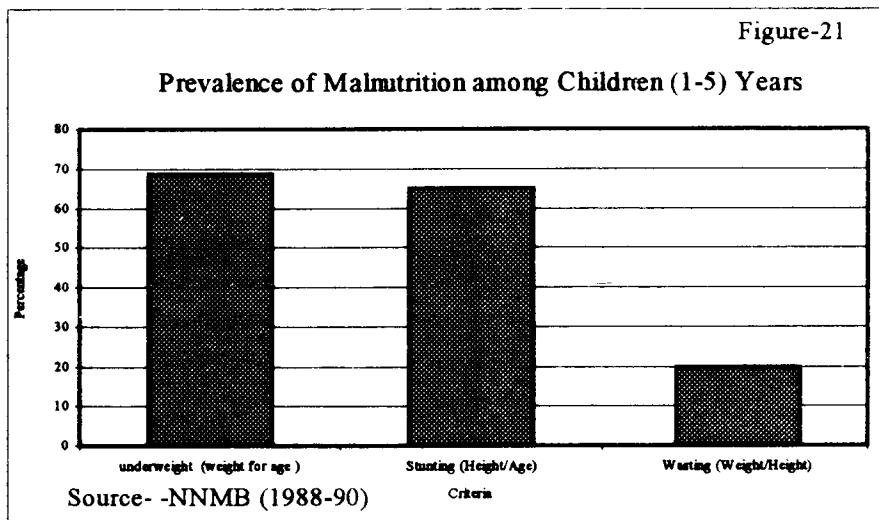
Figure-20



4.3.122 A significant fall in birth weight has been observed in anaemic women, low birth weight rate doubles when Hb levels fall below 8 gms/dl. There is an urgent need to screen all pregnant women and provide food supplements to those with weight less than 40 kg. Effective antenatal care including detection and treatment of anaemia are equally important. Data from studies carried out in NIN indicate that by good antenatal care and utilisation of available food supplements it would be possible to improve birth weight and achieve sustained reduction in low birth weight rates. During Ninth Plan this approach will be implemented throughout the country, through the RCH and ICDS programmes.

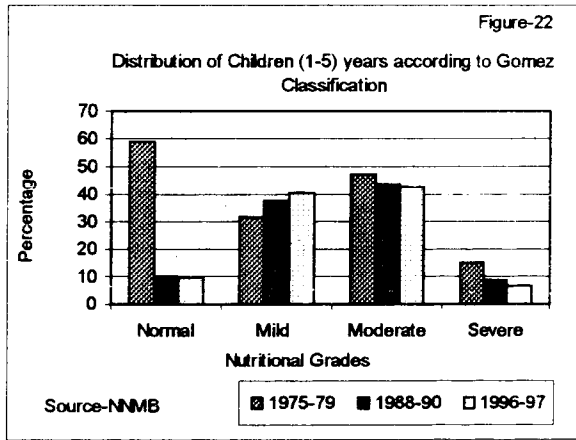
Nutrition in infancy and early childhood (0-5 years)

4.3.123 Preschool children (defined as aged 1-5 years by NNMB) constitute the most nutritionally vulnerable segment of the population and their nutritional status is considered to

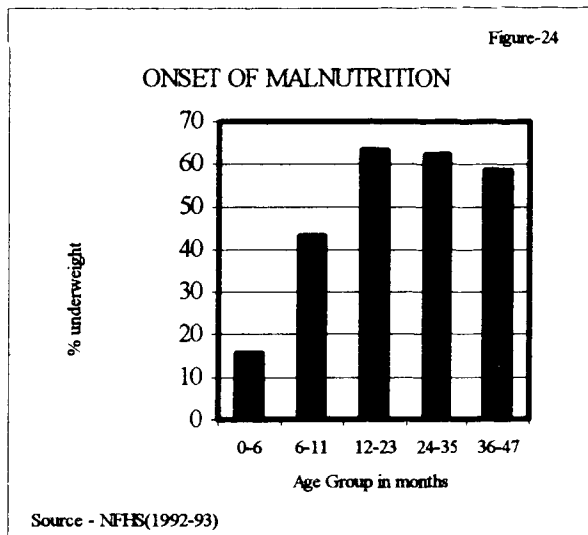


be a sensitive indicator of community health and nutrition. The prevalence of underweight, wasting and stunting among children as determined by anthropometric measurements as shown in Fig. 21.

4.3.124 Over the last two decades there has been some improvement in energy intake and substantial reduction in moderate and severe undernutrition in preschool children (Fig 22).



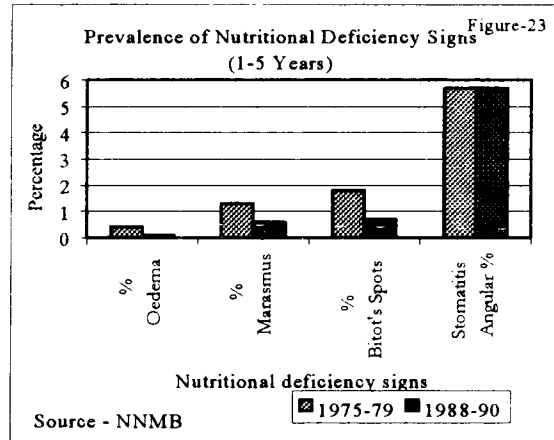
nutritional deficiency signs, however, over the last two decades there has been substantial reduction in severe grades of undernutrition and severe grades of nutritional deficiency signs in all the major States.



the percentage of children who are under weight in the 6-11 months and 12-23 month's age group (Fig.24). This is due to two major problems:

- 1) too early (before 6 months) or too late (beyond 6 months) introduction of supplements to breast fed infants (Fig.25)
- 2) high morbidity rates due to infection in this age group.

Though there has not been any change in the intake of green leafy vegetables and other vegetables, there has been substantial decline in prevalence of nutritional deficiency signs (Fig.23). There are still substantial interstate differences in nutritional status and



4.3.125 Available data on weight for age among under five children is given in Fig.24. At birth about one-third of all neonates are under weight (less than 2.5 Kg). In the first six months the percentage of undernourished infants comes down (15.6%). This is mainly because of the practice of universal breast-feeding, which has been protected and promoted. However, there is a progressive increase in

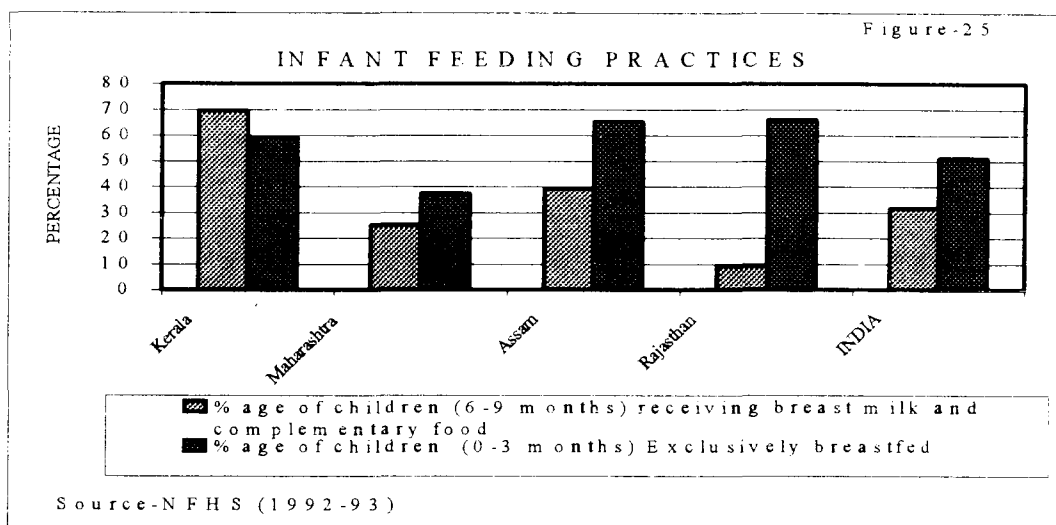
Undernutrition in early childhood

Causes:

- Low birth weight
- Introduction of Supplementary Food too late/too early
- Infections

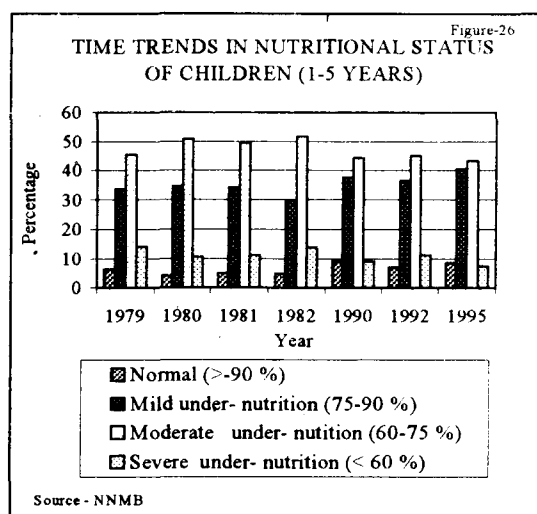
Proposed Intervention:

- Efforts to reduce LBW through ANC
- Timely introduction of Supplementary Food
- Prevention, early detection and treatment of infections
- Growth monitoring

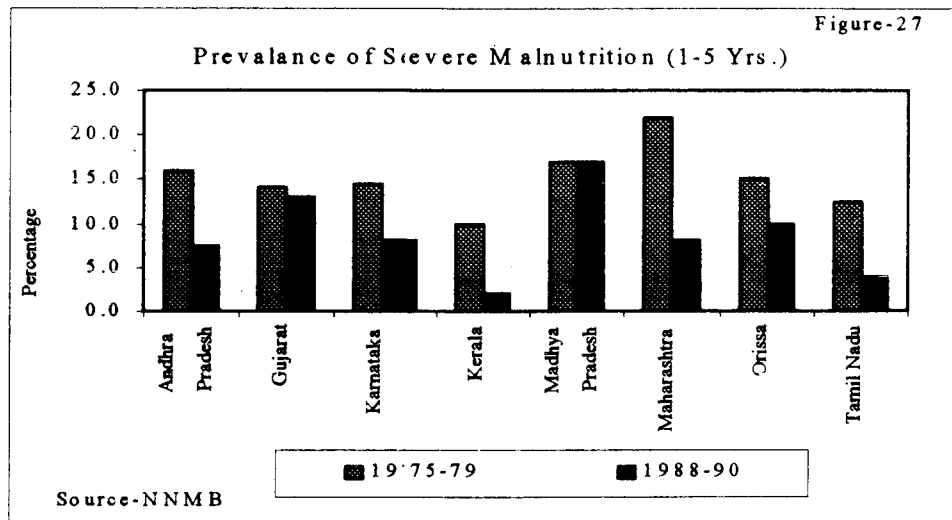


4.3.126 During the Ninth Plan efforts will be made to ensure nutrition education for timely and appropriate supplement introduction is given through all media of communication. The 6-24 month child can take only small quantity of supplements (50-60 Kcal) at any given time. It is therefore essential that the child is fed 4 - 5 times a day in order to meet the requirements of supplements to breast milk in this age group. The support of the family, neighbours and community are all essential for ensuring that infant does receive the care and attention that it needs to consume food needed for growth and development. Employers, women's group, the community and Panchayati raj institutions have to provide conducive environment and enabling provision to women to achieve this objective. Prevention of infection through promotion of environmental sanitation and provision of safe drinking water, early detection and prompt treatment of infection by health workers envisaged as a part of the RCH package are some of the other interventions to improve nutritional status.

4.3.127 Data from NNMB surveys and repeat surveys indicates that over years there has been a decline in the percentage of 1-5 year old children with moderate and severe degrees of undernutrition (Fig.26). During this period there has been a decline in clinical deficiency signs also (Fig.23). This is partly due to some increase in the dietary intake and partly due to improved health care for infection. This encouraging trend should be further accelerated through coordinated efforts of all concerned sectors especially DWCD and Dept. of Family Welfare.



4.3.128 There are substantial interstate differences in childhood undernutrition. Kerala and Tamil Nadu have achieved substantial reduction in undernutrition inspite of relatively low per capita income, expenditure on food and food consumption. Maharashtra has shown the steepest decline in undernutrition among States even though food intake has not changed substantially. Madhya Pradesh continues to have high unaltered prevalence of under nutrition in under five children (Fig.27).



4.3.129 These data emphasize importance of health inputs in reducing infection related deterioration in nutritional status. During Ninth Plan additional assistance is being provided to poorly performing States for bridging critical gaps in primary health care; optimal utilisation of these and effectively targetted food supplementation are expected to result in substantial improvement in health and nutritional status of under 5 children.

Children in the 5-14 age group:

4.3.130 Both the severity and magnitude of undernutrition are less in 5-14 age group than that in early childhood. The mid day meal programmes and the school health programme are ongoing nutrition and health intervention in this age group; however both quality and coverage are often suboptimal. In addition the non-school going children who are more at risk of nutrition and health problems are not covered. During the Ninth Plan the Education Dept. will intensify efforts to ensure universal enrollment and improved retention at school. The midday meal programme will continue; there will be efforts to weigh all children and identify those suffering from moderate and severe undernutrition and ensure that they benefit from the ongoing midday meal programme. School health check up and nutrition education will receive the attention that they deserve.

Emerging nutritional problem:

Adolescent Nutrition

4.3.131 Adolescents undergoing rapid growth and development are one of the nutritionally vulnerable groups who have not received the attention they deserve. In under-nourished children rapid growth during adolescence may increase the severity of under nutrition. Early marriage and pregnancy will perpetuate both maternal and child undernutrition. At the other end of spectrum among the affluent segments of population, adolescent obesity is increasingly becoming a problem. In view of these problems, nutrition education, health education

Nutritional problem in adolescents

Undernutrition is due to:

- Unmet nutritional needs from childhood/ adolescents
- Early marriage, teenage pregnancy
- Micronutrient deficiencies especially iron & iodine

Obesity is due to:

- Overeating, junk food, lack of exercise

and the appropriate nutritional interventions for adolescent are being taken up under ICDS and RCH Programmes during the Ninth Plan. In order to reduce anaemia supplementation of iron and folic acid to adolescent is also being taken up on a pilot basis under both these programme.

Geriatric Nutrition

4.3.132 With increasing longevity the proportion and number of persons in the age group 60 and beyond is rapidly increasing.

Major Geriatric Nutritional problems are :

- Chronic Energy
- Micronutrient deficiency
- Obesity

Factors responsible include:

- Lack of Social support
- Shift towards nuclear family system
- Changing life styles

It is noteworthy that in this age-group women outnumber men. Available data from nutrition surveys indicate that in this group also the dual problem chronic energy and micro nutrient deficiency on one hand and obesity on the other hand are increasingly seen. Lack of social support, breaking up of joint family system, changing life-styles all aggravate health and nutritional problems in elderly age group. Innovative steps to provide societal support, health care and nutrition services to the elderly are currently being taken up by several agencies. Simultaneously there are efforts to improve family and societal support to elderly according to the existing cultural ethos in different regions. Successful models for improving quality of life of the elderly will be replicated elsewhere in the country.

Overeating and obesity.

4.3.133 During the last two decades there has been a major alteration in life styles and activity pattern among all segments of population. With the ready availability of cooking gas, piped water supply, labour saving gadgets and ready transport, there had been a substantial reduction in the physical activity pattern and energy expenditure especially in middle and upper income group. However, the dietary intake has not undergone any reduction; in fact ready availability of fast foods, ice creams and other energy rich food items at affordable costs have resulted in increased consumption of these by all members of the family. All these have lead to increasing energy intake over and above the requirement and consequent obesity in these segments of population (Figure - 19). Nutrition and health education to convince the population about restricting food intake and increasing exercise so that energy balance is maintained will be taken up during the Ninth Plan.

4.3.134 Operational strategy during the Ninth Plan to improve health and nutritional status of vulnerable segments includes

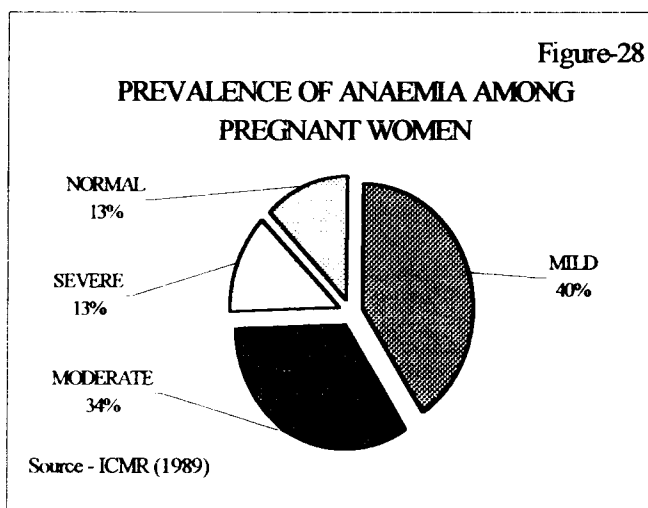
- 1) Pregnant and lactating women - screening to identify women with weight below 40 Kgs. and ensuring that they/ their preschool children receive food supplements through Integrated Child Development Services Scheme (ICDS); adequate antenatal, intrapartum and neonatal care.
- 2) 0-6 months infants - Nutrition education for (a) early initiation of lactation (b) protection and promotion of universal breast feeding (c) exclusive breast feeding for the first six months (unless there is specific reason supplementation should not be introduced) (d) immunisation, growth monitoring and health care.

- 3) Well planned nutrition education carried out through all channels of communication to ensure that the infants and children in the critical 6-24 months period, do a) continue to get breastfed; b) get appropriate cereal-pulse-vegetable based supplement fed to them at least 3-4 times a day- appropriate help in ensuring this through family/community/work place support; c) immunisation and health care for all children.
- 4) Ensure that children in the 0-5 age group are screened, by weight; children with moderate and severe undernutrition get double quantity supplements through ICDS; screen all 0-5 children for nutrition and health problems and provide appropriate intervention.
- 5) Screen primary school children and ensure that those with moderate and severe chronic energy deficiency do receive the mid-day meal/ or their families get the cereals through TPDS.
- 6) Monitor for improvement in the identified undernourished infants, children and mothers; if there is no improvement, refer to physician for identification and treatment of factors that might be responsible for lack of improvement,
- 7) Nutrition education on how dietary needs of different members of the family vary and how they can all be met by minor modifications in the family meals. Intensive health education for improving the life style of the population coupled with active screening and management of the health problems associated with obesity.

Micronutrient deficiencies

Anaemia

4.3.135 Anaemia is the most wide spread yet most neglected Micronutrient deficiency disorder in India. Iron and folic acid deficiency due to inadequate intake of green leafy



vegetables and other iron folate rich foodstuffs is the most common cause of anaemia. Poor bioavailability of iron from the phytate, fibre rich Indian diet aggravates the situation. Anaemia affects all age groups of population from all strata of the society. Pregnant women and pre-school children are the worst affected (Fig.28). Anaemia is associated with reduction in work capacity and increased susceptibility to infection. Association between anaemia and low birth weight are well documented. Details of the ongoing interventions for prevention and

management of anaemia their impact and proposed Ninth Plan intervention is described in Chapter on Family Welfare.

4.3.136 Operational strategy for the Ninth Plan for pregnant women:

- a) Screening of all pregnant women using a reliable method of hemoglobin estimation for detection of anaemia, b) oral iron folate prophylactic therapy for all non-anaemic pregnant women (Hb > 11 g/dl), c) iron folate oral medication at the maximum tolerable dose

throughout pregnancy for women with Hb between 8 and 11 g/dl, d) parenteral iron therapy for women with Hb between 5 and 8 g/dl if they do not have any obstetric or systemic complication, e) hospital admission and intensive personalised care for women with Hb < 5 g/dl, f) screening and effective management of obstetric and systemic problems in all anemic pregnant women

4.3.137 Operational strategy for the Ninth Plan for general population:

a) Fortification of common foods with iron to increase dietary intake of iron and improve hemoglobin status of the entire population including children, adolescent girls and women prior to pregnancy.

b) Health and nutrition education to improve consumption of iron and folate rich foodstuffs such as green leafy vegetables,

c) Horticultural interventions to improve availability of green leafy vegetables in urban and rural areas at affordable costs throughout the year.

Strategy for Improving Vit.A status during the Ninth plan:

Efforts will be made to:

- ❑ improve the coverage of all doses of massive dose of Vit. A administration.
- ❑ health and nutrition education to improve consumption of foods rich in Beta-carotene, especially green leafy vegetables and yellow vegetables/ fruits.
- ❑ horticultural interventions at local level both in urban and rural areas to improve the availability of Beta-carotene rich green leafy vegetables through out the year at affordable cost.

Vitamin A deficiency

4.3.138 In the fifties pediatricians in major hospitals in most States reported that blindness due to Vit A deficiency is a public health problem. Vitamin A deficiency in childhood is mainly due to inadequate dietary intake of Vit. A. Increased requirement of the Vit. A due to repeated infection aggravated the magnitude and severity of the deficiency. The association between measles, severe PEM and keratomalacia and high fatality in such cases was reported by many paediatricians. Prevalence of night blindness and Bitot's spot in pre-school children ranged between 5% and 10% in most States. Blindness due to Vitamin A deficiency was one of the major causes of blindness in children below 5 years. In view of the serious nature of the problem of blindness due to Vitamin A deficiency it was felt that urgent remedial measures in the form of specific nutrient supplementation covering the entire population of susceptible children should be undertaken. In 1970 the National Prophylaxis Programme against Nutritional Blindness was initiated as a Centrally Sponsored Scheme (CSS). Under this CSS, all children between ages of one and five years were to be administered 200,000 I.U of Vitamin A orally once in six months. Details of the ongoing intervention for prevention of Vitamin A deficiency and proposed Ninth Plan intervention is described in Chapter on Family Welfare.

Iodine deficiency disorders

4.3.139 Iodine deficiency disorders (IDD) have been recognised as a public health problem in India since mid-twenties. Initially, IDD was thought to be a problem in sub-Himalayan region. However, surveys carried out subsequently showed that IDD exists even in riverine and coastal areas. No State in India is completely free from IDD. It is estimated that 61 million are suffering from endemic goitre and about 8.8 million people have mental/motor handicap due to iodine deficiency. Universal use of iodised salt is a simple inexpensive method of preventing IDD.

4.3.140 The National Goitre Control Programme was initiated in 1962 as a 100% Centrally funded Central sector programme with the aim of conducting goitre survey, supplying good quality iodised salt to areas having high IDD, health education and resurvey after five years. The programme was renamed as the National Iodine Deficiency Disorder Control Programme in 1992. Details of the ongoing intervention for control of Iodine Deficiency Disorders and proposed Ninth Plan intervention is described in Chapter on Health.

IDD Control Programme

Operational strategy for the Ninth Plan include:

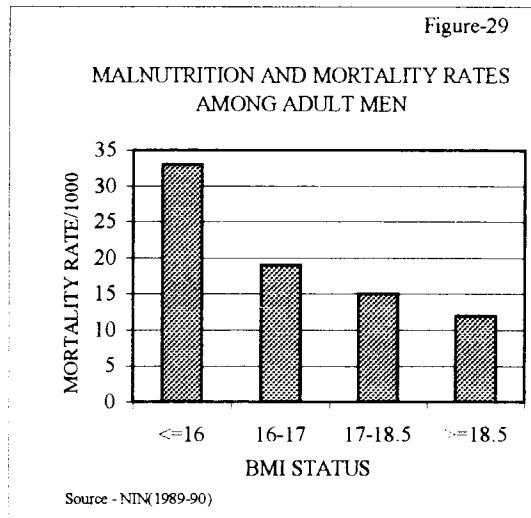
- production of adequate quantity of iodised salt of appropriate quality;
- appropriate packaging at the site of production to prevent deterioration in quality of salt during transport and storage;
- facilities for testing the quality of salt at production level, at retail outlets and household level so that consumers get and use good quality salt
- IEC to ensure that people consume only good quality iodised salt and
- reduction in the price differentials between iodised and non-iodised salt through subsidy to people below poverty line, improving ready access to iodised salt through TPDS.

Health nutrition interactions:

4.3.141 It is well recognised that the pregnant and lactating women from one of the most vulnerable segments of the population from nutritional point of view; the ill effects of maternal undernutrition affect not only of the mother but also her offspring. Adverse nutrition and health consequences of "too early, too close, too many and too late" pregnancies on the mother child dyad were recognised early in our country and contraceptive care was recognised as an indirect effective intervention to improve maternal and child nutrition. Research studies during the sixties and seventies documented the magnitude and health hazards associated with chronic energy deficiency iron, folate, iodine and vit. A deficiency. National programmes to combat these were drawn up and are being implemented. Yet another important indirect cause of undernutrition continues to be infections. Pediatricians still grapple with the vicious cycle of severe CED and infection; obstetricians and pediatricians continue to tackle the increased morbidity in anaemic women and children. With the advent of HIV epidemic in India in the eighties, it is inevitable that over the next decade there will be an increase in the severe undernutrition associated with AIDS in all the age groups.

Malnutrition and Mortality among Adults

4.3.142 Both undernutrition and obesity are associated with higher risk of morbidity and mortality. A longitudinal study conducted by the NIN showed a good correlation between the nutritional status of adults (as measured by BMI) and mortality during the subsequent 10-year period (1979-1989) (Fig. 29). Clinical data from India has unequivocally demonstrated the increased risk of non-communicable disease especially cardiovascular disease and diabetes and the higher mortality risk in obese individuals. Association between low birth weight and perinatal and infant mortality and growth faltering and high-risk childhood mortality are well documented.



4.3.143 Association between severe grades of anaemia and high perinatal and maternal mortality has been well documented. Anaemia is one of the leading causes of maternal mortality in India. Mortality rates are higher in children with moderate and severe grades of under nutrition. Vicious self-perpetuating cycle of undernutrition increasing susceptibility to infection and infection aggravating undernutrition often ends in death. HIV/AIDS is a new addition to the existing infections that causes undernutrition and result in death.

4.3.144 The Health sector programmes during the Ninth Plan are aimed at combating both problems of undernutrition and overnutrition. The Reproductive and Child Health initiative and the Health Sector programmes strive for early detection and treatment of both undernutrition and infections especially in preschool children and women. Food supplementation especially if they are targetted to undernourished individual could reduce morbidity. During Ninth Plan, integrated health and nutritional intervention will be taken up with appropriate intersectoral coordination to ensure rapid decline in undernutrition, morbidity and mortality.

Intersectoral coordination between health and ICDS functionaries

4.3.145 Over the last decade there has been substantial improvement in the collaboration between the AWWs and ANMs. The AWW have assisted the ANMs in immunisation and undertaking antenatal check ups. The ANM has been providing the micronutrient supplements as and when required. However the collaboration has not resulted in the improvement in the quality of screening for undernutrition, monitoring the improvement following supplementation, identification and management of at risk women and children. The quality of nutrition and health education has also not improved substantially. It is imperative that the ANM and the AWW are given orientation and training in nutrition and health problems, ongoing intervention programme in both the sectors, appropriate messages for nutrition and health education, so that they can function more effectively. This area will receive due attention during the Ninth Plan because increasingly improving nutritional status will depend on the synergistic effect of food supplements, infection management and fertility regulation. Effective antenatal care and targetting food supplements to women below 40 kg

will hold the key to reduction in low birth weight; breast feeding, growth monitoring and infection treatment will be needed for improving health and nutritional status of the under fives and reducing under five mortality.

4.3.146 Intersectoral coordination at and below the district level especially at the village level holds the key to improvement of health and nutritional status of the population within the available resources. It is essential that improving awareness regarding environmental sanitation and safe drinking water are done in settings which have access to both these. Therefore, the drinking water and sanitation programmes both in urban and rural area should provide these facilities on high priority to Panchayat, anganwadi, primary school and primary health care institutions. Nutrition and health education forms a part of school curriculum. If these are taught in real life situation they will have more impact. Utilising the time for "Socially useful productive work" in school for students and teachers' participation once in a month in health and nutrition check up, growth monitoring, immunisation activities at the Anganwadi would not only improve children's knowledge and promote child to child care but also assist the hard pressed ANM and Anganwadi worker to complete their activities and keep the records meticulously.

4.3.147 Mahila Swasth Sangh and PRI members can assist in identifying pregnant and lactating women weighing below 40 Kg. and infants and children showing growth faltering and ensuring that these persons/families have access to food supplementation in the ICDS on priority basis. The agricultural workers and PRI members can ensure that green leafy vegetables, herbs and condiments are grown in the village land and supplied to anganwadi on a regular basis so that food supplements do have vitamin and minerals and are also more palatable.

Monitoring of ICDS Programme:

4.3.148 Effective monitoring and midcourse corrections are essential for successful implementation of the intervention programmes; this is even more critical in programmes like ICDS that requires good intersectoral coordination for achievement of the goals. Evaluation of ICDS carried out by both Nutrition Foundation of India (NFI) and National Institute of Public Cooperation and Child Development (NIPCCD) have suggested that there is a need for improved monitoring of the implementation of the programme.

4.3.149 Both ICDS and the health functionaries regularly file monthly progress report, which are collated and reported. However the existing monitoring systems are functioning suboptimally. There are lacunae at the levels of collection, reporting and collation. There are delays in analysis and reporting. The reports of the health and family welfare programme by the respective workers, and the Monthly progress reports sent by the ICDS workers are not utilised for district level monitoring and midcourse correction of the ongoing programmes. Currently there are efforts to improve these and also ensure effective utilisation of the available district data for area specific micro planning and monitoring.

4.3.150 At the request of the Dept. of Women and Child Development the National Institute of Nutrition has carried out a study in Andhra Pradesh for improving the monthly progress reports of the ICDS workers and improve monitoring of ICDS programme at district level. The data from the study indicated that it was possible to train and orient the ICDS functionaries to improve the quality and timeliness of the reporting; analysis of the data and discussions on the implications of the reports with the functionaries facilitated the

implementation of midcourse corrections and led to improvement in performance. Careful monitoring of the data on prevalence of undernutrition in under five children will also be the first step towards building up of a nutrition surveillance and response system at the critical district level.

4.3.151 Under the Reproductive and Child Health initiatives the ANMs are to identify, and refer 'at risk' undernourished women and children. Collaboration between the ANM and the AWW at the village level would improve implementation and monitoring of both health and nutrition programmes. During the Ninth Plan period attempts will be made to improve the monitoring not only regarding the coverage but also quality of services such as the identification of the 'at risk' individuals, ensuring that they do take supplements, assessing the response to food supplements and if they are not improving, referring them to the PHC for examination and management.

Monitoring Nutritional Status of the Population

4.3.152 India is a vast and varied country. There are large differences in per capita income, availability of the food stuffs, purchasing power, dietary habits, habitual consumption of food stuffs, health and nutritional status between different States in the country. In all States there are substantial urban-rural and inter-district variation in the above indices. The tribal population differs considerably from the non-tribal population residing in the same district.

4.3.153 Sound, reliable data on the factors modifying dietary intake and nutritional status of the population in States/ districts are essential for policy makers, programme managers and monitoring agencies to carry out appropriate decentralized planning, policy and programme formulation which keeps in focus both the National goals and the local needs. Ready availability of data on process and impact indicators and continuous monitoring is vital for midcourse correction of ongoing programmes.

The strengths of NNMB are:

- Uniform sampling procedure in all states
- Collection of data by well-trained personnel
- Good quality control
- Data analysis and reporting by NNMB's Central Reference Lab.

4.3.154 Until 1970 the information on food consumption and nutritional status of the population was being collected by the state Departments of Nutrition. However there was no uniform methodology of data collection, reporting and quality control measures hence it was difficult to make any interstate comparisons or draw inferences regarding time trends or impact of ongoing intervention programmes.

4.3.155 In 1972 the National Nutrition Monitoring Bureau was set up by the Indian Council of Medical Research to:

1. Collect the data on dietary intake, and nutritional status on a continuous basis from different states and
2. Evaluate the ongoing national nutrition programmes, identify their strengths and weaknesses and recommend midcourse corrections to improve their effectiveness.

Limitation of NNMB are:

- Monitoring is done in only 10 States
- Not all States have been covered in all monitoring rounds;
- Monitoring rounds have not been done every year.
- There have been changes in sampling design and coverage over the years.

4.3.156 The National Nutrition Monitoring Bureau (NNMB) has been undertaking surveys on dietary intake (household and individual) and nutritional status of the population on a continuing basis since 1972 in nine major States (Andhra Pradesh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh, West Bengal); Orissa has been included in 1977.

4.3.157 The National Nutrition Policy envisages that the Nutrition monitoring will be extended throughout the country and the Central Reference Laboratory of NNMB situated in National Institute of Nutrition will assist the Deptt. Of Women & Child Development in this process.

4.3.158 India is currently undergoing demographic, economic, social, educational, agricultural and health transition. These factors individually and collectively can bring about substantial alteration in health and nutritional status of the population. Several programmes have been initiated to combat these problems. In this context it becomes imperative that the existing mechanisms for monitoring and midcourse corrections are further strengthened, streamlined and utilized effectively.

4.3.159 Currently, the agricultural production (Deptt. of Agriculture), economic indices including expenditure on food (NSSO), demographic and health indices (SRS) are monitored on an yearly basis throughout the country. NSSO surveys on consumer expenditure provides information on expenditure on food and quantity of food consumption at household level. But NSSO does not provide information on intrafamilial distribution of food in the household. NNMB carries out nutrition surveys, monitors dietary intake including intrafamilial distribution of food and assessment of nutritional status but this is done only in ten states. There is at present no mechanism for continuous monitoring of nutritional status in the rest of the States.

4.3.160 During the Ninth Plan efforts will be made to extend Nutritional Monitoring on yearly basis throughout the country. Appropriate agencies/ institutions, which could undertake nutritional survey with good quality control and ensure rapid, cost effective coverage will be identified in States, which have not been covered as yet. The sampling frame may be modified and improved through coordination with NSSO. The Central Reference Laboratory of NNMB will continue to be the focal point for training of personnel and quality control. Mechanisms for data collection, analysis and reporting will be strengthened so that updated information is available on yearly basis which could be utilised for planning intervention, monitoring of progress of ongoing interventions and effecting midcourse correction.

Research:

4.3.161 India is one of the pioneers in Nutrition research not only in the Asian region but also in the world. Several research institutions and Universities are carrying out the research studies with assistance from Ministries and research funding agencies such as ICAR, ICMR, CSIR, DBT and DST. Basic, clinical, applied and operational research studies carried out in the country have identified major nutritional problems in the country, their aetiology, appropriate remedial and preventive measures to tackle the problem and the modalities of effectively operationalising the intervention programme at the regional and national level. Initially the focus of research was on deficiency diseases and chronic energy deficiency -

health hazards associated with them, methods for detection, treatment and prevention. It is noteworthy that the major intervention programmes such as food supplementation programmes, anaemia prophylaxis programme, massive dose vit A supplementation programme have all been initiated on the basis of research work carried out in the country. During the last two decades responding to the changing spectrum of nutrition related disorders, research studies on food and drug toxins and nutritional risk factors associated with noncommunicable diseases have been initiated.

4.3.162 During the Ninth Plan period basic, clinical, applied operational and socio - behavioral research in Nutrition will continue to receive priority attention so that the country can effectively and rapidly tackle the nutritional and associated health problems. Net working of the research institutions and universities carrying out research studies in Nutrition will be attempted, so that there is no unnecessary duplication of efforts and the available resources are fully utilised.

Priority areas for Research in Nutrition include:

- Micronutrient deficiencies
- Nutrition-fertility, nutrition-infection interaction
- Changing dietary habits and lifestyles
- Obesity-noncommunicable diseases
- Increasing longevity-nutritional implications
- Nutrition and environment
- Socio-behavioural research-lifestyle modifications
- Evolving & testing better tools for assessment of nutritional status
- Operational research to improve on-going programmes

4.3.163 Among priority areas of research to be carried out during the Ninth Plan period are:

1. Research studies on major micronutrient deficiencies with special emphasis on prevention, speedy control, and effective management
2. Changing nutrition- fertility and nutrition - infection interactions and their implications to health and nutritional problems; evolving and testing appropriate intervention strategies;
3. Changing dietary habit and lifestyle and their impact on nutritional status especially obesity and micronutrient deficiencies.
4. Increasing longevity and changing lifestyles - their impact on nutrition and risk of non-communicable diseases.
5. Nutrition-environment interactions and their health implications.
6. Improvement in the methods of assessment of nutritional status of the individual and the community.
7. Studies on determinants of nutritional status under varying conditions and effective modification of the adverse influences.
8. Operational and socio-behavioural research to improve performance of the ongoing interventions.

Funding

4.3.164 Food Supplementation costs under the ICDS scheme is borne by the State Governments; the infrastructural costs are borne by the Department of Women and Child Development. The Mid-Day Meal Programme costs are borne by the Department of Education. The Anaemia Prophylaxis Programme and Massive Dose Vitamin A Programme are funded by the Department of Family Welfare and the Department of Health provides the funds for Health Component of Iodine Deficiency Disorder Control Programme. It is obvious that different Departments are funding different programmes for improvement of nutritional status of the population. Different departments will continue to fund these ongoing nutrition programmes during the Ninth Plan period. The funding for infrastructure for the ICDS will continue to be borne by the Deptt of Women and Child Development and the state Govt continue to provide funds for food Supplementation.

4.3.165 During the Ninth Plan efforts will have to be made by the States to improve regularity of supply of food to ICDS centres and improve the availability of food supplements to the most needy by identifying 'at risk' individuals and families, providing food supplements to them on priority basis and monitoring their improvement. Better targeting, reducing the wastage, building up of the mechanisms for identification and provision of supplements according to the needs, participation of the Panchyati Raj /Nagar Palikas and the people themselves in the ongoing efforts to improve their nutritional status are some of the mechanisms through which more effective utilisation of available resources will be ensured during the Ninth Plan.

4.3.166 It is expected that with funds made available by the States, Centre and EAPs it will be possible to universalise food supplementation component of the ICDS, improve the quality and coverage of the programmes so that the country will quickly move towards achievement of the nutrition and health goals specified in the National Nutrition Policy; however it may not be possible to achieve all the goals with in the Ninth Plan period. During the Tenth plan period, further efforts will be made to rapidly bridge the existing gaps. It is anticipated that accelerated economic development, improvement in employment generation, rise in Gross Domestic Product and per capita income will make it possible both for the country and for the individual to invest more in nutrition and health and achieve substantial improvement in both.

CHAPTER 5

INDUSTRY AND MINERALS

(including Village, Small, Cottage, Agro and Food Processing Industries)

Introduction

5.1 Fullfledged liberalisation, no doubt, started in 1991. But in the industrial sector, the Seventh Plan witnessed the commencement of liberalisation of policy measures in 1985 itself. The major ones were: delicensing of non-MRTP, non-FERA companies for 31 industry groups and MRTP/FERA companies in backward areas for 72 industry groups; raising the assets limit for exemption of companies from the purview of MRTP Act; exempting 83 industries under the MRTP Act for entry of dominant industries, etc. Some other changes were also made in the areas of licensing and procedures, import of technology, import of capital goods, allowing broad banding of products in a number of industries, etc. The Government also took some major decisions regarding the public sector reforms e.g. limiting the role of the public sector to strategic, hi-tech and essential infrastructure areas and gradually withdrawing from other areas. The Sick Industrial Companies Act (SICA) was extended to public enterprises in 1993 enabling sick public sector enterprises to be referred to the Board for Industrial & Financial Reconstruction (BIFR). Partial disinvestment was introduced in order to encourage wider public participation and a greater public accountability. Other reforms were also announced, such as professionalisation of the Boards of Directors of the public sector enterprises and evaluation of performance through Memoranda of Understanding (MOUs). These liberalisation measures and improvements in the infrastructure sector viz power, coal, etc., contributed to a significant growth in industrial production during the Seventh Plan period.

Review Of Policy Reforms and Major Initiatives

5.2 With the announcement of a new industrial policy in July 1991, a more comprehensive phase of policy reforms was ushered in with a view to consolidating the gains already achieved in the Seventh Plan and providing greater competitive stimulus to the domestic industry. This was followed by a series of reforms introduced in the fiscal, trade and foreign investment policies. With these reforms, the Indian economy in general, and industry in particular, was freed from controls and opened to international competition for integration of Indian economy with the world economy. The policy reforms continued through the Eighth Plan period and even subsequently.

5.3 A number of policy initiatives were undertaken during the Eighth Plan. The thrust of the new industrial policy was on substantial reduction in the scope of industrial licensing, simplification of procedures, rules and regulations, reforms in the Monopolies and Restrictive Trade Practices (MRTP) Act, reduction of areas reserved exclusively for the public sector, disinvestment of equity of selected public sector enterprises (PSEs), enhancing limits of foreign equity participation in domestic industrial undertakings, liberalisation of trade and exchange rate policies, rationalisation and reduction of customs and excise duties and personal and corporate income taxes, extension of the scope of MODVAT etc. The basic objectives are to promote growth, increase efficiency and international competitiveness.

5.4 The number of industries requiring industrial licences was gradually reduced to 14 by the end of the Eighth Plan; this has since been reduced to six. Only four industries are now reserved for public sector. Separate policy measures were announced for Export Oriented

Industrial Policy Reforms and major Initiatives

- Number of industries requiring industrial licenses reduced to 6
Only 4 industries reserved for Public sector
- Foreign direct investment policy liberalised
- Disinvestment Commission constituted for preparing an overall long term disinvestment programme for PSEs referred to it and the modalities for disinvestment.
- Sick Industrial Companies Act (SICA), 1985 amended to bring PSEs within the ambit of SICA, 1985 and BIFR
- National Renewal Fund set up to protect the interest of workers likely to be affected due to restructuring or closure of industrial units
- Growth Centres Scheme taken up to develop infrastructure in backward areas to promote industrialisation
- To promote development of specific hilly, remote and inaccessible areas, Transport subsidy scheme extended till March, 2000
- Drugs Price Control Order amended to give freedom to private sector including fixation of drug prices Number of drugs under price control reduced from 143 to 72
- New National Minerals Policy announced opening Mining industry to private sector including 50 percent foreign equity in 13 minerals
- Technology Development Board set up to facilitate development of new technologies and assimilation of imported technologies

Units/Export Processing Zones and Technology Parks. Foreign Direct Investment Policy was further liberalised. In July 1996, a new list of nine industries was approved, where joint ventures upto 74 per cent of foreign equity would be cleared automatically in sectors like infrastructure, non-conventional energy, electronics, software and sectors having a significant export potential. The list of industries eligible for automatic approval upto 51 per cent foreign equity was also expanded from 35 to 48. Trade liberalisation has reduced effective protection to import substitution activities and encouraged export oriented activities based on comparative advantage. Thus, the policy initiatives

have focussed on changing the basic orientation of industry from inward looking to outward orientation and closer linkage with the global economy. Highlights of policy reforms and major initiatives in the Eighth Plan are indicated in Box.

5.5 The Industrial Policy statement, 1991 envisaged disinvestment of a part of the Government holding in the share capital of selected public sector enterprises. The disinvestment of Government-owned equity constitutes a major step for improving the performance of PSEs, increasing public accountability and broad basing their management and ownership. A programme of partial disinvestment in public enterprises has been set in motion. In order to suggest modalities of disinvestment of PSEs, Disinvestment Commission was constituted in August, 1996. The Government had referred 43 PSEs to the Commission upto March 31, 1998. The Commission has since submitted eight Reports covering all the 43 PSEs. The Commission has recommended varying levels of disinvestment in some of the PSEs and strategic sale/trade, sale/closure and sale of assets in some of these PSEs. Some of its general recommendations relate to corporate governance of PSEs, professionalisation of management, setting up of a Disinvestment Fund, restructuring of PSEs, greater autonomy to PSEs, etc.

MAJOR RECOMMENDATIONS OF THE DISINVESTMENT COMMISSION

- Disinvestment Commission constituted for preparing an overall long term disinvestment programme for PSEs referred to it, and the modalities for disinvestment.
- Eight reports covering forty three PSEs submitted till August 1998. Three more PSEs have been referred to the Commission subsequently.
- The Commission has recommended disinvestment at varying levels for 11 PSEs.
- Strategic sales in various proportions have been recommended for 19 enterprises.
- Deferment of disinvestment has been recommended for eight enterprises.
- No disinvestment has been recommended for one enterprise.
- The Commission has also made a number of general recommendations regarding establishment of Disinvestment Fund, delinking the disinvestment process from the budgetary exercise, reduction of Government equity, Voluntary Retirement Scheme, delegation of autonomy to PSEs, etc.

5.6 In pursuance of these recommendations of the Commission, the Government has decided to disinvest its equity at different levels in GAIL, IOC, MTNL, CONCOR, ITDC, Modern Food Industries Ltd and VSNL. The other enterprise specific recommendations of the Commission are at various stages of examination/ implementation.

5.7 The Sick Industrial Companies Act (SICA), 1985 was amended in 1993 to bring the Public Sector Enterprises also within the ambit of the Board of Industrial and Financial Reconstruction (BIFR). Since its inception in May, 1987, 3148 references have been registered with BIFR upto

March 31, 1998 under the Sick Industrial Companies Act (SICA) 1985 both in respect of private companies and public sector undertakings. The BIFR has approved/sanctioned 625 rehabilitation schemes and has recommended winding up in 579 cases. As many as 202 companies, including four PSEs, have been declared "no longer sick" on successful completion of the rehabilitation schemes sanctioned by the BIFR.

5.8 The National Renewal Fund (NRF) was announced by the Govt. of India, as a part of the new Industrial Policy, 1991 and was established on February 03, 1992 to protect the interests of the workers likely to be affected by technological upgradation and modernisation in the Indian industry. The aim of the NRF is to provide a social safety-net for labour. The Fund, to begin with, is of a non-statutory nature and may include contributions from, inter-alia, the Government of India, State Governments, financial institutions, insurance companies and industrial undertakings. The major objectives of the Fund include providing assistance to cover the costs of re-training and re-deployment of employees arising out of industrial restructuring, providing funds, wherever necessary, for compensation of employees affected by restructuring or closure of industrial units both in the public and private sectors and providing funds for employment generation schemes both in the organised and unorganised sectors. At present there are two approved schemes under NRF, namely, implementation of Voluntary Retirement Scheme (VRS) for central public sector undertakings and re-training scheme for rationalised workers in organised sector. A total of 2,17,489 workers had availed of the VRS as on 31.08.1997. The NRF has been strengthened with the setting up of Employee Resource Centres (ERC)/Employee Assistance Centres (EAC). Nearly 65,000 workers have been covered by the Employee Assistance Centres and as on 31.03.1997, 64,360 number of workers have been surveyed,

31,714 counselled, 23,946 re-trained and 6,273 re-deployed. The EAC network has been extended to additional locations where there is a substantial work outflow and presently, the scheme has a coverage of 49 locations spread over 16 States through 13 nodal agencies.

5.9 For promoting industrialisation of backward areas in an effective manner by way of developing the infrastructure, a Centrally sponsored scheme of Growth Centres was taken up during the Eighth Plan. As against the target of setting up 71 Growth Centres in all the States/Union Territories during the Eighth Plan period, 66 Growth Centres had been approved till 31st March, 1998. Work on the setting up of these Centres is in progress. A sum of Rs 253.75 crore was released as Central assistance for the approved Centres upto 31st March, 1998.

5.10 To promote industrialisation of specific hilly, remote and inaccessible areas such as Jammu & Kashmir, Himachal Pradesh, Sikkim, North-Eastern States, Andaman and Nicobar Islands, Lakshadweep, eight hill districts of Uttar Pradesh and Darjeeling district of West Bengal, the Government of India has extended the Transport Subsidy Scheme till 31st March, 2000. Since the inception of the scheme in 1971, a sum of Rs.360.77 crore had been re-imbursed by the Government of India till 31st March, 1998 as transport subsidy to States/Union Territories.

5.11 A new Drug Policy was announced in 1994 and Drug Price Control Order 1986 was amended in 1995 with the objective of giving more freedom to the private sector including fixing of prices of drugs. The number of drugs under price control was reduced from 143 to 72.

5.12 The Government announced a new National Mineral Policy in 1993 for non-fuel and non-atomic minerals and also further amended the Mines & Minerals (Regulation & Development) Act 1957 under which the mining industry was opened to private sector for 13 minerals, including direct foreign investment up to 50 per cent equity participation. Beyond this limit approvals would be given on case by case basis. The other important objective of the new National Mineral Policy is to give more powers to the States for mineral development. The mineral concession rules and procedures have also been simplified for the benefit of investors.

5.13 A number of initiatives were taken under the new R&D policy for strengthening technological capabilities of the Indian industries. A Technology Development Board was established in 1996 with the mandate to facilitate development of new technologies and assimilation and adaptation of imported technologies by providing catalytic support to industries and R&D institutions to work in partnership. A system of matching grants to R&D institutions showing commercial earnings through technology services was introduced in 1996.

5.14 The Prime Minister's Rozgar Yojana (PMRY) was launched on 2nd October, 1993. Under this scheme, self-employment opportunities to educated unemployed youths, both rural as well as urban, are being provided with financial assistance from banks/financial institutions upto Rs. 1 lakh, with a subsidy of 15 per cent of the project/venture cost, subject to a maximum of Rs.7,500, without collateral guarantee. During 1993-94, 31,800 beneficiaries were provided financial assistance by the banks. The number of loans sanctioned were 1,94,292 in 1994-95, 2,99,265 in 1995-96 and 2,18,327 in 1996-97. During 1997-98 and 1998-99 (upto September 1998) the number of loans sanctioned were 2,64,696 and 32,840 respectively.

5.15 With the aim of reducing the backlog of unemployment, a High Powered Committee (HPC) under the chairmanship of the then Prime Minister recommended in 1994-95, the creation of two million new job opportunities under the Khadi & Village Industries (KVI) sector during the remaining period of the Eighth Plan. The KVIC is implementing this programme at an estimated cost of Rs.5,600 crore, with one-third as budgetary support and the balance through loans from commercial banks.

5.16 A number of measures have been initiated for promoting the growth and development of the food processing sector. These include:

- (a) Deregulation of the food processing industry except for beer and alcohol
- (b) Allowing foreign equity investment and automatic approval upto 51 per cent foreign equity in high priority industries including food processing industries
- (c) Delicensing of almost all food products excepting brewing and distillation of alcoholic beverages and items reserved for small scale industries
- (d) Making foreign technology import procedures, agreements, etc. easier.

Performance of Industrial Sector

5.17 The industrial sector recorded an average annual compound growth rate of 4.6 per cent from 1970-71 to 1979-80 and 6.6 per cent from 1980-81 to 1989-90 (at constant prices). It achieved a high growth rate of 8.5 per cent in the Seventh Plan (1986-86 to 1989-90). The main reason for the good performance was starting of the liberalisation process and a number of policy measures taken during the Plan period, inter-alia, including changes in the areas of licensing and procedures, import of technology, import of capital goods coupled with a reasonable rate of public investment and almost total protection to domestic industries from international competition through quantitative restrictions on imports as well as high tariff rates.

5.18 The Eighth Plan started in the backdrop of an impressive industrial growth during 1970s and 1980. Though the average annual growth rate of the industrial sector including mining, manufacturing and electricity generation during the Seventh Plan and the Annual Plan 1990-91 was 8.5 per cent, it was followed by a recession in the year 1990-91 when the average industrial growth rate achieved was just 0.6 per cent. Even so, the growth rate achieved during the Eighth Plan was encouraging as may be observed from Table 5.1.

Table 5.1
Sector-wise Growth Rates in Eighth Plan

Year	Manufacturing	Mining	Electricity	General
Eighth Plan target	7.30	8.00	7.80	7.4
1992-93	2.18	0.53	5.02	2.3
1993-94	6.07	3.50	7.45	6.0
1994-95	9.80	7.47	8.48	9.4
1995-96	13.00	7.07	8.17	12.1
1996-97	8.00	1.20	3.80	6.8
Overall 8 th Plan	7.80	3.80	6.50	7.3

5.19. The overall rate of industrial growth gradually increased from 2.3 per cent in 1992-93 to 6.0 per cent in 1993-94, 9.4 per cent in 1994-95 and 12.1 per cent in 1995-96. However, in 1996-97 it slumped to 7.1 per cent resulting in an average growth rate of 7.3 per cent - against a target of 7.4 per cent - during the Eighth Plan period. While manufacturing

Code- Group	Industry Group	Weight	% Growth	
			Seventh Plan Average	Eighth Plan Average
1.	2.	3.	4.	5.
20-21	Food Products	5.327	5.0	3
22	Beverage, Tobacco & Tobacco products.	1.571	-1.1	11
23	Cotton Textiles.	12.309	1.8	4
24	Jute, Hemp & Mesta Textiles.	1.999	-0.3	0
25	Textile products. (incl. wearing apparel)	0.817	11.8	0
26	Wood & Wood products & Furniture & Fixtures.	0.448	-2.5	4
27	Paper & Paper products.	3.235	6.7	9
28	Manufacture of Leather & Fur products.	0.489	6.4	5
29	Manufacture of Rubber Plastic, Petroleum & Coal Products.	4.000	3.6	3
30	Manufacture of Chemicals & Chemical Products.	12.513	11.7	7
31	Manufacture of Non-metallic Minerals.	2.299	6.7	6
32	Basic Metals & Alloy industries.	9.802	6.1	10
33	Metal Products & Parts.	2.888	6.3	5
34	Machinery, Machine tools & parts.	6.240	6.0	6
35	Manufacture of Electrical Machinery.	5.779	25.8	8
36	Manufacture of Transport Equipment & parts.	6.386	6.5	13
37	Miscellaneous Manufacturing Industries	0.905	23.1	1
2-3	Manufacturing.	77.107	8.9	7
1	Mining & Quarrying	11.464	5.6	3
4	Electricity	11.429	9.3	6
Overall index of industrial production.		100.000	8.5	7.3

maintained an upward trend in growth from 1992-93 to 1995-96, mining and electricity generation maintained upward trend in growth only upto 1994-95 and declined thereafter. The year 1996-97 witnessed lower growth in all the sub-sectors of industry compared to previous years. On the whole, the annual growth rates in the Eighth Plan have been lower than those in the Seventh Plan in all the three sectors of industrial activity though the growth rate in the manufacturing sector has been higher than targeted.

5.20 The Table 5.2 shows the average annual rate of growth recorded in industry groups at the two digit level during the Seventh and Eighth Plan periods.

5.21 The group-wise industrial growth rates indicate that Food Products, manufacture of chemicals and chemicals products, manufacture of electrical machinery and miscellaneous manufacturing industries recorded significantly lower growth rate during the Eighth Plan period than in the Seventh Plan. However, beverages, tobacco & tobacco products, cotton textiles, paper and paper products, basic metals and alloy industries, manufacture of transport equipment and parts achieved higher growth rates.

5.22 The most important reason for the lower growth rates during the Eighth Plan period as compared to the Seventh Plan period seems to be that the industrial sector, which had been almost totally protected from both internal as well as external competition during the previous four decades, was suddenly exposed to foreign competition through a significant liberalisation of imports and a drastic reduction in import duties. The industry was hardly prepared for it and the slow-down was only to be expected as is reflected in the very low growth rates realised in the first two years of the Eighth Plan. By far, the worst affected was the capital goods sector. First, the user sectors now had the option of importing the most modern capital goods and equipment which was often not available indigenously and which was imperative for enabling these sectors to modernise themselves and thus be in a position to meet the challenge of opening up of the economy. Second, with a progressive reduction in import duties, many of the user sectors preferred to adopt a 'wait and watch' policy and postponed their investment plans. The capital goods sector with a weight of 16.4 percent in the Index of Industrial Production (IIP), recorded growth rates of (-)12.8 percent, (-)0.1 percent and (-)4.1 percent in 1991-92, 1992-93 and 1993-94 respectively. The capital goods sector took a number of steps like import of drawings and designs and upgradation of technology to meet this challenge assisted by a resumption of investment in a number of sectors, the capital goods sector was able to achieve a phenomenal growth of 24.8 per cent in 1994-95 and 17.8 per cent in 1995-96.

5.23 A number of industries were not able to meet external competition due to a variety of reasons, an important one being their historical background. For example, the development of copper industry in the country was taken up on strategic considerations even though the quality of domestic ore is very poor by international standards. The substantial import duty reduction effected in the last few years has been accompanied by a drastic fall in international prices of copper resulting in the only producer viz Hindustan Copper Ltd cutting down its production, incurring severe losses and not being in a position to make even essential renewals and replacements. The paper industry was unable to meet external competition, reasons for the same being non-availability of captive plantations to the industry. In the hydrocarbon sector also, a number of petroleum intermediates were imported while the domestic capacity languished. A number of commodities faced the problem of dumping. The machinery for investigation of dumping was not adequate to deal with the increasing number of cases.

5.24 A major reason for the slow-down of growth rate in the recent past has been the slow down of investment. As is well known, the pace of public investment came down rather significantly. The Government efforts to control the fiscal deficit resulted in a substantial decrease in the Plan expenditure which, coupled with a larger proportion of Plan investment going to sectors like rural development, poverty alleviation and other social sectors, considerably reduced the public investment. The rate of private investment also came down drastically due to (i) the

capital market being in a bad shape, (ii) high cost of borrowings, and (iii) introduction of Minimum Alternate Tax (MAT). With considerable freedom being granted to the private sector in the pricing of issues, a large number of companies came into the market with unduly high rates of premium. Besides, some of the other steps taken by the Government, i.e. the changes in Badla system, affected investors' confidence adversely. As a result, even good companies were not able to raise funds from the capital market. With very high rates of interest prevailing in the market during the last couple of years, public limited companies have been in no position to come up with viable proposals and raise funds from any source.

5.25 Inadequate availability of infrastructure like power and transportation bottlenecks, inadequate handling facilities at ports, also affected industrial production. More importantly, the quality of infrastructure e.g. frequent interruptions of power, and unduly long handling times at ports added to the real costs of manufacture and thus affected competitiveness of the domestic industry. The addition to power capacity in the Eighth Plan was less than

CAIPITAL GOODS (C.G.) INDUSTRY	
<ul style="list-style-type: none"> • Worst affected sector of industry. • Average Capacity Utilization down to 50 percent in 1996-97 and likely to further drop to 35-40 percent. • Decline / drying up of Order Book position mainly due to lack of adequate Investments in Infrastructure sector. • Zero Duty Imports of Capital Goods by Fertilizer, Refinery Sector and Specified Goods required for Petroleum operations undertaken under contract entered into by Government with Indian or Foreign Companies. • Fear of Extension of Zero Duty to other Sectors. • Prevailing Inverted Duty / distorted Custom Duty Structure in case of many Items. • Continued import of second hand machinery. • Non-availability of matching export credit with easy repayment facilities as offered by competitors abroad. 	

in the Seventh Plan even in absolute terms. With electricity generation having a weight of 11.43 percent in the index of industrial production, a low rate of growth of electricity generation also depressed the growth rate of industrial production. Second-hand machinery and large-scale imports of basic materials and intermediate goods and components due to anomalies in the tariff structure, uneconomic scales of domestic production in a number of cases and the inability of domestic industry to meet external competition by ensuring quality products, keeping to delivery schedule, etc., depressed industrial production. There was also low value-addition within the country, particularly in high growth sectors like automobiles and electronics due to increase in import of components and intermediates to a considerable extent. There were also a number of anomalies in the tariff structure such as in the case of fertilizer sector and refineries, where the finished capital goods enjoyed 'zero' rate of import duty but the domestic manufacturers were subject to taxes and duties and import duties on intermediates and components.

5.26 This analysis of the industrial growth during the Eighth Five Year Plan is based on the Index of Industrial Production 1980-81. In May 1998, the Central Statistical Organisation revised the base year to 1993-94; a revised series of indices for the period April 1994 to October 1997 has been brought out, taking into account the changes in the industrial structure during this period; with these changes, there has been a slight change in the yearly industrial growth rates since 1994-95. A comparative position of the industrial growth rates based on 1980-81 and 1993-94 series is shown in Table 5.3.

Table 5.3
Industrial Growth Rate (%)

	Base 1980-81	Base 1993-94
1994-95	9.4	8.4
1995-96	12.1	12.7
1996-97	7.1	5.6
1997-98	4.6	5.8

Similarly, there has been some change in the growth rates in mining, manufacturing and electricity sub-sectors.

5.27 The growth in exports has been quite encouraging, especially in the initial years of the Eighth Plan. An average annual compound growth rate of 13.1 per cent in dollar terms is estimated to have been achieved in the Eighth Plan as against the target of 13.6 per cent. Against the export target of US \$ 33.5 billion for the terminal year of the Eighth Plan, the exports in 1996-97 were valued at US \$ 33.1 billion. There has, however, been a slow-down in the export growth rate in the recent past due to a slow-down in international trade, melt-down of currencies of a number of South-East Asian countries and various non-tariff barriers being raised by many countries e.g. the ban on use of azo dyes, inflammability test on skirts in U.S.A., alleged use of child labour in carpet making, etc.

5.28 The number of Industrial Entrepreneurs Memoranda (IEM) and Letters of Intent (LOI) filed from 1991 to December, 1996 totalled 31,157 with overall investment intention of Rs.6,34,760 crore and estimated employment of 5.7 million. There has been a substantial growth in the assistance disbursed by the all-India financial institutions during this period. Foreign firms and Multi-National Corporations (MNCs) were showing keen interest in investing in India. The total number of foreign collaborations during 1991-1996 were 10,041 of which 5,434 proposals involved foreign direct investment (FDI) amounting to Rs.78,030 crore. Besides, more than 75 per cent of these foreign investments are in the priority sectors of core and infrastructure industries, capital goods and services. The actual inflow was around Rs.32,642 crore during this period.

5.29 The village & small industries (VSI) sector has been growing at the rate of about two to three percentage points higher than the large and medium industries sector. Today, it contributes more than 40 per cent of value-added in the manufacturing sector and 80 per cent of total employment in the industries sector. Its contribution to exports is significant and accounts for more than 40 per cent (both direct and indirect). The food processing industry has also recorded a good growth during the Eighth Plan period.

5.30 The implementation of the Prime Minister's Rozgar Yojana (PMRY) has been quite satisfactory but the implementation of the two million jobs programme of the KVIC has been unsatisfactory due to initial teething troubles and non-utilisation of credit from the consortia of

banks by the KVIC and the States' Khadi and Village Industries Boards (KVIBs). During 1995-96, new jobs created under this programme were 1.5 lakh against the target of three lakh. The targets for 1996-97 and 1997-98 were kept at 3.5 lakh and 5.5 lakh respectively. In order to step up the pace of implementation, the KVIC is taking steps like (i) setting up of project appraisal cells (ii) adoption of project approach, (iii) formulation of bankable project profiles for the village industries sub-sector, (iv) laying more emphasis on creation of new jobs, (v) setting up of national projects in areas of leather, bee-keeping, food processing and (vi) implementing margin money scheme for village industries by involving nationalised banks intensively.

Performance of the Central Public Sector Enterprises

5.31 As on 31st March 1997, there were 242 Central public sector enterprises (PSEs) owned by the Government Of India with a total investment of Rs. 1,93,121 crore. Out of these, 238 were operational enterprises with an investment of Rs. 1,89,141 crore and employees' strength of 20 lakh. Of these, 129 were profit-making and 104 were loss-making enterprises, 3 PSEs were neither making loss nor profit and six had not commenced operation. The profitability profile of the PSEs over the last decade is detailed in Statement-5.1.

5.32 For improving the performance of the PSEs a number of measures were taken during the Eighth Plan. The portfolio of public sector investments is continually reviewed with a view

Public Sector Reforms

Greater operational autonomy and delegation of Powers granted to profit making Public Sector Enterprises (PSEs) in terms of:-

- incurring capital expenditure.
- establishing joint ventures and subsidiaries for strategic alliances
- restructuring and implementation of schemes for HRD subject to meeting the eligibility criteria and other guidelines.

Induction of professionals on the Boards of PSEs.

PSEs brought within the ambit of Sick Industrial Companies Act (SICA), 1985 and Board for Industrial & Financial Reconstruction (BIFR).

Concept of Navratnas & Mini-ratnas

Disinvestment of PSEs.

to focussing the public sector on strategic, hi-tech and essential infrastructure and opening other areas selectively to the private sector. The Sick Industrial Companies Act, 1985 was amended for enabling referral of sick PSEs to BIFR for their revival/rehabilitation or closure as the case may be. A social security mechanism was created to protect the interests of the workers likely to be affected in the revival process. A part of the Government equity was disinvested for encouraging wider public participation and developing market-driven accountability. The Boards of Directors of PSEs were given more powers particularly for investment decisions and were made more professional. A system of Memorandum of Understanding (MOUs) was introduced to provide the managements of the PSEs with more autonomy and accountability. The Concept of Navratnas and Mini-Ratnas for giving autonomy to PSEs was also introduced.

5.33. In general, the PSEs have responded well to the challenges of globalisation and the opening up of the economy. However, there have been some major problems. The mobilisation of internal and extra budgetary resources by the PSEs has been well below the level projected in the Eighth Plan Coupled with the severe constraint in budgetary support that could be provided to the PSEs, this has led to a slow-down in investments and growth plans of the PSEs. This has also affected their plans for expansion, modernisation, upgradation of technology, diversification, etc. and thus their competitiveness.

State Level Public Enterprises

5.34 According to a survey carried out by the Institute of Public Enterprises, Hyderabad, (based on a little more than 50 per cent response), there were 885 State-level public enterprises (SLPEs), as on 31.3.1994, with an estimated investment of about Rs.31,848 crore. Number-wise, the maximum concentration of State-level public enterprises is in Kerala (104 units) followed by U.P. (74 units), Karnataka and Tamil Nadu (68 units each), Andhra Pradesh (59 units), Bihar (50 units), Gujarat (45 units), Maharashtra, Orissa and Rajasthan (43 units each). Tripura has the minimum number of units (two units).

5.35 Out of the total investment of Rs.31,848 crore, the maximum is in Maharashtra (Rs.7,069 crore) followed by Gujarat (Rs.4,473 crore), Andhra Pradesh (Rs.4,178 crore) and Karnataka (Rs.3,934 crore). At the bottom of the list is Mizoram with an investment of only Rs.4.56 crore (as on 31.3.1993).

5.36 There were 137 continuously profit-making SLPEs with Gujarat and U.P. (13 enterprises each), heading the list followed by Maharashtra (11 enterprises), Haryana, Karnataka and Punjab (nine enterprises each), Rajasthan (eight enterprises); and at the bottom of the list were Jammu & Kashmir (one unit) Meghalaya (two units) and Bihar (three units).

5.37 There were 41 continuously loss-making SLPEs with Kerala heading the list (eight units), followed by U.P. (five units), Assam, Maharashtra and Orissa (four units each). Andhra Pradesh, Bihar, Gujarat, Meghalaya, Punjab, Rajasthan, Tamil Nadu had one unit each in this category.

5.38 As many as 159 enterprises have shown mixed performance with Kerala and Karnataka leading the list (19 units each), followed by Maharashtra, Andhra Pradesh and Punjab (13 units each), Goa (12 units), U.P. and Haryana (10 units each), Orissa and Tamil Nadu (eight units each), Rajasthan (seven units), West Bengal (six units), and Himachal Pradesh (five units). At the bottom of the list are Tripura & M.P. (one unit each), Arunachal Pradesh, Bihar, Jammu & Kashmir, Manipur, Meghalaya (two units each), and Assam (four units).

5.39 The reasons for the industrial sickness of the SLPEs have been numerous and varied. The product mix or the range of services provided by these enterprises, the existence of a poor marketing organisation, cost structure of the enterprises were some of the important factors. The business culture in these enterprises also contributed in a substantial measure to their bad performance. Most of these enterprises are in the commercial sector and are engaged in the manufacture of scooters, textiles, electronics, power generating devices, detergents and chemicals, plywood products, rubber products, engineering goods, drugs & pharmaceuticals, etc.

5.40 All the states, by and large, have initiated reforms of their SLPEs. The central purpose of these reforms is to cut down public spending either to reduce the budgetary deficits by reducing budgetary support or to increase allocative efficiency. Efforts are also afoot to restructure as well as privatise the SLPEs which began in the late 1980s when the Auto Division of Hyderabad-based Allwyn Ltd. was hived off and handed over to Mahindra & Mahindra Ltd. and the Refrigerator Division was privatised with the sale of its assets to Voltas in 1994.

5.41 Some progress has been reported in the privatisation drive in the SLPEs. A number of SLPEs have been privatised in Goa. In Gujarat, the State Government had asked the Gujarat State Finance Commission to conduct a detailed exercise on privatisation of the SLPEs. The Commission made several recommendations on disinvestment and privatisation of the SLPEs and many companies have been identified for privatisation which include Gujarat Insecticides Ltd., Gujarat State Seeds Corporation, Gujarat State Handicrafts Corporation, Gujarat Maritime Board, Gujarat Agro Industries Corporation, Gujarat Industrial Development Corporation, Gujarat Small Industries Development Corporation, etc.

5.42 Haryana has made rapid strides towards privatisation. It has won remarkable appreciation on account of transparency in various transactions adopted in the entire process of restructuring its public enterprises. Haryana Concast Ltd. and Haryana Breweries, two large public enterprises have been privatised.

5.43 The Karnataka and Kerala Governments have drawn up ambitious programmes to privatise their public enterprises, particularly the loss-making ones. Some of the units listed for privatisation in Karnataka include Karnataka Telecom Ltd. and Karnataka State Electronics Development Corporation Ltd. Kerala has identified enterprises for privatisation such as Kerala Minerals & Metals Ltd., Trivandrum Rubber Works Ltd., Scooters Kerala Ltd., Kerala State Salicylates & Chemicals Ltd., etc.

5.44 The Maharashtra Government has decided to privatise State Industrial Corporation of Maharashtra (SICOM) and Maharashtra Tourism Development Corporation. It has also developed one of the best voluntary retirement schemes in the country.

5.45 The Government of Orissa has taken some very meaningful measures in the direction of privatisation of its public enterprises. The SLPEs have been transferred to the private sector on the basis of outright sale, lease and management contracts. The Charge Chrome Division of Orissa Mining Corporation was sold to Tata Iron & Steel Company in 1991. The Baramba Cooperative Sugar Mills was handed over to Shakti Sugar Management Corporation of Tamil Nadu on management contract in 1991. The Baragarh Cooperative was handed over to Ponni Sugar Management Industry on a management contract in 1991. The East Coast Breweries was leased to United Breweries in 1993.

5.46 There are also similar examples of successful privatisation of State-level public enterprises from other States such as Punjab (three units), Rajasthan (two units privatised and two units closed down), Tamil Nadu (four units under restructuring), U.P. (15 sugar mills, 1 electronics unit and several textile mills have been listed for sale), West Bengal (13 electronic units partly/wholly privatised and 3 units listed for outright sale), Assam (five units listed for privatisation and Ashok Paper Mills has already been leased out on a long term basis to Sanghi

Industries). In Bihar though a large possibility of privatisation exists, performance in this regard has not been satisfactory and no concrete steps have been taken for privatisation of the SLPEs in the State (only one unit, namely, Gavia Corporation was closed in late 1980s in view of its continuing dismal performance). In the North Eastern States, the progress in privatisation is reportedly slow. Meghalaya has, however, privatised the activities of its State Electricity Board.

5.47 Profitability profile of public sector enterprises is given in Statement 5.1

Outlays and Expenditure

5.48 Outlays and actual expenditure for industry and mineral projects in the central sector during the Eighth Plan period are given in Statement-5.2.

5.49 Outlays for Central industrial and mineral projects for the Ninth Plan are given in Statement-5.3 and outlays for States/Union Territories are given in Statement-5.4.

5.50 The production targets for the terminal year of the Ninth Plan (2001-2002) are detailed in Statement-5.5; and indicative targets for village and small industries are given in Statement 5.6.

Outlook and Issues for the Ninth Plan

5.51 There has been a slow-down in the rate of industrial growth in the recent past. There are many reasons for this; these include slow pace of investment especially in infrastructural sectors, lack of demand, inadequate availability and poor quality of infrastructure, global recession leading to slow down in international trade, etc. Taking into account the prevailing environment and the measures taken to improve it, the target for industrial growth in the Ninth Plan has been set at 8.2 percent comprising 8.2 percent in manufacturing, 9.3 percent electricity generation and 7.2 percent in mining.

Areas Needing Attention

Slow Down in the rate of industrial growth in the recent past.
Inadequate availability and poor quality of infrastructure.
Slow down in exports.
Need to review SSI reservation for critical export industries such as toys, garments and leather goods
Need for greater flexibility in labour legislation.
Slow progress of disinvestment of PSEs.
Hundred & four (104) loss-making PSEs; particularly fifty four (54) ironically sick PSEs
Regional imbalances in industrial development.
Unsatisfactory working of BIFR.
Low investment in domestic R&D; weak linkage of R&D with industry.
Simplification or streamlining of procedures at State Governments level, especially elimination of multiple local licensing requirements.
Feed-stock and pricing policy for fertilizers.
Review and modification of various food laws which hamper development of Food Processing Industry
Establishing forward linkages with FPI units in the form of contract farming.
Development of packaging industry with appropriate policy and fiscal measures for increasing exports of processed foods.

5.52 One of the major constraints faced by the industrial sector is inadequate availability of infrastructural support. Further, the poor quality of infrastructure e.g. frequent interruptions in power supply, transportation bottlenecks, communication problems, delays in handling cargo at ports, etc. is adding to the real costs of manufacture and thus affecting the competitiveness of domestic manufacturers and providers of services. These are also affecting exports adversely. Unless the existing infrastructural capabilities are strengthened adequately, the target for industrial growth at 8.2 per cent per annum and for export growth at 11.8 per cent per annum as envisaged in the Ninth Plan would be difficult to achieve. With the opening up of the economy and globalisation, the importance of competitiveness and hence the importance of adequate availability and requisite quality of infrastructure cannot be over emphasised.

5.53 Indian industry has responded reasonably well to the challenge of liberalisation and opening up of the economy. There is a good awareness of the need to modernise and upgrade process technologies; plant and equipment; achieve economies of scale; improve product quality; and devote greater attention to research and development. Such positive responses to the challenges of market forces are resulting in improved competitiveness as well as increased exports. This process of adjustment needs to be continued and broadened. For instance, in the era of a liberalised economic environment, there is little justification for continuing with licensing in the case of coal. In the case of coal, partial delicensing has already been done by allowing captive coal mines for power generation. This process needs to be taken further to its logical conclusion. Delicensing of coal would lead to more efficient mining, greater attention to quality of coal and customer satisfaction and promote healthy development of the sector.

5.54 Sound investment and foreign trade policies play an important role in promoting and sustaining a high rate of growth as well as exports. Foreign direct investment (FDI) enhances technological strengths and economic efficiency of domestic production, besides augmenting domestic resource availability and reducing dependence on external borrowings. It also boosts exports and ensures a smooth and effective transition to a more open economy. The rate of foreign direct investment has started picking up in response to the improved policy environment. However, the country is not yet able to attract foreign direct investment commensurate with its potential. Many of the smaller countries in Asia as well as China are able to attract much larger inflows of foreign investment. It should be possible to achieve foreign direct investment of US \$ 10 billion per annum in the next two to three years. In order to stimulate FDI inflows, the list of industries for which automatic approval upto 51 per cent foreign equity participation has been permitted will be suitably enlarged to cover, among others, mining and exploration services. Besides, this limit will be raised to 74 per cent. Foreign equity participation upto 100 per cent will be considered in selected sectors such as hotels, tourism etc.

5.55 The pace of development of backward areas continues to be a cause for concern. With the doing away of the system of licensing of industries and coming into play of market forces, the industries tend to gravitate towards already developed areas which provide better infrastructure, easier availability of skilled work-force and forward and backward linkages in terms of availability of raw materials and markets for products. Thus, the regional imbalances in industrial development may tend to increase. It is, therefore, imperative to take special measures to promote development of industries in backward areas.

5.56 The Growth Centres Scheme was initiated in the Eighth Plan to tackle the problem of regional imbalances in industrial development. However, the Scheme has not been able to make much headway during the Eighth Plan period and not a single Centre out of the 66 approved had become functional upto 31.3.1998; whereas substantial resources have been thinly spread over a large number of such Growth Centres. It is imperative to prioritise the efforts on the large number of Growth Centres under implementation, so that maximum benefits can be obtained from the investments in these Centres in the shortest possible time. As a rule, work on new Growth Centres should not be taken up. However, an exception would be made in the case of North-Eastern States and in very special cases. It is now proposed to split the Growth Centres in the North-Eastern States into two or more sub-Centres since a large area may not be available at one place; nor will there be enough takers for so many units at one location. Here again, it would be appropriate to concentrate on only one location in each of North-Eastern States and start work on the next sub-Centre only when the work on the first sub-Centre is nearing completion.

5.57 The approved funding pattern of the Growth Centres envisaged a contribution of Rs 10 crore as equity by the Centre, Rs.5 crore as equity by the concerned State, Rs.4 crore, including Rs.2 crore as equity from financial institutions, Rs.1 crore from Nationalised Banks and Rs.10 crore as market borrowings, giving a total of Rs.30 crore per Growth Centre. However, the financial institutions and banks have not been forthcoming to contribute their share even where they have appraised the project reports. Nor has it been possible to raise any worthwhile amounts as market borrowings. Against the Eighth Plan provision of Rs.50 crore by the Central Government for the Growth Centres Scheme as a whole, Rs 178.75 crore were actually provided during the Plan period. A revised financing pattern for the Growth Centres taking into account the problems being faced in the existing financing arrangement and the likely escalation in cost since the scheme was conceived in 1988, would need to be worked out and implemented at the earliest.

5.58 The North Eastern States have continued to remain industrially backward due to isolation of the region from the main centres of trade and industry, inadequate economic and physical infrastructure, small size of the regional market, low accessibility of the market outside the region, lack of entrepreneurs, difficult terrain conditions, etc. The development of the North Eastern Region would need special attention. A special package involving, among others, changes in the funding pattern of the Growth Centres and integrated infrastructure development centres, extension of transport subsidy scheme, strengthening of institutions concerned with entrepreneurship and human resources development etc., various physical concessions and incentives and specific measures for development of individual sub-sectors like sericulture, handicrafts, handlooms, etc has been announced under a new Industrial Policy for the North Eastern States. It is hoped that this package would help to spur industrial and economic development of the North Eastern Region and help remove the feeling of isolation of the region from the mainland.

5.59 The working of the BIFR has left much to be desired. First, the stage at which the sick industrial units are referred to the BIFR does not leave much scope for their revival. Second, the BIFR has been taking too long a time to come up with appropriate revival plans which, in most cases, only call for financial restructuring, conversion of loans into equity, waiver/ moratorium of interest on loans and sacrifices on the part of Central Government, State Governments, financial institutions and other Government agencies, etc. which is generally not acceptable to the concerned organisations. The technical content of the revival schemes does not get

POLICY INITIATIVES FOR INDUSTRIAL DEVELOPMENT OF THE NORTH EASTERN REGION

- Entire expenditure on Growth Centres to be provided as Central Assistance subject to a ceiling of Rs.15 crore per Growth Centre.
- The funding pattern for the Integrated Infrastructure Development Centres (IIDC) changed from 2:3 to 4:1 between Government of India(GOI) and Small Industries Development Bank of India with GOI funding as a grant.
- Extension of Transport Subsidy Scheme for a period of another seven years i.e upto 31st March, 2007.
- The North East Development Financial Corporation (NEDFI) to be designated as nodal agency for release of transport subsidy in NE States.
- Converting the Growth Centres and IIDCs into total tax free zones for a period of ten years from the commencement of production.
- Industries located in Growth Centres to be given Capital Investment Subsidy @ 15% in plant and machinery subject to a maximum of Rs.30 lakh.
- Setting up of dedicated branches/counters of commercial banks and NEDFI.
- An interest subsidy of 3% on working capital loans.
- Similar benefits to be extended to the New Industrial Units or their substantial expansions in other Growth Centres/IIDCs/Industrial Estates/Parks/Export Promotion Zones set up by States in any zone.
- Expansion in the scope of the Prime Minister's Rozgar Yojana Scheme to cover areas of horticulture, piggyery, poultry, fishing, small tea gardens etc so as to cover all economically viable activities.

adequate attention. More importantly, it has not been possible to close down a single unit, whether in private or public sector, based on the BIFR's recommendation. The entire system and working of the BIFR, including the criteria for identification of industrial sickness and referring to the BIFR would have to be critically examined and modified suitably to make it an effective instrument for revival of sick industrial units.

5.60 Additionally, in the case of PSUs referred to the BIFR it involves repeated inter-ministerial consultations and multiple references to the Committee of Secretaries, the Group of Ministers, the Cabinet Committee on Economic Affairs, etc. In the meantime, the various creditors stop giving supplies to such units on credit and insist on cash payments while the Government does not provide adequate funds (even for essential renewals and replacements). Thus, the working condition of the concerned PSU deteriorates rather sharply. The result is that in many instances, huge sums are being provided to non-viable, non-revivable units as non-Plan support, whereas many border-line units are not able to get even relatively small sums for maintaining their technological health in modernisation/ diversification to improve their competitiveness. It is imperative to devise appropriate alternative mechanism for sick public sector enterprises which involves a single point decision-making authority and includes technical expertise.

5.61 The National Renewal Fund (NRF) was set up in 1992 to protect the interests of the workers affected by industrial restructuring and provide a social safety net for the worker. While the voluntary retirement component of the scheme is under implementation, the retraining and redeployment component of the scheme has not progressed as per the objectives set out for it due to operational problems relating to motivation of employees, their age profile, specialisation, availability of proper institutional apparatus, etc. The scheme, therefore, would have to be recast through appropriate modifications to make it more effective and achieve the objectives for which NRF was set up.

5.62 The public sector enterprises (PSEs) can be divided broadly into three categories:

- (i) Profit-making PSEs which are able to finance their development and growth plans on their own;
- (ii) PSEs which are making only marginal profits or losses and are not in a position to finance their modernisation/growth/diversification plans without Government support, and
- (iii) PSEs incurring substantial losses.

5.63 The first set of PSEs i.e. those making good profits are limited in number and include all companies in the oil sector, Steel Authority of India Ltd (SAIL), Bharat Heavy Electricals Ltd (BHEL), Indian Petrochemicals Corporation Ltd (IPCL), etc. In pursuance of the policy objective to make the public sector more efficient and competitive, the Central Government has decided to grant enhanced autonomy and delegation of powers to profit-making public sector enterprises in terms of incurring capital expenditure, establishing joint ventures and subsidiaries of strategic alliances and restructuring and implementation of schemes for HRD subject to meeting the eligibility criteria and other guidelines. Eleven PSEs have been categorised as Navratnas and granted freedom and powers in the above cited areas apart from enabling them to open offices in India and abroad, wind up posts upto Director level and raise loans from the domestic market for emerging as global giants capable of withstanding international competition. The eleven PSEs are Indian Oil Corporation Ltd (IOC), Hindustan Petroleum Corporation Ltd (HPCL), Bharat Petroleum Corporation Ltd (BPCL), Oil & Natural Gas Commission (ONGC), Gas Authority of India Ltd (GAIL), Indian Petrochemicals Corporation Ltd (IPCL), Steel Authority of India Ltd (SAIL), Bharat Heavy Electricals Ltd (BHEL), National Thermal Power Corporation (NTPC), Videsh Sanchar Nigam Ltd (VSNL) and Mahanagar Telephone Nigam Ltd (MTNL).

5.64 Another 97 profit-making PSEs have been identified for grant of increased financial and managerial autonomy. These have been further divided into two categories - (Category-I) and (Category-II). Category-I covers those PSEs which had made profits in the last three years continuously, had pre-tax profit of Rs.30 crore or more in at least one of the three years and have a positive networth. Category-II covers those PSEs which have made profits in the last three years continuously and have a positive networth. The concerned administrative Ministry, however, will decide whether a public sector enterprise fulfils the requirements of category-I/ category-II company before granting it enhanced powers.

5.65 The second set of PSEs i.e. those making marginal profits/losses, would need to be provided limited budgetary support and other assistance to enable them to stand on their own feet i.e. independent of budgetary support, in the shortest period. It needs to be borne in mind that the public sector has been created and nurtured over the last four and a half decades of planned development as an effective instrument for development and meeting the socio-economic imperatives. The public sector has played an important role in meeting the objectives of growth, modernisation and self-reliance. However, problems have arisen in a number of cases primarily because of insufficient autonomy and lack of operational freedom on the one hand and multiplicity of objectives on the other. The result is that many of the PSEs have become procedure-oriented rather than result-oriented and are not able to respond adequately to the opening up of the economy and challenge of market forces. Such undertakings would need to be provided limited support and assistance to enable them to graduate to the first type of PSE, and to stand on their own in the shortest possible time.

5.66 In the third group, there are a number of enterprises which have been incurring huge losses for many years. Quite a few of these undertakings were originally in the private sector, became sick and were nationalised, primarily to protect the employment of their workers. Many of these enterprises are not serving any socio-economic purpose. As a matter of fact, keeping them on huge doses of budgetary support - both Plan as well as non-Plan - is only resulting in sub-optimal usage of scarce resources. Such financial resources can be utilised much better in many other areas with much greater gains to the economy as a whole. In the case of units which are not serving any socio-economic purpose and cannot be revived at reasonable cost and in limited time frame, hard decisions would need to be taken.

Sick Public Sector Enterprises (PSEs)

- There are 104 loss making and 53 chronically sick (making losses for over five years) Central Public Sector Enterprises (PSEs).
- As on 31.3.1997, 60 PSEs stand referred to BIFR.
- BIFR procedures are time-consuming and unsatisfactory, and require revamping for effective and quick disposal of cases.
- A large number of PSEs are potentially unrevivable and need to be closed.
- Precise estimate of likely fund requirement for reviving potentially viable sick PSEs is not available, but it is not possible to accommodate such huge fund requirement in the Plan.
- Strategic sale with transfer of Management of potentially viable PSEs, therefore, appears to be the best option for which speedy decisions are required.
- There is surplus work force in many PSEs, both healthy as well as sick PSEs. The response to VRS has been rather unsatisfactory. More effective measures are imperative to expeditiously reduce the work force and bring the strength to optimum level. Availability of funds in National Renewal Fund is grossly inadequate to meet the requirements of VRS of sick PSEs.
- Lack of a social safety net poses a serious potential of social unrest. There is an urgent need for creating a social safety net.

5.67 The disinvestment of equity of the public sector enterprises (PSEs) was started primarily to subject the PSEs to the discipline of market forces and make their managements more professional and result-oriented. Unfortunately, so far, the disinvestment has been carried out mainly with a view to raising resources for reducing the fiscal deficit. Besides, for a variety of reasons, the progress of disinvestment has been rather slow. The Disinvestment Commission was set up in August 1996 to consider the various issues related to disinvestment programme and impart transparency to the system. Forty three PSEs were referred to the Commission for advice and recommendations. The Disinvestment Commission has submitted eight reports on reforms and restructuring of PSEs till August 1988 making specific recommendations on each of the forty-three PSEs. Three more PSEs, namely, MMTC, STC and PEC have been referred to the Commission subsequently.

5.68 A number of decisions have been taken on some of the general recommendations of the Commission made in its earlier reports such as granting greater autonomy to PSEs and induction of nonofficial directors. The Government has also decided to dismantle the administered price mechanism (APM) in respect of petroleum products in a phased manner as also recommended by the Disinvestment Commission in its third report that disinvestment in companies dealing in petroleum products should be preceded by an announcement of dismantling of the APM as it would help enhancement of their share values. It is imperative that decisions on other important issues such as creating a Disinvestment Fund, offering shares in the domestic retail market, revamping of Voluntary Retirement Scheme (VRS),

Employee Pension-cum- Insurance Scheme, Counselling Service to those taking VRS and providing safeguards to officers and staff for bonafide commercial decisions are expedited. The Disinvestment Commission has suggested that the Government should set up a definite time-frame for taking action to eliminate further delays in implementation of the recommendations of the Commission.

5.69 The concept of Memorandum of Understanding (MOUs) between public sector undertakings and the Government was introduced to provide greater autonomy to the PSUs in day-to-day management, hold them accountable for the overall performance and maintain an arms's length relationship between the PSUs and the Government. However, in practice, these MOUs have tended to become one-sided with the Government hardly making any commitments on its part in the MOUs. Furthermore, the targets of production, profitability etc. mentioned in the MOUs needs a critical review and appropriate modifications to make it achieve the objectives for which this system was introduced.

5.70 In order to enable the institutions/organisations like National Institute of Design, National Productivity Council, etc. to play a more effective role and augment their operations, a system of block grants is proposed to be introduced to provide them limited additional support in the initial years of the Ninth Plan. It is expected that this will help to suitably strengthen these organisations in selected areas and augment their resource generation capabilities so that they can stand on their own feet in subsequent years.

5.71 It is generally believed that the machinery for investigations of anti-dumping is not adequate to deal with the increasing number of cases. The increasing work load may be gauged from the fact that the number of petitions increased from 3 in 1991-92 to 22 in 1996-97. Out of the 22 cases only 11 could be finalised. Adoption of anti-dumping measures has assumed significance following liberalisation of the Indian economy. Strict enforcement of these measures, therefore, would have to be an essential component of the import liberalisation programme in order to safeguard interests of the domestic industry.

5.72 It has become a practice for the State Governments to bring out their industrial policy guidelines to attract industrial investment into the States while the framework of the main policy guideline for industrial approval has been formulated by the Central Government, the State policies are sometimes not in conformity with the Central Government's policy guidelines. Further, unhealthy competition among the States in regard to offering of fiscal concessions and incentives for promotion of industrialisation may become counterproductive. There is a need to bring a greater degree of coordination between the Centre and the State Governments and between State Governments themselves regarding policy issues and fiscal concessions being offered by different States.

5.73 There appear to be a number of deficiencies in the existing system of retention pricing of fertilizers. First, there is no incentive for the fertilizer companies to optimise the capital cost of the plants. As a matter of fact, higher the capital cost of a plant, higher is the profit margin in absolute terms. Thus, there is a tendency on the part of fertilizer companies to 'gold-plate' their capacity. Second, in the case of old plants, since the net block is extremely low and the retention price is based on the net worth, the returns are not adequate to maintain the plant in good technological health and carry out the necessary additions, modifications and replacements. Third, the operating norms are based on the best performance of the previous two years. This means that a unit, which has achieved excellent level of working, has to

maintain it in order to be able to earn a reasonable return whereas a unit which has been working inefficiently continues to get a good profit margin in spite of higher consumption of inputs and energy. This is patently unfair. Fourth, the system does not provide enough incentive for continued improvements in technological norms and energy consumption. Fifth, in practice there are considerable delays in fixing the retention prices and payment of subsidy to the fertilizer companies, which adversely affects their ways and means position. It is, therefore, imperative to move away from the complex system of retention price system for individual plants.

5.74 The retention price-cum-subsidy scheme (RPS) was introduced with the objective of supplying fertilizers to farmers at affordable prices and at the same time ensuring a reasonable return on investment and promoting healthy development and growth of the domestic fertilizer industry. As elaborated above, a number of weaknesses of the existing RPS have become apparent. It would be better to separate the two objectives. The objective of facilitating healthy growth and development of fertilizer industry can best be achieved by subjecting it to competitive market forces. The second objective of making available fertilizers to the farmers at a reasonable price may be achieved through provision of a uniform subsidy to all fertilizer plants, taking into account the need to promote the use of fertilizers and the fiscal capacity of the Government. The amount of subsidy payable on different types of fertilizers may take into account the long run marginal cost of producing/importing such fertilizers on the one hand and ensuring optimum balance in the usage of different fertilizers on the other. So long as the petroleum products continue to be under administered price mechanism, the prices of feedstock would also need to be taken into account in determining the fertilizer prices payable to the manufacturers.

5.75 In other words, all the three types of fertilizers i.e nitrogen, phosphatic and potassic may be decontrolled, with the Government providing a flat rate of subsidy per unit of each type of fertilizer taking into account its fiscal capacity so as to achieve an optimum ratio in the consumption of different types of nutrients on the one hand and making available fertilizers to the farmers at a reasonable price on the other. Clear signals may be given to the domestic fertilizer industry that they should restructure, modernise, control costs and improve their competitiveness so as to be able to produce fertilizers at international prices at an early date.

5.76 Another major issue affecting fertilizer production is the lack of a feedstock policy. So far, the choice of feedstock for fertilizers has been influenced primarily by the availability of different feedstocks. In the early 1970s, naphtha emerged as the most important feedstock for nitrogenous fertilizers as against coke and coke oven gas used in the production of nitrogen in India before 1970s. After the oil crisis of 1973, naphtha prices rose sharply. This resulted in the use of fuel oil and coal as feedstock by the new fertilizer plants. Presently, natural gas is the preferred feedstock for production of ammonia and urea in India and elsewhere in the world. But it is scarce and not easily available. Therefore, new fertilizer units are still being based on naphtha as feedstock. The fertilizer units can be technology-wise flexible enough to switch over to natural gas or liquefied natural gas (LNG), which has also emerged as a competitive feedstock for production of nitrogenous fertilizers.

5.77 The cost of production of fertilizers is highly sensitive to the cost of feedstock. Fuel oil, LSHS and naphtha have been priced for industrial users at import parity prices. The price concession extended for the use of these petroleum products for fertilizer production has been withdrawn. The price of natural gas has been increased and linked to the international price

of fuel oil with staggering ratio of parity price i.e. in the first year it will be 50 per cent of the fuel oil parity price, 65 per cent in the second year and 75 per cent in the third year. It will be reviewed after three years with a view to introducing 100 per cent fuel oil parity price from the fourth year onwards. The transportation cost on HBJ pipeline has also been increased from Rs.850 per 1000 cu. Mtr. to Rs.1150 per 1000 cu. Mtr. Today, LNG is the preferred feedstock for production of nitrogenous fertilizers. It has been estimated that the cost of imported LNG is lower than the likely delivered cost of imported naphtha to the consumers on HBJ pipeline. The fertilizer industry is beset with problems due to large differences in the cost of production when different feedstocks are used. The natural gas reserves are not sufficient to cater to the rising demand of the power, as well as the fertilizer sectors. There are bottlenecks with regard to storage and supply of LNG. The uncertainties regarding availability of different feedstocks and the prices thereof is a major problem facing the fertilizer industry. It is imperative to formulate and implement an appropriate feedstock policy so that the manufacturers can plan their capacity on a long-term basis

5.78 With the coming into force of the Uruguay round of the General Agreement on Tariffs and Trade (GATT) and the World Trade Organisation (WTO), the textile importing countries have committed themselves to phase out the Multi-Fibre Arrangement (MFA) in 10 years beginning January 1995. This development is a mixed bag for developing countries, including India. As far as the impact of the MFA being phased out on the country's textile industry is concerned, it will have implications on both domestic and export front. The textile industry will have to gear itself to face competition from the producers of cheap quality cloth. The implications of the new trade regime under WTO would need to be worked out in right earnest at appropriate levels in order to face the new challenges successfully after 2005 A.D. For this long-term policies need to be adopted rightaway.

5.79 The TRIPS agreement under WTO is one of the main challenges in the area of knowledge and technology for Indian industry. The global regime represented by TRIPS severely restricts national autonomy. By enhancing the protection of intellectual property rights across-the-board, this regime has tilted the balance between the public interest, on the one hand, and the private interest of the inventor, on the other, excessively in favour of the latter. The challenge posed by the new global regime has been compounded by unilateral and arbitrary restrictions being placed by industrialised countries on transfer of technology on the specious ground of preventing proliferation of "dual use". This situation will have to be faced in a concerted manner both at the national and international levels. National laws will have to be suitably strengthened to withstand such unilateral restrictions. Gaps and ambiguities in the international regime will have to be availed of creatively to seek more favourable interpretations of its provisions. At the international level, a new initiative will have to be launched in concert with the developing countries to mitigate the rigours of the international regime and to secure a more favourable deal at the impending review of the TRIPS Agreement in the WTO. Further, research and development capabilities in general and industry-related in particular, would need to be strengthened. The industry-R&D linkage at present is not strong as in developed countries. While it is quite likely that the competitive market forces would throw up institutional mechanisms, including skills, for this linkage to get established, the State would intervene as a matter of policy and strategy, including adoption of comprehensive approach in research and development for creating competitive and dynamic industry-R&D linkages to meet the challenges of TRIPS.

5.80 Environmental pollution due to developmental activities has increasingly become the focus of concern, particularly due to the wide variety of emissions from the automobile and industrial activities. The Rio Conference held in June 1992 had adopted Agenda 21 to tackle the growing problem of environmental deterioration and its adverse consequences, inter-alia due to industrialisation. It has become necessary to keep in focus this concern while developing industries in the Ninth Plan. Therefore, new projects will be based on environmentally sound industrial-friendly technologies and the existing units would be upgraded and modernised inter-alia with the objective of achieving environment-friendly production from these units in the Ninth Plan. The present mechanism of environmental surveillance and monitoring industrial production would also be strengthened.

5.81 The small scale sector has shown considerable resilience and in-built strength. After the opening up of the economy, its growth rate has been about two to three percentage points higher than that of large and medium industries. The sector has matured and is in a position to make a much greater contribution to the national economy as well as to meet the competition from large industry, including multi-nationals. The SSI sector will be provided with necessary incentives and support, including making available credit to facilitate its growth and development leading to increased contribution to output, exports and employment generation.

5.82 In accordance with the recommendations of the Abid Hussain Committee, the definition of small scale sector will be broadened from Small Scale Industries to small scale enterprises (SSEs), which will include not only industrial enterprises but also business enterprises. Incentives, credit and promotional facilities would be made available to all SSEs. This would promote entrepreneurship, rapid growth of industrial and business ventures in small scale sector and thus, additional employment.

5.83 The small scale sector is presently producing about 8000 items, out of which 822 items are still reserved for production in the small scale sector. However, it has been observed that out of the reserved items, as many as 200 items are either not produced at all in the small scale sector or their production is insignificant. In the case of some reserved items, the present policy is only benefitting the existing large scale producers having "carry on business" licences by effectively shutting out competition, to the detriment of the consumer, without any benefit to the small scale sector. Besides, in the last few years, the growth of SSI sector in the nonreserved areas has been higher than in the reserved categories which is proof of the inherent strength and resilience of the small scale sector and its ability to respond to the challenge of market forces. Furthermore, out of these 822 items, about 600 items are allowed to be imported under OGL, which means that the SSI units have to face competition from multinational corporations and large units abroad, whereas large units in the country are not allowed to produce these items, thus preventing economic activity and employment within the country. De-reservation would also help a number of SSI units to upgrade their technology, improve the quality of their products, expand their scale of operations, and boost their exports as presently a number of export orders are being lost because of inability of domestic producers to supply the desired quantity in the required time-frame. Thus, there does not appear to be much of a justification for continued reservation of these items for production in the small scale sector. The biggest argument in favour of dereservation is that, if, at all, this is helping only a small percentage of units, whereas the policy framework should be supporting the entire SSI sector. The Abid Hussain Committee has also recommended complete dereservation of the products, presently reserved for the small scale sector. However, it needs to be ensured that this does not cause any sudden dislocation

and problems for the weak small scale units and an appropriate policy framework is provided, including phased dereservation to help small scale industries to sustain their growth. In the meantime, the list of products reserved for small scale sector will have to be continually reviewed and the investment limit for the small scale sector will have to be revised upwards periodically to take account of inflation and to enable the small scale sector to reap the economies of scale and effect upgradation of technology to withstand the emerging competition, particularly in the export market. The Government has enhanced the investment limit for tiny units from Rs.5.00 lakh to Rs.25 lakh. The investment limit for small scale units was also raised from Rs.60 lakh to Rs.300 lakh in December 1997 which is now contemplated to be reduced to Rs.100 lakh.

5.84 Perhaps, the biggest problem being faced by the small scale industries is inadequate availability of credit. The Nayak Committee had made a number of recommendations to help the SSI sector in this regard. Most of its recommendations have been accepted by the Reserve Bank of India. However, there is a need to closely monitor the implementation of these recommendations and see that they are implemented in letter and spirit. The financial institutions will be motivated to offer factoring services on a large scale to the small scale sector in addition to the present system of discounting bills. The non-banking financial companies (NBFCs) would need to be encouraged through suitable financial incentives to provide/earmark enhanced loans/lending to the SSI units. Friends and relatives of SSI entrepreneurs could be given fiscal incentives at par with those investing in large units/public limited companies to lend to SSI units. The financial and management base of SFCs and SIDCs may be suitably strengthened to enable them to provide better services to the SSI sector. Banks/financial institutions may concentrate upon cluster approach and set up specialised branches in such clusters of SSI concentrations. Setting up Local Area Banks (LAB) by financially strong and better managed SSI associations would also help in making available adequate credit to the SSI units.

5.85 The Informal Group constituted by the Planning Commission to examine and recommend ways and means of increasing the availability of bank credit to SSIs and village and tiny units has recommended that the volume of credit available to SSI and village and tiny units should be in proportion to the contribution of SSI sector to the output of the manufacturing sector. The Reserve Bank of India should examine the feasibility of implementing this recommendation.

5.86 The Delayed Payments Act does not appear to have really helped the small scale industries. It is highly desirable to review this Act and make appropriate changes to ensure that it achieves the objectives for which it has been enacted.

5.87 The "consortium" concept for consumer items with approved quality standards would be more helpful to SSI units in marketing their consumer products. The State Industries Development Corporations (SIDCs), the National Small Industries Corporation (NSIC), the SSI associations, etc., may also be allowed to help the SSI units by setting up consortia of marketing agencies. Simultaneously, to improve the quality standards of SSI products, this sector may be provided quality testing facilities at the clusters of SSI concentrations. The SSI associations may be helped by providing one-time grant for setting up such quality testing facilities.

5.88 In the unorganised sector, provision of training, upgradation of skills and improvement in tool kits, equipment and production techniques would go a long way in increasing production, productivity and income levels of artisans, craftspersons weavers, spinners and workers, etc.

5.89 There is a vast potential to increase exports of the products of handlooms, handicrafts, khadi and village industries, wool (unorganised sector) and coir industry. Enhancement of design inputs, adoption of new production techniques and information about trends in export markets regarding products, utility aspects, prices, demand, etc. would help these sub-sectors to improve their performance and to achieve higher export targets.

5.90 There is an urgent need to improve the data base for the SSI sector. Involving SSI associations/units on a voluntary basis, setting up computer facilities and computer-based networks and encouraging SSI units to submit information on a voluntary basis regarding production, employment, flow of working capital, term loans and performance of units on a quarterly basis through their associations would help in this effort. The SSI units may be persuaded to provide such information regularly and may be assured that this information would not be used against them. The usefulness of this information in the preparation of suitable policy measures for the growth of the SSI sector cannot be over-emphasised.

5.91 India is the second largest producer of fruits and vegetables. However, only about one per cent of fruits and vegetables are processed in the country, as against 70 to 80 per cent in the developed countries. Besides, about 25 to 30 per cent of the produce perishes due to grossly inadequate storage and cold chain facilities. It is imperative to set up extensive cold chain facilities throughout the length and breadth of the country. Of late, there has been some interest on the part of multi-nationals to set up such facilities but this would need considerable policy support, fiscal concessions and other assistance to make the private sector come forward in a big way.

5.92 Many provisions of the food laws and their implementation strategy have created hurdles in the way of the growth and development of food processing industry and trade. Particularly, the Prevention of Food Adulteration Act and Rules has been a source of considerable harassment. The standards are unrealistic and there is more emphasis on policing than on prevention and even the definition of adulteration is defective. The various food laws would need to be reviewed and suitably modified at a very early date. Further, the quality of fruits and vegetables produced in the country is generally unsuitable for production of high quality processed products. There are also large variations in terms of quality, size of products, colour, taste, degree of maturity, etc. Proper grading and sorting facilities are almost non-existent. The farming of fruits and vegetables needs to be organised on a scientific basis and forward linkages with the food processing units need to be established so as to facilitate the growth and development of food processing industry.

5.93 Lack of quality control and testing facilities is another major constraint being faced by the food processing industry. As the industry is highly dispersed and many of the units are too small to afford individual testing facilities, the initiative for such facilities would have to be taken primarily by Industry Associations and other specialised agencies with the Government providing technical as well as financial support, especially in the initial stages.

5.94 The unhygienic and insanitary conditions under which slaughtering and processing of livestock as well as marine products take place pose important problem to this sector. Already there have been cases of exports of marine products having been rejected by certain countries on grounds of unhygienic processing and handling conditions. This is an area which needs urgent attention.

5.95 The packaging industry for processed foods is yet to develop as a result of which there is a gap in contemporary packaging of food products. The cost of packaging is also very high. Appropriate policy and fiscal measures are required to encourage scientific development of packaging industry which is a prerequisite for development of food processing industry and exports of processed foods.

5.96 Special efforts are required to rehabilitate and modernise flour milling units, rice hullers, pulse milling, oil extraction, etc. by providing credit and other facilities to improve yields and minimise wastages.

5.97 The experiment of "factory on wheels" being tried in Karnataka will be further developed and extended to other parts of the country so as to give a big boost to decentralised fruit processing industry.

Ninth Plan (1997-2002) - Sectoral Profile

Metallurgical and Mineral Industries

5.98 The metallurgical and mineral industries constitute the bedrock of industrial sector as they provide the basic raw materials for most of the industries. Up to the Seventh Plan, a significant progress was made in the development of mineral resources in the country which is amply depicted in the appreciation of mineral inventory. In the Eighth Plan, greater emphasis was laid on mineral exploration by adoption of improved technologies like remote sensing, geotechniques, etc., particularly for those minerals in which the resource base of the country is poor such as gold, diamond, nickel, tungsten, rock phosphate, sulphur, etc. keeping in view the time lag between identification of new deposits and enhancement of minerals' production.

5.99 As part of the liberalisation drive which commenced with the new industrial policy brought out in July 1991, the Mines and Minerals (Regulation & Development) Act, 1957 was amended in January 1994 and a new Mineral Policy was announced. With this, the mining sector was thrown open to the private sector including foreign direct investment. Further, the States were empowered to grant prospecting licences/mining leases without prior approval of the Central Government for minerals such as apatite and phosphatic ores, barytes, dolomite, gypsum, kyanite, magnesite, molybdenum, nickel, platinum, silver, and other precious metals, sillimanite, sulphur and its ores, tin, tungsten and vanadium ore. With this only 11 minerals are left (excepting atomic and fuel minerals), for which State Governments would require prior approval of the Central Government for giving licence for prospecting. These are asbestos, bauxite, chrome ore, copper, zinc, gold, iron ore, lead, limestone - except where it is used in kilns for manufacture of lime as building material-manganese ore and precious stones. The mining lease period has been increased to a maximum of 30 years and a minimum of 20 years. The

prospecting period is also likewise increased from 2 to 3 years and further renewal up to a period not exceeding 5 years is allowed to facilitate more systematic and scientific prospecting and exploration for mineral deposits.

5.100 The restriction on equity holding by foreign nationals in a mining company has also been removed and the need to provide greater stability of tenure to lease holders has been recognised. The amendments would be of particular benefit to captive coal mines in the power sector - where a number of projects have been approved - and other mines attached to mineral processing industries like steel, cement, etc., where an assured supply of raw materials is essential. The period for which prospecting licences can be granted has been increased to three years and these licences can be renewed at the discretion of the State Governments so that the total period does not exceed five years. Besides, it has been provided that no appeal to the Central Government can be made for orders passed by the State Governments with regard to minor minerals. The State Governments have also been empowered to terminate leases of minor minerals without prior approval of the Central Government. The period before which a lease can lapse has also been increased from one year to two years. With these changes in the national Mineral Policy, more power has been transferred to State Governments for mineral development and administration.

5.101 Making available minerals at internationally competitive prices to consumers will be the policy objective in the Ninth Plan. The domestic mining industry will have to compete with imports as no protection will be available except what is permitted within the world trade regime through the fiscal policy. The private sector will play a greater role in mineral development and production in the Ninth Plan. Many joint ventures, including with foreign parties, are expected to come up. As a matter of strategic intervention by the Government in the new economic environment, the dynamism of policies, various rules, procedures and enactments will be maintained, apart from promoting exploration for scarce minerals.

Iron Ore

5.102 Iron ore constitutes one of the major items of export of the country. The production of iron ore recorded an average annual compound growth rate of 5.6 per cent during the period 1950-51 to 1995-96, comprising 12.5 per cent during the 1950s, 6.2 per cent during the 1960s, 2.9 per cent during the 1970s and 2.8 per cent during the period 1980-81 to 1995-96. The production target set for the terminal year of the Eight Plan (1996-97) was 72 million tonnes, consisting of 32 million tonnes for exports and 40 million tonnes for domestic consumption. This target by and large has been realised. The reserves of high grade iron ore in the country are limited and, therefore, it is necessary to carry out extensive exploration for establishing more reserves and at the same time ensuring conservation of high grade minerals by blending with low grade ores. As a matter of policy, only low and medium grade ores, fines and temporary surpluses of high grade iron ore (+ 67 per cent iron content) particularly from Bailadila (M.P.) should be exported in the Ninth Plan and beyond.

5.103 A production target of 100 million tonnes of iron ore has been set for 2001-02, out of which, export target is placed at around 32-35 million tonnes. The production capacity of iron ore in the country is about 107 million tonnes, comprising 39.56 million tonnes of lumps, 54.48 million tonnes of fines, 4 million tonnes of concentrates and 9.25 million tonnes of pellets. In order to meet the production target, projects already identified, particularly in the public

sector such as 10 & 11-A and 11-B mining projects at Bailadila (M.P), will be completed in the Ninth Plan. Research and development efforts will be intensified for developing new technologies to make Indian steel industry internationally competitive as well as utilise more and more iron ore fines in the production of steel as a measure of conservation of iron ore.

Iron & Steel

5.104 A production target of 22.80 million tonnes of finished steel was set for 1996-97, the terminal year of the Eighth Plan. The actual production was around 22.72 million tonnes. In 1996-97, the actual production of hot metal, crude steel, saleable steel and pig iron from integrated steel plants in the country was 18.64 million tonnes, 16.15 million tonnes, 14.14 million tonnes and 1.72 million tonnes respectively. The demand for 1996-97 was estimated at 24 million tonnes and the actual consumption was around 22.12 million tonnes with imports and exports of the order of 1.56 and 1.62 million tonnes respectively during the year.

5.105 The secondary steel producers contributed about 12.18 million tonnes of finished steel in 1996-97 as compared to 6.79 million tonnes in 1992-93. The main integrated steel plants contributed about 10.54 million tonnes of finished steel in 1996-97 as compared to 8.41 million tonnes in 1992-93.

5.106 Thus, major augmentation in the finished steel capacity was in the private sector. There was a marginal shortfall from the target in the production of finished steel. The growth rate of domestic consumption of finished steel at 4.00 per cent was, however, lower than the Plan estimate of 6.67 per cent during 1996-97.

5.107 The domestic production of finished steel from all sources is estimated to be around 39 million tonnes during 2001-02, the terminal year of the Ninth Plan and around 58 million tonnes in 2006-07, the terminal year of the Tenth Plan. Out of this, domestic consumption would be around 33 million tonnes, leaving a net exportable surplus of around 6 million tonnes during 2001-02. The corresponding figures for 2006-07 would be 49 million tonnes and 9 million tonnes, respectively. Thus, the future thrust would be on producing finished steel not only for the domestic market but also for export. The steel consumption is anticipated to grow at an average annual rate of 8.85 per cent in the Ninth Plan and at 8.30 per cent in the Tenth Plan.

5.108 Bhilai and Bokaro Steel Plants of Steel Authority of India Ltd (SAIL) achieved the production targets set for the Eighth Plan, but Durgapur and Rourkela Steel Plants could not achieve the targets due to delays in completion of modernisation projects and slower-than-planned build-up of production from these modernisations. SAIL's production fell short of the Eighth Plan target because of this reason.

5.109 While the expansions of Bhilai and Bokaro Steel Plants of SAIL have since been completed, modernisation of Durgapur Steel Plant (DSP) and Rourkela Steel Plant (RSP) has been delayed. Several new schemes such as automation of blast furnaces and modernisation of rolling mills, interring plants, coke oven batteries, oxygen plants, etc., were taken up for implementation by SAIL in the Eighth Plan. With these projects becoming fully operational in the early Ninth Plan, SAIL's physical and financial performance would improve further.

5.110 SAIL raised an amount of US \$ 125 million during the Eighth Plan period through Global Depository Receipts (GDRs) mainly for financing its Plan programmes. The response to the issue was very encouraging. The issue was widely distributed to over 100 international institutional investors spread over 15 countries and listed at London Stock Exchange. Under the policy of disinvestment, SAIL's shares were also disinvested. The equity structure of SAIL by the end of the Eighth Plan was : Government of India's 85.82 per cent, Financial Institutions 9.35 per cent, GDRs 3.5 per cent, individuals 0.43 per cent, foreign institutional investors 0.11 per cent and domestic companies 0.09 per cent.

5.111 The major new projects planned to be taken up in the Ninth Plan are installation of New Medium Structural Mill, Bloom Caster with ladle furnace, reconstruction of Blast Furnace No.3, etc. at Durgapur Steel Plant; augmentation of capacity, development of Rowghat Mines, installation of Universal Beam Mill, etc. at Bhilai Steel Plant; renovation of Cold Rolling Mill Phase-II, upgradation of pipe plant, etc. at Rourkela Steel Plant; double strand slab caster, process control, modernisation of HSM Phase-II, etc. at Bokaro Steel Plant.

5.112 The Vizag Steel Plant (VSP) of Rashtriya Ispat Nigam Limited (RINL) has been commissioned fully. It is, however, yet to stabilise its production at the rated capacity. VSP is the only integrated steel plant in India to have hundred per cent continuous casting facilities and the entire production comprises long products. Technologically, it is also one of the most modern steel plants in the country.

5.113 The major projects to be taken up for implementation in the Ninth Plan are Coal Dust injection in Blast Furnace Nos. I & II, Combined Blowing of LD Converters and expansion of capacity from 3.00 MT to 4.05 MT liquid steel.

5.114 Some of the major developmental objectives for the iron and steel industry in the Ninth Plan and beyond would be: (a) production of 38 million tonnes of finished steel by 2001-02 and 58 million tonnes by 2002-07; (b) provision of iron and steel items of international quality and prices to domestic consumers; (c) adoption of ISO 9000 series certification and Total Quality Management (TQM) by steel plants; (d) achievement of export target of 6 million tonnes of finished steel in 2001-02; (e) promotion of growth of private investment including foreign direct investment in the iron and steel sector by maintaining dynamism in the policy framework.

Non-Ferrous Metals:

5.115 The liberalisation of the economy affected non-ferrous metals industry rather severely during the Eighth Plan period. There was a sharp decline in the London Metal Exchange (LME) prices of non-ferrous metals, particularly copper, lead and zinc and a fall in demand of these metals due to slow-down of the economy during the first two years of the Plan. A substantial reduction in import duties was effected under the new policy dispensation, which made imported non-ferrous metals, particularly copper, lead and zinc cheaper than indigenously produced metals. The domestic companies had to resort to cut-backs in production, particularly of lead and zinc by Hindustan Zinc Limited, a major producer of these metals in the public sector. In the case of aluminium, though LME prices remained depressed during the first two years of the Plan, it did not affect the indigenous aluminium industry since it had comparative

advantage. The LME prices started picking up with the easing of recession in the western world economy during early 1994, resulting in improvement in the situation for the domestic producers.

5.116 The investments by the public sector enterprises of the Ministry of Mines were well below the approved Eighth Plan outlays. The main reason for this was the inability of the concerned PSEs to mobilise adequate extra budgetary resources, which in turn was due to competitive environment and fall in international prices of non-ferrous metals coupled with reductions in import duties. A welcome development in the new liberalised economic environment was the initiative taken by the private sector in investing in non-ferrous metals which were hitherto reserved for the public sector as a matter of policy, particularly copper and secondary zinc smelters. The metal-wise details are given below:-

Aluminium

5.117 An average annual compound growth rate of 8.5 per cent in aluminium consumption was envisaged during the Eighth Plan period. As against this, the consumption of the metal grew at 5 per cent. This was mainly due to factors such as slow-down of the economy during the first two years of the Plan, slow off-take of aluminium by the State Electricity Boards due to paucity of resources, lower investment in the aluminium consuming sectors because of liquidity crunch in the economy, etc.

5.118 The production target set for the terminal year of the Eighth Plan was also not realised, mainly due to anticipated addition to the capacity not coming through. A new smelter of 150,000 tpa capacity planned to be set up by the private sector Hindustan Aluminium Company in Andhra Pradesh was dropped on commercial considerations. The public sector National Aluminium Company did not complete its debottlenecking programme due to some technical reasons and the private sector Indian Aluminium Company was not able to bring into production its full rated capacity as envisaged. MALCO could not produce aluminium during 1992-93 to 1994-95 due to non-availability of power.

5.119 The demand for aluminium is anticipated to grow at an average annual compound growth rate of 8 per cent during the Ninth Plan period. The installed capacity of aluminium is expected to increase from the present level of 6,70,000 tpa to 7,14,000 tpa.

5.120 It is expected that the private sector Indian Aluminium Company's capacity of 117,000 tonnes will become operational with its Belgaum Smelter's full capacity of 65,000 tonnes per annum coming into production with assured power supply from its captive power plant which has been taken up for implementation. Besides, it is envisaged that the public sector National Aluminium Company will complete the expansion programme of its alumina refinery in the Ninth Plan and work on the expansion of its smelter will be initiated during the later years of the Ninth Plan. The additional capacity will become operational during the middle of the Tenth Plan. Besides, with the completion of debottlenecking programme, about 12,000 tpa capacity will be added to National Aluminium Company's existing capacity of 218,000 tpa. The Hindustan Aluminium Company is planning to set up a new aluminium smelter of 250,000 tpa capacity in Orissa in the Ninth Plan. A new Cold Rolling Mill of 40,000 tpa capacity has been approved to be set up at the Korba Smelter of BALCO in the Ninth Plan in order to improve the product-mix of the company.

5.121 It is expected that three large export-oriented alumina plants of one million tonnes capacity each will be set up in the private sector. The industry has achieved international competitiveness and will continue to maintain this position in the Ninth Plan. It is envisaged that the industry will also launch programmes to develop and promote use of aluminium in various sectors of the economy, particularly, in areas where it could replace wood, plastics, etc.

Copper

5.122 While the consumption of copper has been higher than anticipated during the Eighth Plan, the planned addition to the capacity has not been realised mainly because of change in the scope of the expansion programme of Khetri Copper Complex of Hindustan Copper Limited (HCL). The company has now planned to expand Khetri Smelter capacity from 31,000 tpa to 46,000 tpa as originally planned in the Eighth Plan.

5.123 With the opening up of the economy, there was a spurt in the private sector investment in copper. Birla Copper Ltd. took up for implementation one large smelter of 100,000 tonnes per annum capacity and one copper rod plant of 80,000 tpa capacity during the Eighth Plan period. M/s. Sterlite Industries Limited also took up for implementation a large smelter of 100,000 tpa capacity during the Plan period. While the smelter of Sterlite Industries Limited has come on stream, the plants of Birla Copper Ltd. are expected to come on stream during early 1998. A scrap-based smelter of 50,000 tpa capacity was taken up for implementation in the private sector by SWIL Ltd. This is also expected to come on stream during early 1998. Besides, M/s. METDIST Ltd. is contemplating to set up a large smelter of 150,000 tpa capacity in the private sector which is anticipated to come on stream during the Ninth Plan period. With this, and after the completion of expansion of the Khetri Smelter of the HCL, the total copper capacity at the end of the Ninth Plan is expected to reach 500,000 tpa from the present level of 47,500 tpa. The total investment in these smelters is placed at Rs. 5,400 crore. Besides, HCL, the only copper producer in the public sector, will make investment in expanding its existing mines and opening up new mines. A thrust under R&D will be given in the Ninth Plan for developing bio-leaching technology for recovering copper from lean grade ores.

5.124 The copper demand is expected to grow at the rate of about 8 per cent per annum in the Ninth Plan. With this, by and large, there would be no demand-supply gap during the terminal year of the Ninth Plan.

Zinc

5.125 There was a marginal increase in the growth rate of consumption of primary zinc over that anticipated for the Eighth Plan. The capacity creation target was also achieved with Binani Zinc Ltd. (BZL), a private sector primary zinc producer, having completed expansion of its smelter in Alwaye (Kerala). Hindustan Zinc Limited (HZL), the major public sector primary zinc producer, deferred major investments planned to be taken up in the Eighth Plan on commercial considerations.

5.126 The demand for zinc is anticipated to grow at the rate of an average 6 per cent per annum during the Ninth Plan period. Both the primary zinc producers, namely, HZL and BZL are likely to expand their capacities by 20,000 and 30,000 tonnes respectively during the Ninth Plan period. With this and taking into account the availability from the secondary sources, there will be a gap in the demand-supply to the tune of about 50,000 tonnes during the year

2001-02, the terminal year of the Ninth Plan. However, this gap could increase to 70,000 tonnes if the production from secondary sources fails to materialise, consequent to the ban on international movement of hazardous waste and scrap, including zinc ash under Basal Convention. HZL is contemplating to set up a new smelter, work for which is expected to start during the Ninth Plan period. But, it will come on stream only in the early part of the Tenth Plan. HZL has entered into a joint venture with BHPM of Australia for exploration and development of zinc and lead resources in Rajasthan.

Lead

5.127 In the Eighth Plan, primary lead demand was projected to grow at 8 per cent compound per annum. The actual growth rate has been around 7.5 per cent. This was primarily because the actual consumption in the base year 1991-92 was higher than that assumed for working out the growth rate. The production target set for the terminal year of the Eighth Plan (1996-97) was not realised primarily because HZL had to resort to cut back in production on commercial considerations. It is attributed to the effect of liberalisation which made HZL non-competitive in lead production. The company has initiated measures to tackle this situation. The capacity creation also fell short of the target, though marginally, because of the delay in completing the expansion programme planned by the only lead producer in the private sector - Indian Lead Private Ltd.

5.128 The demand for lead is expected to grow at the compound rate of 7 per cent per annum during the Ninth Plan period. The private sector Indian Lead Ltd. is planning to expand its capacity from the present level of 25,000 tpa to 40,000 tpa in the Ninth Plan. No addition to the existing lead capacity of 65,000 tpa of HZL is anticipated in the Ninth Plan. HZL has, however, included in its Ninth Plan programmes, expansion of the existing Rampura-Agucha lead-zinc mine and concentrator to increase the supply of lead concentrates for captive use and taking up exploration projects for augmenting its lead resource position in which it is presently deficit. For expansion of the secondary lead production in the country, a major problem will be availability of scrap, primarily because of Basel Convention. The availability of domestic scrap will also be a constraint. Therefore, new scrap-based lead capacity in the secondary sector is not expected to come up in the Ninth Plan.

Capital Goods and Engineering Industry

5.129 The capital goods and engineering industry comprising mainly of Machine Tools, Electrical Machinery, Industrial Machinery, Transport and Agricultural Equipment, Oil Exploration, Mining, Earth Moving and Construction equipment and control and instrumentation has crucial backward and forward linkages with the rest of the industry sector. The trend and pattern of its growth determine the productivity and performance parameters of other industries. In the past, the Government had protected this sector through high customs duties on imports of plant and machinery which had at times impeded the efforts of other industries towards modernisation and technological upgradation. By mid 1970s, the share of indigenously produced capital equipment in the total supply of machinery reached a level of over 80 per cent.

5.130 The first attempt at rationalising Indian capital goods industry was made in 1975 by delicensing 24 industries including industrial machinery, machine tools and other equipment. Thereafter in 1985, 25 broad groups of industries including several items of industrial

machinery were delicensed for non-MRTP, non-FERA companies. Machine tool industry became the first group of industries to be broad-banded in 1983. Industrial machinery sector was also broad-banded covering chemical, pharmaceutical, petrochemical and fertilizer machinery. In August, 1987 a Technology Upgradation Scheme was launched for five groups of capital goods industries. The scheme was to encourage selective import of foreign technology to upgrade the capital goods industry.

5.131 During the first two decades of planned development, the growth rate of the capital goods industry was impressive at 17.10 per cent for machinery and machine tools (except electrical machinery), 14.9 per cent for electrical machinery and 11.05 per cent for transport equipment. This was primarily because of investment made in setting up new capital goods capacities in the country and partly due to the base year production level being very low. During 1970s, the average annual compound growth rate of machinery and machine tools (other than electrical machinery) was moderate at 8.2 per cent whereas the electrical machinery group could achieve only 5.4 per cent growth rate during this period. The performance of transport equipment sector was much lower at 2.8 per cent annual growth rate during 1970s. The main reason for the low growth rate in electrical machinery during 1970s was lower growth in electricity generation during the Fourth Plan period i.e. 1969-74. In the case of transport equipment sector, the lower growth rate was primarily due to various controls on capacity expansion and new capacity creation in the automobile sector in order to restrict the demand for petroleum products. During 1980s, the growth rate in machinery and machine tools sector (except electrical machinery) was 6.5 per cent, whereas the electrical machinery group achieved a significantly higher growth rate of 18.9 per cent primarily due to large capacity expansion in power generation during the Fifth and Sixth Plan periods. The machinery and machine tools sector suffered due to lack of technology upgradation due to more emphasis on indigenisation.

5.132 After the major industrial reforms of 1991, the capital goods sector had negative growth during 1991-92 to 1993-94 due to balance of payment crisis which necessitated an import squeeze affecting availability of inputs and their costs, the tight monetary policy pursued by the Government to contain inflation, which affected the demand and raised the cost of borrowings for the industry, fall in demand due to reduction in public expenditure and investment as well as postponement of investment plans in the private sector in anticipation of further reductions in import duties and lack of international competitiveness of the domestic capital goods industry. However, the industry quickly responded to these challenges and upgraded itself. The reforms started showing positive results since 1994-95 with growth rates of 24.8 per cent and 17.8 per cent during 1994-95 and 1995-96, respectively. Since 1995-96, however, there has been a slight down-slide as a result of the overall industrial growth slowing down primarily due to slow-down in electricity generation, crude oil production, high cost of borrowings, slump in the primary capital market and low investment in infrastructure. Recovery in the capital goods sector is linked with overall industrial revival. The demand for capital goods being a derived demand, the long-term prospects of the industry would depend on continuous and sustained growth in overall industrial production.

5.133 During the Ninth Plan, the capital goods industry is expected to grow at 12-14 per cent per annum. In order to sustain a growth rate of this level, the industry needs to orient itself in terms of quality and costs. Being a capital intensive sector, the domestic production is sometimes costlier than imports. The reasons for prevalence of high cost pattern of production in the capital goods industry are (i) higher prices of components and bought-out parts (due partly to lower scales of production), (ii) a lower ratio of sub contracting which usually

allows producers to minimise costs over the entire production process, (iii) low utilisation of capacity, especially by international standards, (iv) small sizes of plants, (v) insufficient plant modernisation and inability to keep pace with the CNC techniques used elsewhere in the world, (vi) higher inventory costs - Indian machinery manufacturers keep 6-12 months' production as inventory because of uncertainties regarding inputs and sales, poor distribution network and infrastructure bottlenecks, (vii) an inverted duty structure with lower Custom duty on import of finished goods than duties on imported raw materials/components, which puts the domestic manufacturers at a disadvantage giving them negative protection against imports. Domestic manufacturers are at a further disadvantage due to local levies (sales tax, octroi etc.) vis-a-vis foreign manufacturers. The anomalies in excise duty (ED) and countervailing duty (CVD) also require rationalisation to bring domestic industry on par with foreign manufacturers. Due to these reasons and some other inherent disadvantages like cost of finance, infrastructure facilities, etc., 'zero' customs duty on import of items which are also manufactured in India, domestic capital goods industry does not have level playing field vis-a-vis imports. This needs urgent attention.

5.134 Some of the thrust areas during the Ninth Plan are R&D and exports. Any R&D effort would have to be towards achieving improvements in the existing efficiency, security, safety and reliability of systems. If the industry is to develop and grow in a competitive market, it has to produce cheaper, better quality and better designed products, besides offering shorter delivery period and guaranteed service.

5.135 There is a growing need for ensuring quality in the products and services. With the emergence of the open market economy, quality management is an essential management ingredient to harness the potential capabilities in the organisation to meet customer requirements and even exceed them in order to have an edge over the competitors. An organised effort at institutionalising quality management and spreading it to all sectors of industry as a culture is increasingly being made.

5.136 To be competitive in the global market, production costs have to be optimised. The machining technology plays a vital role in the output, quality, productivity and competitiveness of the engineering industry. The future level of manufacturing industry in the country would depend to a large extent on its ability to update its technology in tune with the current international trends.

5.137 Small and medium sized engineering units are engaged in the manufacture of auto components, metal parts of electronic industries, machine tools, cutting tools, sheet metal products and fabrications, textile machineries, precision gauges and instruments, fabrication, heat treatment and surface treatment. The small and medium units need support in technology upgradation and productivity improvement through consultancy services and training. R&D support for product development and testing are the immediate requirements of the engineering industry.

5.138 ISO 9000 certification will be encouraged for increasing exports. The ISO 9000 movements have laid great emphasis on the reliability and precision of measuring instruments and equipment used in the laboratories which in turn contribute towards achieving a higher quality of the end-product. Consequently, the calibration of measuring instruments assumes

greater importance since ISO 9000 series standards make it mandatory that instruments used should have a known state of calibration with precision of national or international standards.

5.139 The different rates of levies like sales tax, motor vehicles tax, road tax, etc., prevailing in different States for the automobile industry need to be rationalised. In the machine tools industry, the existing public sector units will be encouraged to form joint ventures with reputed manufacturers for technology upgradation. The PSUs engaged in the manufacture of industrial, electrical and other machinery also need to be privatised by forming joint ventures for technology upgradation and efficient management, wherever appropriate.

Ship Building and Ship Repair Industry

5.140 The shipping industry is closely connected with the ship building and ship repair industry for augmentation, service and maintenance. At present, there are 40 shipyards in the country, out of which seven are in the public sector (four under the Ministry of Surface Transport and three under the Ministry of Defence), two in the State sector and the remaining in the private sector. The ship building industry has been delicensed and is open to the private sector, irrespective of the size of ships, except for construction of war-ships. At present, the private shipyards are not building large-sized ships due to various reasons like non-availability of adequate resources, inadequate returns, lack of demand etc. The three public sector shipyards under the Ministry of Surface Transport are Cochin Shipyard Limited (CSL), Hindustan Shipyard Limited (HSL) and Hooghly Dock and Port Engineers Limited (HDPE). CSL and HSL are catering to ocean sector while HDPE is mainly confined to construction of fishing trawlers, barges, small passenger vessels, small crafts etc. CSL has been designed for building large size (86000 DWT) panamax type vessels and oil tankers while HSL builds standard (21,500 DWT) pioneer class type vessels.

5.141 The Indian shipyards have been finding it difficult to face competition from abroad, the main reasons being lack of design base, very high cost of production, unduly long delivery periods and poor viability of the shipyards. In the Eighth Plan, taking into account the problems faced by the ship-building industry, more emphasis was given to ship repair activity, which is more profitable and foreign exchange saving than ship-building. Ship repair industry has been recognised as a deemed export industry and a number of concessions which are given to 100 per cent export oriented units, are available to this industry. The capacity utilisation of the public sector shipyards in the ship-building activity was very low. The major reasons for the poor capacity utilisation are inadequate flow of orders, reluctance on the part of ship owners to place orders due to the higher price of indigenous ships and long construction period compared to international builders. The pricing policy for construction of ships in Indian shipyards was revised in September, 1993 for a period of two years which expired in September, 1995. Under this a subsidy of 20 per cent from the Central Government and 10 per cent from the owner of the ship was provided to the shipyards.

5.142 During the Eighth Plan, the production in HSL was 113,895 DWT and in CSL 69,033 DWT, registering a capacity utilisation of 30.27 per cent and 10.09 per cent respectively. However, as ship repair is more remunerative, the ship building docks and other facilities have been used by these shipyards for ship repairs. During the Eighth Plan, CSL has achieved a turnover of Rs. 390.94 crore in ship repair activity and CSL could turn around and start earning profits. During Eighth Plan period the turn over of HSL was Rs. 198.21 crore. The HSL which

is presently incurring losses, needs to concentrate more on ship repair activity. HDPE, which is presently a sick yard, is undergoing a short-term revival plan to complete the existing orders. A long-term revival plan including privatisation needs to be formulated and implemented

5.143 Though in the existing scenario, ship repair is more profitable than ship building, the ship building industry needs to be maintained at least at the existing level of production because of the following reasons :

5.144 (i) Ship building is a skill which has been developed by shipyards at considerable cost and should not be allowed to die out, (ii) ship building industry is supported world over by their respective Governments; Indian shipbuilding industry also needs such support from the Government, considering strategic requirements and also the foreign exchange saving involved in it, (iii) the infrastructural facility such as design setup, huge fabrication and assembly shops, machines, hydraulic presses, etc developed by shipyards will become redundant as these are not fully useful for ship repair activity, and, (iv) ship building industry also supports ancillary industries.

5.145 During the Ninth Plan, emphasis will continue to be on ship repair activity and the future of ship building will depend on the competitiveness of the Indian yards, which will have to improve their efficiency and modernise by forming joint ventures with reputed foreign shipyards. They may also diversify their activities so that the idle machinery etc. could be fully utilised. Another advantage of forming JVs is that the JV partner may be able to get international orders.

5.146 The National Ship Design and Research Centre (NSDRC), a society under the Ministry of Surface Transport was commissioned in 1993, to provide design/consultancy services to the ship building industry. The Centre is yet to sustain its activities. Considering the present situation of the Indian ship-building industry, NSDRC should extend its consultancy services beyond the country's borders so that it could sustain its operations rather than depending on budgetary support.

Electronics

5.147 The presence of electronics is being felt in every sphere of life. Electronics has been identified as an effective tool in tackling various issues of national importance like literacy, education, health, agriculture, information infrastructure, population control, unemployment etc. It is set to bring about a social transformation covering all spheres of life in manufacturing, services, education, management and entertainment. Its enviable role in key sectors of the national economy for improving efficiency, achieving cost optimisation and improving safety as well as reliability, has been amply demonstrated

5.148 During the Eighth Plan, the electronics industry is estimated to have achieved a cumulative growth of 20 per cent in production and 41 per cent in exports. In the terminal year of the Eighth Plan, electronics production and exports were Rs.26,640 crore and Rs.6,287 crore, respectively, against the Eighth Plan target of Rs.36,000 crore and Rs.6,500 crore respectively. The infrastructure facilities created by Government of India like Software Technology Parks, Electronics Hardware Technology Parks, Export Processing Zones, Standardization Testing and Quality Control (STQC) Laboratories are contributing a lot to the growth of the electronics industry.

5.149 The Eighth Plan witnessed liberalization in fiscal, industrial and trade policies. Licensing has been abolished for the electronics industry as a whole except for aerospace and defence electronics items. The EXIM policy has been liberalised. With the exception of consumer electronics and telecommunication products, no other items figure in the negative list of imports. The consumer electronic items are allowed for import under Special Import Licence (SIL). The customs duty on specified raw materials was reduced to 10 per cent and on components, computer and computer peripherals to 20 per cent. These changes in import duties have imparted the much needed dynamism to the computer industry.

5.150 The Software Technology Park scheme, initiated for boosting software development and exports, has made good progress. Upto 1996-97, 642 units were accorded approval under this scheme compared to 121 units till January 1991.

5.151 During the Eighth Plan, there has been a significant growth in investments in computers, consumer electronics and telecommunication sectors. Several foreign collaborations have been established in the sector with prominent multinational companies setting up production/design base in the country for exploiting the advantages of cost-effective human capital and other inputs.

5.152 A target of electronics production of Rs.1,38,350 crore has been kept for the terminal year of the Ninth Plan, representing a compound growth rate of about 39 per cent per annum. This will be 2.0 per cent of world production, as compared to 0.7 per cent at present. An export target of Rs.49,000 crore has been set for the terminal year of the Ninth Plan with a growth rate of 51 per cent. In order to achieve these ambitious targets, the required strategies will be designed and these include: rationalising tariffs, attracting foreign investment, promoting production at international levels of costs and prices, market promotion and export thrust, raising the quality of products to international levels, rationalising of procedures, identifying niche areas in world market, strengthening manpower base, improving R&D efforts, encouraging computing in Indian languages, application of electronics in different sectors of the economy and strengthening data base.

5.153 The development of information infrastructure in the country is increasingly becoming significant and promises to bring far reaching changes in the lives of the people. Some of the areas which have been well appreciated by the society are Railway Passenger Reservation System, Screen Trading of Scrips in stock exchanges, networks of educational/research institutions, etc. The access to Internet has already been established in various parts of the country. During the Ninth Plan, a National Information Infrastructure (NII) is being initiated with a high speed national network and a regulatory authority. Apart from this, the NICNET, a satellite based information network of National Informatics Centre (NIC), which has already been extended to almost all districts in the country will continue to serve mainly the Government sector.

5.154 During the Ninth Plan, thrust will be given to joint R & D projects with user agencies. Special impetus will be given for technology development in selected areas leading to increased exports and for infrastructure development to help exporters.

5.155 The technology development perspective identified for the Ninth Plan period includes: enhancing the product range of audio and video products, incorporating emerging digital technology and home electronics products, industrial automation for increasing productivity and quality, widespread use of Internet, personal communication services and mobile satellite services, increasing computer communication speed, more computer penetration, strategic

electronic components, high resolution technologies, future air navigation systems, radar technologies, components, micro-electronics, multi-layer surface mounted PCBs and colour display devices.

5.156 For global competitiveness, quality assurance to international standards is a pre-requisite. There is a need to expand the present services of STQC to cover areas like environmental/energy management systems, energy auditing, Information Technology (IT) and telecommunication sectors.

5.157 The strength of the country in the software area is well recognised. There is a need to develop globally competitive and high quality software to encash on its comparative advantages. Software houses should concentrate on areas like packaged software, software for factory automation, networking, virtual reality-based design activities, telecom applications, etc. Information technology (IT) has been identified as an area of extreme focus in all future Plans. All efforts will be made to make India a global IT Power and one of the largest generators and exporters of software in the world within ten years. Action to achieve this ambitious national mission has been initiated under National Information Infrastructure (NII) programme. This includes a number of initiatives like setting up of National High-Speed Backbone NetWork, Internet and Related Matters, Promotion of STPI Infrastructure, E-Commerce, Cyber Laws, Human Resource Development in IT and Software, Financing Software Industry, Tax concessions for the IT sector, etc.

5.158 Availability of high quality trained manpower is a must in order to achieve the Ninth Plan targets especially in respect of software exports. To this end, emphasis will be laid during the Ninth Plan on introducing more job-oriented courses at all levels by encouraging private institutions to impart training in computer software area. The need of specialised manpower in areas like software engineering practices, system analysis and design capability and project management skills will be catered through specialised courses to be initiated in the IITs, IIMs, National Centre for Software Technology (NCST), Centre for Advanced Computing (C-DAC), etc. Special manpower development schemes in the area of Applications-Specific Integrated Circuit (ASIC) design, Hindi and regional languages as operating systems, schemes for SC/ST and backward regions in the North East will be initiated during the Ninth Plan. The connectivity of a number of educational institutions and R&D Centres and research institutions to national and international networks will be undertaken during the Plan period.

Fertilizers

5.159 The production targets of both nitrogenous and phosphatic fertilizers set for the Eighth Plan (1996-97) were not achieved primarily because the planned capacity addition of seven lakh tonnes in the case of nitrogen (N) and two lakh tonnes in the case of phosphate (P_2O_5) did not materialise.

5.160 In the case of nitrogenous fertilizers, the shortfall was partly due to non-availability of feedstock-natural gas - which was expected to be made available to units at Vijaipur, Aonla and Jagdishpur (on HBJ pipeline) and two other small units in Krishna Godavari (KG) basin for their expansion projects planned for the Eighth Plan. While Aonla and Vijaipur units got the gas, Jagdishpur could not get the gas allocation partly due to limitation in the availability of gas from the HBJ pipeline and partly due to shifting of priority for gas allocation to the power sector. The other two small units also did not get gas as anticipated because of low gas reserves

in the KG basin. Gas shortage also restricted exploitation of the full capacity of gas-based plants. The other reasons were lower contribution of nitrogen from the phosphatic fertilizer units.

5.161 Due to nearly 100 per cent dependence on imported raw materials, only a small addition in the capacity of phosphatic fertilizers was planned in the Eighth Plan mainly through adoption of pipe-reactor technology in the existing units where 25 to 35 per cent extra capacity could be achieved at nominal investment. Even this addition in the phosphatic fertilizer capacity could not be realised due to changes in the pricing policy in August, 1992 when decontrol of phosphatic fertilizers (along with potassic) was announced. The demand for phosphatic fertilizer slumped and remained stagnant inspite of providing some ad-hoc subsidy. Domestic producers faced stiff competition from imports which flooded the market as a result of decontrol of phosphatic fertilizer industry. The domestic units were forced to cut back production.

5.162 The performance of the sick public sector units continued to be a cause for concern throughout the Eighth Plan period. The performance of Durgapur, Namrup and Barauni units of Hindustan Fertilizer Corporation (HFC) deteriorated in real terms though with derating of capacities of these units their losses came down. The Haldia project of HFC failed to achieve commercial production and its commissioning has been discontinued since 1986. The position of Fertilizer Corporation of India (FCI) is broadly similar with the Gorakhpur unit remaining closed since 1990 following an explosion. Ramagundam and Talcher working well below the rated capacity due to high ash content of coal and technological problems. Both HFC and FCI along with Projects and Development India Ltd (PDIL) a consultancy unit- have been referred to BIFR. The revival package in the case of PDIL has been finalised and implemented. It did not envisage infusion of fresh funds. The turn around package of PDIL has been quite successful and the company has recorded substantial improvement in its operating and financial performance. The revival packages for HFC and FCI have been prepared and are under consideration of the Government.

5.163 The Pyrites, Phosphates & Chemicals Ltd. (PPCL) and Paradeep Phosphates Ltd. (PPL), which produce only phosphatic fertilizers, suffered due to shrinkage of demand for phosphatic fertilizers following decontrol in August, 1992. Though these units were able to avert cash losses, they continued to make operating losses and were provided budgetary support for meeting their investment needs. Both these PSUs have embarked upon turn-around strategies to improve their performance under a targeted time-frame.

5.164 The Eighth Plan had advocated the removal of subsidy in a phased manner on fertilizers and creation of free-market conditions in the fertilizer market. The decontrol of phosphatic and potassic fertilizers led to a steep increase in their prices with consequent decline in demand for these fertilizers. It also resulted in overdosing of comparatively cheaper nitrogen through urea, which was under price control. The NPK ratio of fertilizer feed, which was 5:2.5:1 in 1991-92 and was approaching the optimal level of 4:2:1, drifted away after decontrol to 8.4:2.5:1 in 1996-97, it has gone as far as 37:8.5:1 in the northern zone. This has serious implications for long-term fertility of soil and needs urgent attention. A high power committee was set up to suggest suitable changes in the pricing policy of fertilisers. The committee has since submitted its report, which is under consideration of the Government.

5.165 Among the key objectives for the Ninth Plan would be long-term feed-stock policy for the fertilizer sector and an appropriate fertilizer pricing policy which while maintaining a balance between the twin objectives of tapering off the subsidy and encouraging fresh investment in the fertilizer sector, will help increase fertilizer consumption as well as correct the large disparity between the prices of different nutrients for achieving their optimum application ratio.

5.166 The other areas which would need attention include strengthening of infrastructure, especially for fertilizer movement (railways) and handling of imported fertilizers (ports) which are becoming bottlenecks in meeting the demand for nutrients in different parts of the country. This also implies that the location of new fertilizer plants would be encouraged in deficit areas in order to reduce the lead distance of transportation and avoid logistic problem.

5.167 The fertilizer industry should expand their soil testing services to advise the farmers on the balanced use of fertilizers. At the same time, there is a need to educate the farmers on Integrated Plant Nutrient System.

5.168 With appropriate price correction, the demand for phosphatic fertilizers during the Ninth Plan is anticipated to grow at 7 per cent per annum and for nitrogenous fertilisers at 5 per cent per annum. Based on these growth rates, the demand would be 13.4 million tonnes for nitrogenous fertilisers and 4.6 million tonnes for P_2O_5 during the terminal year of the Ninth Plan i.e. 2001-02. With the projects under implementation and under formulation, the domestic production is anticipated to meet almost 98 per cent of the demand in the case of nitrogenous fertilizers, leaving a gap of 0.2 million tonnes. The gap in the case of P_2O_5 would be 1.7 million tonnes. The total investment in the fertilizer sector in the Ninth Plan is estimated at around Rs.13,300 crore, out of which about Rs.9,300 crore would be in the public sector and the balance in the private sector.

Petrochemicals

5.169 Petrochemicals can be broadly categorised as polymers like polyethylenes commonly known as LDPE, LLDPE, HDPE, polypropylene (PP), polyvinyl chloride (PVC), elastomers like styrene butadiene rubber, poly butadiene rubber, fibres such as PFY, PSF, acrylic fibre and intermediates such as ethylene, propylene, benzene, caprolactam, dimethyl terephthalate (DMT), purified terephthalic acid (PTA), etc. Petrochemicals are manufactured from the feedstocks coming from the petroleum refineries-naphtha and cracked LPG-and natural gas.

5.170 The manufacture of petrochemicals involves three stages : (a) manufacture of olefins such as ethylene, propylene and butadiene from petroleum feedstocks, (b) manufacture of intermediates such as acrylonitrile, DMT, PTA, and (c) manufacture of final products such as polymers, elastomers and fibres.

5.171 The petrochemicals industry in India made a modest beginning in the 1960's with the commissioning of a small-sized integrated petrochemicals complex of 60,000 tpa capacity by National Organic Chemicals (India) Ltd. (NOCIL)), followed by a small cracker and an LDPE plant by Union Carbide (India) Ltd. (UCIL), a PSF plant by Imperial Chemical Industries (ICI) and a synthetic rubber plant by M/s. Synthetics and Chemicals. All these plants were set up in the private sector. The industry, however, saw a phenomenal growth with the

commissioning of Indian Petrochemicals Corporation Limited's (IPCL) - a public sector unit - cracker complex of 1,30,000 tpa capacity at Baroda in the late 1970's and several other plants in the private sector during the 1980's.

5.172 The petrochemicals industry has been one of the fastest growing sectors in the Indian economy. The 1980s witnessed a significant growth in the consumption of all petrochemicals with synthetic fibres and intermediates registering the highest growth rates of around 16 per cent followed by thermoplastics at around 12 per cent per annum. On the whole, the consumption of petrochemicals grew at an annual compound rate of 13.3 per cent in the 1980s. In quantitative terms, the consumption of petrochemicals grew from around 7.5 lakh tonnes in 1979-80 to well over 3.5 lakh tonnes in 1995-96. While the consumption has grown at a very healthy rate, capacity growth has lagged behind. Around the mother crackers, grew the down-stream units which manufacture a large variety of consumer products of plastics including synthetics and cotton blended cloth.

5.173 Keeping in view the higher growth rates realised during the 1980s and the increase in demand for petrochemicals, letters of intent/industrial licences were issued for the setting up of crackers at Hazira in Gujarat, Auraiya in UP, Gandhar in Gujarat, Vizag in AP, Haldia in West Bengal, Tengaghat in Assam, Payal near Ludhiana in Punjab, Mangalore in Karnataka, Jamnagar in Gujarat and expansion of National Organic Chemicals Industries Ltd. cracker at Thane-Belapur in Maharashtra. The total investment in these crackers is estimated at around Rs.40,000 crore. Besides, letters of intent/industrial licences were issued for a number of aromatic complexes. Out of these, Hazira, Auraiya and Gandhar Phase-I have been completed, whereas the progress made in the implementation of the other crackers as well as aromatic complexes has been rather slow.

5.174 The petrochemicals industry was not internationally competitive in the earlier closed economy due to factors such as high input costs, high rates of taxes and duties, infrastructural bottlenecks, etc. With the opening up of the economy, the industry was delicensed except for hazardous products like ethylene, propylene, butadiene, xylenes, toluene, polycarbonate, mono ethylene glycol, etc. The import duties were progressively reduced.

5.175 The Eighth Plan was formulated in the background of economic reforms which implied much greater freedom to Indian industries to make their own business decisions in the competitive economic environment. During the first three years of the Plan, petrochemicals industry came under severe competition with comparatively cheaper imports. This was compounded by a slow-down of the economy during the first two years of the Plan. The international prices of most of the petrochemical products remained depressed during most of the Eighth Plan period. This resulted in cheaper imports and posed a serious threat to the domestic petrochemicals industry.

5.176 The domestic producers had to resort to cut-backs in production, particularly of intermediates. The profitability was also affected. The industry responded to the new economic environment with restructuring, adoption of the latest technologies and taking other measures to improve its competitiveness. Most of the players in the industry have been able to adjust to the new economic environment. The adoption of the latest technologies by the industry has been through a combination of absorption of imported technologies, in-house efforts, R&D and through industry-institutional R&D linkages.

5.177 While the major players in the public sector, namely, Indian Petrochemicals Corporation Ltd. and Hindustan Organic Chemicals Ltd. have taken up expansion/diversification schemes, the Petrofils Cooperative Ltd. has turned sick due to factors such as surplus capacity, cheaper imports, lower demand, steep price hike of raw materials & intermediate inputs, severe liquidity crunch, working capital shortage, etc. It has not been possible to work out any viable revival package so far.

5.178 About 88% of the indicative production targets of the major petrochemicals, excluding fibre intermediates set for the terminal year of the Eighth Plan - 1996-97 has been realised. Production of polymers and synthetic detergent (LAB) exceeded the indicative targets by 4% and 11% respectively and synthetic fibres, fibre intermediates and synthetic rubbers also achieved about 70%, 81% and 69% of their respective indicative targets. Among synthetic fibres, 82% of the indicative target was realised in respect of acrylic fibre and 100% in the case of nylon industrial yarn. The achievement was about 106% in respect of DMT/PTA, which serve as the main raw materials for the production of Polyester Filament Yarn (PFY) and Polyester Staple Fibre (PSF). With the installation of 7.5 million tonne per annum mega cracker at Hazira, the country has almost reached the stage of self-sufficiency in petrochemical building blocks. The new capacity additions in polymers, such as PVC at Gandhar Cracker of IPCL and Hazira Cracker of Reliance Industries Ltd. (RIL), Polypropylene at Baroda Complex of IPCL and Hazira Complex of RIL and synthetic rubber (SBR) at Baroda Complex of IPCL, have bridged the gap between domestic production and consumption. India has become net exporter of PFY, PSF, PVC, PS and LAB. Following import liberalisation, competition is, however, regulating the market and hence prices determine the buyers' choice to go either for indigenously produced products or the imported ones. About 25% of the total domestic production of petrochemicals is envisaged to be exported during the Ninth Plan period.

5.179 The tempo of investment in the petrochemicals sector slowed down in the Eighth Plan. This is attributed to many factors, important ones being the cautious approach adopted by the industry because of liberalisation which, inter alia, resulted in cheaper imports coming into the country due to depressed international prices during most of the Eighth Plan period, liquidity crunch faced by the industry including non-availability of funds from public financial institutions to petrochemicals industry as a matter of Government policy. The position, however, improved from the third quarter of 1995-96 when international prices of some of the petrochemical products started rising. This improved profitability of both the public and private sector companies. The IPCL, commissioned Phase-I of Gandhar petrochemical complex with coming on stream of Vinyl Chloride Monomer (based on imported ethylene) and caustic soda/chlorine units, etc. The Phase-II comprising Mother Cracker and down stream units is expected to be commissioned by December, 1998. The IPCL completed revamping and expansion programme of Poly Butadiene, PP and Butadiene units located at its Vadodra cracker complex. It also completed expansion programme of Ethylene and HDPE units located at its Maharashtra Gas Cracker Complex, Nagothane.

5.180 In order to provide technical services to the growing plastics processing industry including trained personnel, testing for standardisation and quality control of the products, etc., Central Institute of Plastics Engineering & Technology (CIPET) was established at Madras in 1968. Many Centres have also been set up in different parts of the country. The Extension Centres at Amritsar in Punjab, Mysore in Karnataka, Imphal in Manipur and Calcutta in West Bengal were set up during the Eighth Plan period. Six new Centres at Narora (UP), Pune (Maharashtra), Jaipur (Rajasthan), in Kerala, Guwahati (Assam), in J&K and Himachal Pradesh

are expected to be set up during the Ninth Plan. CIPET has joined hands with BPTA (British Polymer Training Association) to conduct BPTA-type training programme in India.

5.181 The petrochemicals industry has a major role to play in the Ninth Plan in achieving, inter alia, the objectives such as employment generation, regional development, improvement in the quality of life of the citizens, etc. The emphasis in the Ninth Plan would be on achieving international competitiveness through restructuring, technological upgradation, expansion of capacities, innovative managerial and marketing efforts and R&D, including effective and efficient industry-institutional R&D linkages. The private sector is expected to play a major role in further development of the petrochemicals industry and a number of joint ventures abroad are expected to come up during the Ninth Plan period.

5.182 It is anticipated that the petrochemicals industry will achieve an annual compound growth rate of around 15 per cent- synthetic fibres, 12 per cent electronics and polymer sectors at about 16 per cent in the Ninth Plan. The total investment in the petrochemicals industry in the Ninth Plan is placed at around Rs.72,000 crore, out of which the public sector is anticipated to contribute around Rs.6,000 crore. The investment is expected to get a boost, since restrictions imposed earlier on the public financial institutions for funding petrochemicals industry have been removed.

5.183 The industry would need to pay due attention to environmental issues like handling plastic wastes. It is expected to make investments for installing state-of-the-art technologies with adequate pollution abatement facilities. During the Ninth Plan, greater emphasis would be laid on performance plastics such as polyamides, polyacetals, polycarbonates, etc., the consumption of which is linked to the growth of sectors like automobiles, electronics, telephones, agriculture, packaging, etc. The changing Indian scene with rapid growth of these industries will push up the growth in the consumption of performance plastics. The petrochemicals industry being technology-intensive, linkages between research, manufacturing, design, engineering and academia will need to be strengthened.

Drugs and Pharmaceuticals

5.184 The Indian drugs and pharmaceuticals industry is one of the largest and most advanced among the developing countries. It is manufacturing a wide range of basic drugs and pharmaceuticals, covering several therapeutic regimes including antibiotics, anti-bacterials, steroids, hormones, vaccines, herbal preparations, etc.

5.185 The domestic drug industry is in a position to meet about 70 per cent of the country's requirements of bulk drugs and almost the entire demand for formulations. The setting up of the Penicillin factory at Pimpri, Pune in the early 50's and the construction of Indian Drugs & Pharmaceuticals Ltd. (IDPL) plants at Rishikesh and Hyderabad in the 60's have been milestones in the history of the pharmaceutical industry in the country. These have been the building blocks on which the structure of the pharmaceutical industry in India has been built. The public sector investment in the pharmaceutical industry has been the engine of growth for the industry as a whole in the last three decades.

5.186 There were about 14,000 units producing drugs and formulations at the beginning of the Eighth Plan. This number has increased substantially since then. More than 30 per cent of production of bulk drugs comes from the small scale units. The production of bulk drugs

and formulations has increased from Rs.240 crore and Rs.1200 crore respectively in 1980-81 to Rs.2186 crore and Rs.10,494 crore respectively in 1996-97. Exports of drugs & pharmaceuticals increased from Rs.161.32 crore in 1983-84 to Rs.2681 crore in 1996-97. Imports increased from Rs.163.34 crore in 1983-84 to Rs.2096 crore in 1996-97.

5.187 The five public sector units namely, Indian Drugs and Pharmaceuticals Ltd (IDPL), Hindustan Antibiotics Ltd. (HAL), Bengal Chemicals and Pharmaceuticals Ltd. (BCPL), Smith Stanistreet Pharmaceuticals Ltd. (SSPL) and Bengal Immunity Ltd. (BIL) have all been in the red due to outmoded technology, excessive workforce, high overheads, weak marketing set-ups, excessive reliance on institutional sales, etc. All these units were referred to BIFR and the revival packages approved by the Government for BCPL, BIL and SSPL are under implementation. These companies are expected to turn around during the Ninth Plan IDPL could not achieve the target set forth in the revival package and BIFR has declared that the revival package has failed. An attempt is being made to put together a fresh revival package. The Industrial Development Bank of India, the operating agency appointed by BIFR, is also in the process of finalising a revival package for HAL.

5.188 A new Drug Policy was announced in 1994. Under this Policy, industrial licensing has been done away with. A new Drug Price Control Order was announced in 1995 reducing the number of drugs under price control to 76 from the earlier 142. With these liberalisation measures, the drugs and pharmaceuticals industry has registered a higher growth and the country has emerged as a net exporter of drugs during the Eighth Plan period.

5.189 Though R & D in the drug industry recorded a significant progress during the Eighth Plan period, the investment on drugs R & D in India is only 1 to 1.5 per cent of its sales turnover, compared to 12-15 per cent in the developed countries. So far, the main thrust has been on process improvements and not enough efforts have been made to discover new drug molecules from the basic stage.

5.190 The National Institute of Pharmaceutical Education and Research (NIPER) is being set up at Mohali near Chandigarh. This institute has been declared as a centre of excellence and is expected to fill up a major gap in the area of pharmaceutical education, research and training.

5.191 A new programme for promoting R&D in drugs and pharmaceuticals sector was initiated for which an outlay of Rs.10 crore was provided in the Eighth Plan. A two-tier structure was set up to manage the programme viz. an Apex Executive Committee at the Secretaries level, chaired by Secretary, Department of Science & Technology and an Expert Committee at the operational level.

5.192 The National Pharmaceutical Pricing Authority has been set up which has been entrusted with the task of price fixation/revision and other related matters. Besides, a separate Department of Indian System of Medicines and Homeopathy has been set up and the National Drug Authority is being set up through an Act of Parliament.

5.193 The domestic drugs and pharmaceutical market is anticipated to grow at an average annual rate of 15 per cent and imports at 12 per cent during the Ninth Plan period. The exports are expected to grow at an average annual rate of 10 per cent for formulation and at 20 per cent for bulk drugs.

5.194 The area of off-patent drugs would be of greater importance because of the post-GATT scenario during the Ninth Plan period. The export growth potential of drugs and pharmaceutical products would be tapped by wide expansion of export operations to Africa, Latin America, Middle East, South East Asian countries, etc.

5.195 The thrust of the drugs R&D in the Ninth Plan will be on developing new drug molecules through basic and applied research for which industry-institutional linkage would be strengthened, apart from pursuing the objective of effective and efficient computer-aided discoveries, setting up of specialised laboratories and adoption of good manufacturing and clinical practices. Realising that India has considerable potential for R&D in the area of tropical diseases, the R&D efforts in this direction would be encouraged.

5.196 An investment of the order of Rs. 1400 crore is anticipated to be made in the drugs R & D during the Ninth Plan period. This is to be financed mostly by the drugs and pharmaceutical industry units from their internal resources and partly by the Central and State Governments and contribution from the financial institutions.

5.197 A number of R & D programmes have been identified for being taken up in a coordinated manner in the national laboratories, public sector undertakings and private sector units. Development of sophisticated formulations such as slow release forms, advanced drug delivery systems, etc., will receive due attention. Research and development in the area of Biotechnology by an understanding of DNA replication mechanism related to the country's needs will also receive due emphasis.

5.198 Pollution control measures, industrial safety and energy conservation will be considered as integral parts of production activities of pharmaceutical industry.

Chemicals and Pesticides Industry

5.199 The chemical industry plays a very vital role in the Indian economy providing basic inputs to pharmaceuticals, petrochemicals, fertilisers and a large number of other allied chemical and consumer industries.

5.200 The chemical industry has been one of the fastest growing sectors in the Indian economy. India was not in a position to export chemicals till the end of the Seventh Plan in large quantities because of high cost of production of chemicals as compared to international prices. During the Eighth Plan period, due to upgradation and modernisation of plants and the support provided by the Government for exports, the Indian chemical industry has shown an impressive performance in the field of exports.

5.201 Dyes and dyestuffs sector is one of the important segments of the chemical industry providing inputs to many consuming industries. It is capable of meeting most of the domestic demands. The industry is practically self-sufficient in terms of its inputs. There are around 50 units in the organised sector having a total annual installed capacity of 49,000 tonnes. The production achieved during 1996-97 was around 30,160 tonnes. A large quantity of dyes and dye-intermediates is being exported. The dyes and dyestuffs industry is also getting gradually integrated with the world economy and is phasing out environmentally unfriendly dyes and dyestuffs, including through banning their use. In this direction, a decision has been taken for banning the use of azo dyes in the textile industry.

5.202 Pesticides including insecticides, fungicides, weedicides, etc., are the other important segments of the chemical industry. These are used extensively in agriculture and public health. Like the other segments of the chemical industry, including basic chemicals, the pesticide industry has also grown rapidly during the past forty years. Presently, more than 60 technical grade pesticides are being manufactured in India. More than 125 units are engaged in the manufacture of technical grade pesticides and over 500 units are making pesticide formulations.

5.203 Production of technical grade pesticides during 1996-97 was around 98,000 tonnes from an annual installed capacity of 139,300 tonnes. As a result of the increased production of pesticides in India, import of technical grade pesticides has declined considerably. Of late, the country has also entered the competitive field of export of pesticides. During 1996-97, pesticides valued at Rs.851 crore were exported.

5.204 Though India has started producing new pesticides, the manufacturers are continuing to import their intermediates in the absence of technology for producing them. Efforts are being made to acquire technology to manufacture intermediates for a number of low-volume and high-cost new generation pesticides such as Butachlor, Endosulphan Synthetic Pyrethroids, etc

5.205 The Eighth Plan saw greater awareness of environmental pollution and safety aspects and the new pesticides have to satisfy these criteria before being certified for use. The use of DDT and BHC, which are high volume pesticides, has been banned in agriculture.

5.206 The alcohol and molasses industry forms another important segment of the chemical industry and has made quite an impressive progress during the past forty years. The Molasses Control Order, 1961 and Ethyl Alcohol (Price Control) Order, 1971 - under which the prices and distribution of molasses and alcohol were regulated - were rescinded in 1993 with a view to ensuring free availability of these products on competitive prices to the downstream industries. Some States are, however, continuing with controls on molasses and alcohol. The matter needs to be reviewed in the larger interest of the chemical industry.

5.207 Several pesticides, which have been banned in the developed countries, are still being used in India. These need to be reviewed. Viable and effective alternatives to toxic pesticides, integrated pest management emphasising on the use of environment-friendly pesticides and use of control agents such as parasites and predators of crop pests would be the policy direction in the Ninth Plan.

5.208 There are a number of international treaties in the chemical sector which are becoming increasingly important and would have large-scale implications for the Indian chemical industry. Some of the international treaties in this regard are the Chemical Weapons Convention, Basel Convention, Montreal Protocol, London Guidelines, etc. The domestic chemical industry is not fully aware of these treaties and their implications. It should be made aware of these by arranging visits of delegations to various countries, seminars, symposia and technology collaborations during the Ninth Plan.

5.209 India has ratified the Chemical Weapons Convention which has come into force on 29th April, 1997. As far as India is concerned, the main obligations of the Convention would relate mainly to the Indian chemical industry and, therefore, the Government will play a crucial role in the implementation of the Convention to ensure that the growth of the industry

is not adversely affected while fulfilling the obligations under the Convention. The Convention requires extensive declarations from the chemical industry which would also be subjected to routine on-site inspections of declared plant sites and short-notice challenge inspections. For sensitisation of the industry to meet various obligations under the Convention, there will be constant interaction with the industry by way of meetings, seminars, workshops, discussions, trial inspections, etc. Analytical back-up support will be developed in the Ninth Plan for this purpose.

Cement

5.210 The cement industry was under price and distribution controls for about four decades. Both price and distribution controls on cement were lifted in 1989. It was delicensed in 1991.

5.211 The cement industry has recorded a significant growth in the past one and a half decade. The installed cement capacity exceeded the Eighth Plan target of 97 million tonnes in 1995-96 itself and touched a figure of 105 million tonnes during 1996-97. The total capacity addition during the Eighth Plan period was about 30-35 million tonnes, representing a growth rate of around 8.5 per cent per annum.

5.212 Though there was shortfall in cement production during the first two years of the Eighth Plan primarily due to infrastructure problems and depressed market conditions, the target of 76 million tonnes set for the terminal year of the Eighth Plan (1996-97) has been achieved. The Eighth Plan average annual growth rate of 7.2 per cent has also been achieved.

5.213 The private sector is having a significant presence in the cement industry with over 85 per cent of the production capacity. The public sector accounts for only around 15 per cent of the production capacity. The Central public sector undertaking, the Cement Corporation of India (CCI), is contributing to less than 5 per cent of the country's cement production.

5.214 The major areas of concern for the growth of the cement industry continue to be shortage of power and good quality coal and limitations in railway capacity. The cement industry is setting up captive power plants to overcome power problems.

5.215 The majority of cement units based on uneconomic wet process have been converted into modern dry process. Large-scale modernisation and automation have led to lower energy consumption and improvement in quality. A large number of plants of one million tonnes and above capacity have been set up with state-of-the-art dry process pre-calculator technology, as a result of which the quality of cement produced in the country is comparable to the best in the world.

5.216 With the increase in the volume of production, bulk handling and distribution of cement have gained importance. Looking at the country's ever increasing demand for infrastructure facilities as well as for large-scale export requirements, the Government of India is setting up a pilot plant project for creating bulk cement movement facilities at Kalamobli, New Bombay.

5.217 On the export front, the cement industry has made spectacular progress. Indian cement manufacturers have become internationally competitive and export cement to the neighbouring countries like Bangladesh, Sri Lanka, Nepal, Maldives, Middle East, etc.

However, the export target of 5 million tonnes set for the terminal year of the Eighth Plan (1996-97) was not achieved due to transport bottlenecks, particularly inadequate port facilities, high sea freight, duties and levies and due to growing domestic demand. Since the situation is not likely to improve in the near future, a conservative export target of 8.0 million tonnes has been fixed for the terminal year of the Ninth Plan, 2001-2002.

5.218 The performance of CCI has been unsatisfactory during the entire period of the Eighth Plan. Production suffered badly due to power shortage, working capital shortage, etc. For the Eighth Plan of CCI an outlay of Rs. 300 crore was approved. This was to be funded entirely from internal and extra budgetary resources. However, due to continuing losses, the company could neither generate internal resources nor mobilise extra-budgetary resources for financing its Eighth Plan schemes. In order to maximise benefits from its existing capacity, budgetary support of Rs.25 crore in 1994-95 and Rs.13.65 crore in 1996-97 was provided by the Government. The company has become sick and has been referred to BIFR. The turn-around strategy being considered involves privatisation of some of its units, financial restructuring, etc.

5.219 The demand for cement is anticipated to reach 109 million tonnes during the terminal year of the Ninth Plan (2001-2002) based on 8.5 per cent annual average growth rate. The capacity and production targets for the year 2001-2002 are placed at 135 million tonnes and 113 million tonnes respectively.

Sugar

5.220 India has been the largest producer of sugar for quite some time. A fluctuating trend of sugar production was witnessed in the first three years of the Eighth Plan with an all-time high of 16.4 million tonnes during 1995-96 and a very low of 9.8 million tonnes in 1993-94. The Eighth Plan target was 15.5 million tonnes. As against this, production in 1996-97 is expected to be around 12.8-13.0 million tonnes. The decline in production was due to decrease in the area under cane cultivation and lower yield in the first two years of the Plan. About two million tonnes of sugar were imported in 1993-94.

5.221 The sugar industry until recently continued to function under a regulatory system where licence had to be obtained for establishing new capacity or expanding the existing installed capacity. The industry has been delicensed in September 1998. The dual price control system is, however, still in operation, under which 40 per cent of the output is pre-empted for distribution through Public Distribution System (PDS) at an ex-factory price which is fixed for each of the 20 zones of the country. The factories are free to sell the balance 60 per cent at market price.

5.222 The Statutory Minimum Price (SMP) for sugarcane is fixed by the Government of India on a basic recovery of 8.5 per cent sucrose content and is used as the basis for determining the levy price of sugar. However, the price to be paid for sugarcane by the industry is the State Advised Price (SAP) fixed by the State Governments which is much higher than the SMP. This is clearly anomalous and needs to be rectified at the earliest.

5.223 For increasing the productivity of sugar industry, Government of India launched a Technology Mission Programme in 1994. Under this programme, encouragement is being given to modernisation/expansion of sugar mills, improvement in cane recovery, etc., to

boost production. Financial assistance for this is being made available from the Sugar Development Fund.

5.224 The Government of India allowed export of sugar during the years 1995-96 and 1996-97 to bring down the surplus stock of sugar. Sugar mills are now permitted to pack sugar in 50 kg. packs for export purposes and also in small consumer packs for local sale.

5.225 Incentives are being provided for setting up sugar units of minimum economic size. As a part of restructuring of sugar industry, the price and distribution controls of molasses were abolished with effect from 1993. In order to bring about greater efficiency in this sector, the Government of India has allowed sugar mills to set up downstream facilities.

5.226 The demand for sugar during the terminal year of the Ninth Plan (2001-2002) is anticipated to be around 19.5 million tonnes. With the decontrol of sugar industry, it is expected that the domestic sugar industry will not only meet this demand but will also produce surplus for exports.

5.227 The activities of Sugar Technology Mission (STM) for technological innovations would need to be continued. For effective human resource development, National Sugar Institute needs to be converted into an autonomous body.

Leather & Leather Goods

5.228 The leather industry has been identified as one of the thrust areas of exports. Footwear sector has been identified as an area of extreme focus. The export performance of the leather sector has improved considerably during the Eighth Plan period. The value of exports went up from Rs.3,076 crore during 1991-92 to Rs.5,861 crore during 1995-96 exceeding the Eighth Plan target of Rs.5,463 crore. However, during 1996-97, the exports were marginally down to Rs.5,798 crore. During the Eighth Plan period, the leather industry registered an annual growth rate ranging between 20-25 per cent.

5.229 A number of policy initiatives were taken by the Government during the Eighth Plan period, inter alia, facilitating import of raw materials, consumables, components and machinery for increasing production of the leather and leather goods sector. These included rationalisation of import tariffs, delicensing, allowing joint ventures, free imports at concessional duty, etc. Manufacture of finished leather from semi-finished leather was delicensed in April 1993. Tanned or dressed fur skins and chamois leather have also been removed from the list of items requiring compulsory licensing with effect from July, 1997. Domestic manufacture of components for the shoe industry was encouraged by promoting joint ventures and duty rationalisation on inputs required for manufacture of such components. Almost all the machinery items required for leather industry have been put under OGL and allowed to be imported at concessional rate of duty. Units in the Export Processing Zones have been allowed duty free import of inputs.

5.230 The Government of India also initiated two important programmes in the Eighth Plan for achieving a rapid growth of the leather industry. These are UNDP assisted National Leather Development Programme (NLDP) and National Leather Technology Mission

(NLTM) for sustainable development of the leather industry. Both these programmes are aimed at ensuring an integrated and balanced development and modernisation of the leather industry.

5.231 The leather industry is reserved for the small scale sector, which along with the cottage sector accounts for over 75 per cent of the total leather goods production. Units in the organised sector can enter this area only with a minimum export obligation of 75 per cent of their production. Units in the small scale and unregistered cottage sectors are encouraged to export leather footwear and leather products. This policy is designed to meet the twin objectives of safeguarding the interests of the small scale and cottage sectors and of increased exports.

5.232 One of the problems in the leather sector has been inadequate supply of raw materials i.e. raw hides and skins. The availability of raw hides and skins is influenced by the population of animals, growth rate of different animal types, recovery of carcasses, the production and marketing chains for raw hides and skins and management practices used in the country.

5.233 According to a survey by the Central Leather Research Institute (CLRI) considerable fallen carcasses are not recovered and this contributes to a significant loss of raw hides and skins. Model centres have now been established for recovery of fallen carcasses in various parts of the country. The NLTM has launched an initiative to commission 25 demonstration centres for recovery and for training the flayers and primary producers of raw hides and skins, leading to quality improvement. Several steps are being taken to augment the potential of raw hides and skins. These include (a) tapping the full available potential, (b) exploring new potential from the existing sources of animals, (c) generating new indigenous resources with techno-economic benefits and (d) supplementing resource needs through imports.

5.234 A major objective of the Ninth Plan would be modernisation of leather processing industry as well as artisan sector in footwear and leather goods segments. This would include (a) cost-reduction through higher productivity, (b) putting in place cleaner production systems, and (c) focussing on global market leadership in selected vital sectors through improvement of quality and consistency of products.

5.235 Tanning industry in India is facing a major crisis due to non-compliance with the national pollution control standards. A comprehensive technological package with both process changes and common effluent treatment needs to be developed with assistance from National Laboratories and other Government agencies.

5.236 The export target for the leather and leather products sector has been placed at US \$ 3,218 million and US \$ 4,515 million respectively by the end of the Ninth Plan.

Textile Sector

5.237 Textile industry is one of the largest and the most important sectors in the economy in terms of output, employment generation and foreign exchange earnings. It is presently contributing 20 per cent to the national industrial production and 35 per cent to the total national export earnings. It has also made a significant contribution to employment generation by providing over 25 million jobs. The production of spun yarn has grown at an average annual

growth rate of a little over 5.06 per cent over 17 years since 1980-81. The dominant share in spun yarn is that of cotton yarn constituting about 81 per cent of the total spun yarn production. The production of cotton and non-cotton yarn has grown at the rate of 4.48 per cent and of blended yarn at 8.47 per cent compound annually during the last 15 years. Although the output of blended yarn and 100 per cent non-cotton yarn has been growing, their shares have remained more or less the same, because over 70 per cent of the spindles are suitable for production of 100 per cent cotton and viscose yarn and the balance can use man-made fibres.

5.238 The domestic production of man made fibres and filament yarn has nearly tripled since 1985. This was primarily due to cuts in fiscal levies and tariff on man-made fibre intermediaries as per 1985 Textile Policy. This led to a spurt in the domestic demand for these fibres. The most notable growth was that of Polyester Filament Yarn (PFY), the production of which rose very sharply as compared to viscose and nylon filament yarn at 27.06 per cent during 1981-97. This has led to the expansion of powerloom sector - as PFY is largely used in this sector. As against this, the production of viscose filament yarn grew at an average annual compound growth rate of 2.06 per cent and nylon filament yarn at 3.85 per cent during the same period. The spindle capacity has been increased from 28.09 million in 1992-93 to 33.53 million by the end of March 1998. The per capita domestic availability of cloth in the country has risen to about 30.78 sq. mtrs. in 1997-98 from a little over 24.50 sq. mtrs. in 1992-93.

5.239 The production of cloth grew at 6.54 per cent during the period from 1980-81 to 1996-97. This was accompanied by a distinct shift in market share from the large-scale organised mill sector to the small-scale unorganised powerloom sector. The share of mill output declined to 5.71 per cent and that of powerloom rose from 38.5 per cent to 72.5 per cent. This is also reflected in the average annual compound growth rate in production recorded during the period 1980-81 to 1996-97 among the major sub-sectors of the textile industry. While the production of mill sector recorded a negative growth rate of 5.11 per cent, production of handloom sector grew at an average compound growth rate of 5.62 per cent and of powerloom sector at 10.83 per cent during the period 1980-97. Some of the factors which led to negative performance of the mill sector were structural transition coupled with lower productivity of labour, obsolescence of technology, increase in cost of inputs and working capital shortage besides competition from the powerloom sector because of its greater cost advantage.

5.240 The growth of textile exports from a modest figure of Rs.1336 crore at the beginning of 1981 to Rs.35,478 crore during 1996-97 (all textiles including readymade garments) was impressive. The share of man-made fibre textiles, which was almost negligible during 1981-82, now accounts for about 9.07 per cent in the total textile exports; it recorded an annual compound growth rate of 34.57 per cent during the period from 1981-82 to 1996-97 followed by 28.24 per cent for cotton textile fabrics, made-ups including yarn and sewing thread and 13.68 for woollen textiles.

5.241 The thrust areas for the textile sector during the Eighth Plan included greater emphasis on production of value-added, diversified and quality goods for exports and increased capacity utilisation with sophisticated designs, product mix with the use of latest technologies.

5.242 During the Eighth Plan period, the organised mill sector concentrated increasingly on exports with the bulk of the indigenous demand being met by the powerloom sector. The handloom sector produced high-value products for domestic as well as export markets.

5.243 The physical targets of yarn and cloth production set for the terminal year of the Eighth Plan (1996-97) were achieved and even surpassed in some cases. However, the export performance has been far short of the targets.

5.244 As a part of the world trade reforms, the Multi Fibre Arrangement (MFA) would cease to be in force after 2005. The Indian textile industry would get unrestricted access to the world market but would also face competition in the international market as well as in the domestic market from foreign exporters. It is, therefore, imperative to take urgent steps to bridge the technological gap.

5.245 While the spinning sector has performed well, the weaving and processing sectors have not, because of lack of modernisation. Due to this, the exporters have been generally exporting only grey fabrics. There is a considerable scope for increased processing resulting in higher value addition and better export earnings.

5.246 Upgradation of these sectors needs special attention and large doses of investment. The modernisation of textile sector would be a major thrust area in the Ninth Plan. For this purpose, it is proposed to create a Textile Modernisation Fund.

5.247 The ginning and processing units in the small-scale sector also suffer from obsolete technology, resulting in poor quality and wastage. It is imperative to provide adequate credit for modernisation of these units.

5.248 The targets for spun and filament yarn and cloth production for the terminal year of the Ninth Plan (2001-2002) are placed at 3755 million kgs, 997 million kgs and 44000 sq. mts. respectively.

5.249 The jute sector would continue to play an important role during the Ninth Plan period. A new organisation - National Centre for Jute Diversification - has emerged to provide forward and backward linkages between the existing and emerging entrepreneurs. A number of mills have R&D Centres and are diversifying their products. Exports are showing a steady upward trend.

5.250 A major area of thrust during the Ninth Plan would be to consolidate the achievements of the UNDP-assisted National Jute Development Programme and to carry on the follow-up activities. The Plan will have the twin objectives of consolidation of what has been achieved so far and moving into newer pastures. The thrust in the traditional sector would be on producing lighter material, modernisation of machines and processes, cost reduction and increased diversification and exports. Newer pastures are enthusing new entrepreneurs, NGOs, Women's Groups etc. in taking up jute related activities leading to increased and diversified production, sustainable human resource development, etc.

Paper Industry

5.251 There are more than 380 paper mills in the country with installed capacity of 43.5 lakh tonnes. The industry is providing direct employment to about 2 lakh people and indirect employment to 10 lakh persons. The Eighth Plan had projected the installed capacity of paper and paper board at 35 lakh tonnes and production at 29 lakh tonnes. While the installed capacity has exceeded the target, the production at 28 lakh tonnes was marginally lower than the target.

5.252 As a part of the liberalisation process, the paper industry has been delicensed subject to locational conditions. In order to help the industry improve its production and financial viability, policy measures such as free import of raw materials, broad banding of different varieties of paper and paper board, excise concessions for use of non-conventional raw materials, etc., were taken up during the Eighth Plan period.

5.253 The paper industry is one of the few sectors where the outcome of the global linkages has surfaced in the post-liberalisation era. With the scaling down of import duties to 20 per cent and the volatile international prices, the paper industry has been exposed to severe competition. The issues of scale of operations, cost competitiveness, quality upgradation have, therefore, assumed greater significance for the future of the paper industry.

5.254 The paper industry is dependent upon raw materials from forest sources. Wood is the main raw material used by the industry. Paper and pulp industry world-over has recognised strategic importance of wood as a fibrous raw material and countries with captive plantations of fast growing species would have a competitive edge over others because of cost-effective and high quality raw materials secured through these plantations. Assured raw materials facility and standardisation of manufacturing process would result in higher recoveries and better quality product.

5.255 One of the serious constraints which have been faced in augmenting the supply of forest-based raw materials is the restrictions imposed on captive industrial plantations under the national forest policy which rules out the provision of even degraded forest lands to the paper industry for industrial plantations. An appropriate policy on industrial plantations needs to be worked out to enable the industry not only to meet its raw material requirements but also help in increasing the green cover of the country through captive plantations on degraded and waste lands.

5.256 The problems facing the large paper mills are technological obsolescence and outdated processes and machinery. The small paper mills are beset with problems of obsolete equipment and inefficient chemical recovery systems which lead to high cost of production and pollution problems. More than 70-80 per cent of the paper used in India is of low quality unlike international markets where paper quality is much superior.

5.257 Presently, major imports of paper products include ivory card, art board, single coated paper, etc. The competitiveness of the paper industry in terms of cost and quality would depend upon modernisation, technological upgradation and economies of scale in production. The production of value-added products will also improve the viability of paper mills.

5.258 The paper industry is classified on the basis of installed capacity, raw materials consumed and the products manufactured. The proportion of non-wood raw material based paper has increased over the years. At present, about 61 per cent of the total production of paper is based on non-wood raw materials and the balance 39 per cent is based on wood. Most of the small and medium sized paper mills are based on non-conventional materials, namely, waste paper and agro residues. Bagasse, a byproduct of sugar industry, has found successful application in the manufacture of paper. The Government is offering incentives to the units using such non-conventional materials. In view of the constraints in the availability of forest-based raw materials, the future capacities would have to be based on alternate sources, related to recycleable, renewable and non-conventional raw materials.

5.259 The mechanism of waste paper collection from indigenous sources needs improvement in respect of grading/sorting. A stress on improving R&D efforts would be required to improve input/output norms, improve quality and reduce energy costs. Timely support is also needed by the paper industry by way of rationalisation of duty structure for imported paper vis-a-vis indigenous cost of production on account of volatile international prices and dumping.

5.260 The Hindustan Paper Corporation Ltd. (HPC) has five units, namely, Nagaon & Cachar Paper Mills in Assam and three subsidiaries, namely, Hindustan Newsprint Ltd (HNL), in Kerala, Mandya National Paper Mills Ltd. (MNPM) in Karnataka and Nagaland Paper & Pulp Co. (NPPC)

5.261 Except HNL, the performance of other units has been below expectations. In the case of NPPC, the production has been suspended from October 1992 due to erratic power supply from the grid coupled with disturbed working conditions. The revival of NPPC is under consideration. At MNPM, the production has been suspended since April, 1993, due to shortage of working capital and uneconomical operations. For MNPM, the only alternative appears to be privatisation.

5.262 The Eighth Plan provision for HPC was Rs.360 crore, including budgetary support of Rs.9.0 crore. The capacity utilisation was low and the company suffered cash losses on account of its sick units, namely, MNPM and NPPC. However, the capacity utilisation improved in the later part of the Eighth Plan period. The operating profits of the company also improved. The company has drawn up a plan for installation of certain balancing equipment to maximise capacity utilisation.

5.263 Paper is an essential consumer item and is of vital importance for educational, scientific, industrial and commercial sectors of the economy. With greater emphasis on increasing literacy level, the demand for paper would continue to grow. With the growth-oriented economy, the overall demand for paper and paper board is expected to be around 42 lakh tonnes by the end of the Ninth Plan.

Newsprint

5.264 There are at present 35 mills with an annual installed capacity of 7.63 lakh tonnes of newsprint. The production of newsprint in 1996-97 was 3.00 lakh tonnes. The capacity utilisation has been low, primarily because of competition from cheap imports. The timely rationalisation of duty structure is important to this sector as in the case of paper and paper

board to maintain cost competitiveness and to avoid any dumping.

5.265 Besides the obsolete plant and machinery, the main problem being faced by the industry is inadequate availability and high prices of raw materials. The industry needs to be allowed captive plantations, at least on degraded forest and waste lands, to have an assured source of raw materials. Usage of alternative sources of raw materials also needs to be encouraged to improve the level of production. Among the alternative sources of raw material, bagasse has been found to be a promising alternative. A leading Indian paper unit M/s Tamil Nadu Newsprint Ltd. has successfully employed bagasse-based technology for manufacture of newsprint. Another alternative source is waste paper, known as recycled fibre. Deinking technology has also a crucial role to play in future newsprint production. There exists a good scope for setting up newsprint capacity based on this technology. The demand for newsprint by the end of the Ninth Plan is estimated to be around 7.5 lakh tonnes.

5.266 The performance of NEPA was adversely affected on profitability and production fronts due to power shortages, accumulation of stocks, inadequate availability of inputs due to financial constraints, depressed market scenario, etc. NEPA was referred to Disinvestment Commission which has recommended the company for strategic sale.

5.267 Hindustan Newsprint Ltd. (HNL) in Kerala is a subsidiary of Hindustan Paper Corporation (HPC) with a capacity of 1 lakh tonne per annum. The performance of HNL has been quite satisfactory. The company has been consistently earning cash/operating profit during the Eighth Plan period.

Atomic Energy

5.268 The activities of the Department of Atomic Energy under Industry & Minerals sector pertain to the requirement of heavy water, nuclear fuel, instruments and controls, spent fuel recovery and waste disposal for nuclear power reactors.

5.269 The Uranium Corporation of India Ltd. (UCIL) completed its project of uranium Mining and Mill at Narwapahar, Bihar. The Nuclear Fuel Complex (NFC) took up five new projects for implementation in the Eighth Plan for meeting fuel requirement of the new nuclear power reactors.

5.270 Three of the NFC's projects namely, New Zircaloy Fabrication Plant, New Uranium Oxide Plant and New Fuel Assembly Plant are at advanced stages of completion. The two remaining projects namely Zirconium Sponge Plant and Titanium Sponge Plant are yet to start. However, due to the scaling down of the nuclear power target, the delay has not caused any problem in meeting the fuel demand of the existing reactors.

5.271 The Department of Atomic Energy has taken up the development of fast breeder reactors which enable utilising Thorium as fuel for power reactors. Simultaneously, it is proposed to set up high flux research reactors to develop new fuel designs in order to economise on the use of nuclear fuels. For augmenting uranium capacity, UCIL will develop a new uranium mine at Domiasat in Meghalaya in the Ninth Plan.

5.272 No new heavy water plant will be set up in the Ninth Plan. A new spent fuel re-processing plant, in addition to revamping of the old plant at Trombay, will be taken up in the Ninth Plan.

5.273 The Indian Rare Earths (IRE) will take up joint ventures for beach sand processing in Andhra Pradesh and Tamil Nadu in the Ninth Plan.

VILLAGE & SMALL INDUSTRIES

5.274 The Village and Small Industries (VSI) sector comprises modern and traditional segments of industry. The modern segment includes small-scale industries (SSI) and powerlooms, which use modern technology in the manufacturing process. The traditional segment consists of handlooms, sericulture, khadi & village industries (KVI), coir industries, handicrafts and wool development (unorganised sector). Because of immense potential of creating new jobs at low cost, the VSI sector has been accorded high priority.

5.275 The physical performance of the VSI sector - production, employment and exports- is given in Statement-5.6.

Small-Scale Industries (SSI)

5.276 The major problems faced by the SSI sector are (i) inadequate flow of credit, (ii) use of obsolete technology, machinery and equipment, (iii) poor quality standards, and (iv) inadequate infrastructural facilities. The Government has taken a number of steps to mitigate the impact of these problems. For increasing the flow of credit, the Government has started setting up specialised branches of banks exclusively meant for providing credit to SSIs, simplification of procedures, sensitising bank managers and reorienting them towards the working and the needs of the SSI sector, conducting sample surveys, etc. The SIDBI has already set up a Technology Development and Modernisation Fund with a corpus of Rs.200 crore. The Government has also set up Technology Trust Funds with contributions from State Governments and industry associations for transfer and acquisition of the latest technologies.

5.277 Under the scheme of Integrated Infrastructure Development Centres (IIDCs), infrastructure facilities are being developed in backward, rural areas. Fifty such IIDCs were to be set up during the Eighth Plan period, out of which 22 have been approved. This scheme would be continued during the Ninth Plan period with enhanced incentives and financial assistance for hilly areas and N.E. States. Technology upgradation, transfer and acquisition of appropriate technology would be encouraged through enhanced flow of credit from financial institutions (FIs) and encouragement would also be given for adoption of higher quality parameters and quality consciousness amongst the SSI units.

5.278 The sector also has the problem of non-conforming to quality standards which are vital for standardisation and continuous order flow for components, sub-assemblies and spares from large and medium sectors. To help the SSI sector, the Government has taken a number of policy initiatives like allowing 24 per cent equity participation to large and medium-scale units in SSI units, simplification of registration procedures, simplification of environmental laws applicable to SSI units, allowing filing of Memorandum of Information for all categories of industries, except 17 categories of polluting industries, simplification of labour laws in respect of small-scale units, etc.

5.279 Financial assistance upto Rs.75,000 per SSI unit is being provided to acquire ISO 9000 or an equivalent quality certification.

5.280 To provide technological support and training to small scale units, Tool Rooms with German, Danish and Italian assistance and expertise are being set up at Indore, Ahmedabad, Bhubaneshwar, Jamshedpur and Aurangabad. Construction work for these Tool Rooms has been completed. Machine tools have been installed at Indore.

5.281 A Process-cum-Product Development Centre (PPDC) for essential oils has been set up at Kannauj (U.P.), with UNDP assistance and contributions from the Central and U.P Governments, to provide necessary inputs for modernisation and upgradation of technology of essential oils and perfumery industry. Steps have been initiated to overcome the problems being faced by the small scale units engaged in exporting leather products by providing critical inputs used in the leather industry. Modernisation of the existing Central Footwear Training Centres (CFTCs) at Madras and Agra has been completed. The CFTCs at Calcutta and Mumbai provide technical manpower to the leather industry.

5.282 The credit provided to the SSI sector by the financial institutions is considered credit to 'priority sector'. By March, 1997, the total credit provided by public sector banks stood at Rs.31,542 crore. The cumulative disbursement by the State Financial Corporations amounted to Rs 12,704 crore upto March, 1996.

5.283 The Small Industries Development Bank of India (SIDBI) is providing credit to the small-scale sector directly and through refinance to the nationalised banks and Bill Rediscounting Scheme. Under the direct assistance scheme, SIDBI provides credit for (i) equipment purchase, (ii) industrial infrastructure development, (iii) marketing, (iv) ancillary development, (v) resources support to factoring companies, (vi) assistance to leasing companies, (vii) direct project loans and (viii) direct discounting of bills (equipment and components)

National Small Industries Corporation (NSIC)

5.284 The NSIC was set up in 1955 to assist small-scale entrepreneurs and artisans. The Corporation is serving this sector through hire-purchase and leasing of machinery and equipment, procurement and supply of indigenous and imported raw materials, technology transfer, Government stores purchase programme, prototype development, training, upgradation of managerial skills, etc. It helps SSI units in technology upgradation by setting up common facilities and provides training at Prototype Development & Training Centres (PDTCs) and their sub-centres. It also provides marketing assistance, etc.

5.285 The Corporation is periodically publishing a Directory of Units enlisted under the programme. Under the Single Window Scheme of NSIC the small-scale units registered with the Corporation are getting advantage of preferential purchase policy over large and medium units. The NSIC also helps SSI units by discounting of bills drawn on public sector units. Besides, the Corporation provides assistance to small industries for export of products.

5.286 The NSIC provides technological inputs and training to SSI units through five Prototype Development and Training Centres (PDTCs) set up at New Delhi, Rajkot, Howrah, Chennai and Hyderabad. These Centres provide common facilities in areas like testing,

machining, casting, electroplating, etc. Sub-centres of PDTCs have been set up for different trades at Aligarh (U.P.), Dindigul (Tamil Nadu), Khammam (Andhra Pradesh) and Rajpura (Punjab). A Demonstration-cum-Training Centre at Guwahati is conducting technical training as well as enterprise building programme for the North Eastern States.

5.287 The Corporation has developed improved tool kits for rural artisans, which are being distributed under the Rural Development Programme. The Corporation offers concessional terms in respect of earnest money, rate of interest and administrative charges for units in backward areas. Units, especially those promoted by SC/ST entrepreneurs, technocrats, physically handicapped persons, ex-defence personnel and women entrepreneurs are also offered these concessions. The NSIC has introduced liberal terms for units taking up modernisation / expansion, technological upgradation and for tools and dies. The Corporation has taken up equipment leasing activity which would help the SSI units in modernisation, expansion and diversification. The scheme provides 100 per cent finance, single window service for indigenous as well as imported machines and tax rebate on full year rental.

5.288 For the Ninth Plan, the Corporation has envisaged an increase in its turnover from the estimated Rs.664.03 crore in 1996-97 to Rs.1,560 crore in the terminal year of the Ninth Plan. It would continue all the programmes and schemes in the Ninth Plan with focus on tiny and rural industries. With the proposed increase in the investment ceiling for plant and machinery for SSI units upto Rs.300 lakh, more units would be falling under the SSI sector. The NSIC would have to focus on advanced technology, higher quality parameters and modernisation of SSI units.

Khadi & Village Industries

5.289 The Khadi & Village Industries (KVI) sector is not only providing employment to people in rural and semi-urban areas at low investment per job, but also utilises local skill and resources and provides part-time as well as fulltime work to rural artisans, women and minorities.

5.290 The production of khadi cloth increased from 105 million square metres (m.sqm) in 1995-96 to 125 m.sqm in 1996-97. The target of khadi cloth production has been kept at 230 m.sqm in the terminal year of the Ninth Plan.

5.291 The production of village industries increased from Rs.3,504 crore in 1995-96 to Rs.4,120 crore in 1996-97. The target of production for village industries for the terminal year of the Ninth Plan has been kept at Rs.7,260 crore. The employment in KVI sector increased from 57 lakh persons in 1995-96 to 58 lakh persons in 1996-97. During the Ninth Plan, about 23 lakh more persons are proposed to be provided employment.

5.292 There is a need to bring profit making culture in the manufacture of khadi cloth. There is also an urgent need for reducing its dependence upon rebate and interest subsidy. The Khadi and Village Industries Commission (KVIC) and State Khadi and Village Industries Boards (SKVIBs) would have to become more professional to promote large-scale employment in the village industries sub-sector. During the Ninth Plan, the KVIC has envisaged more emphasis being placed on the creation of additional employment in village industries which has the potential of generating additional employment at low investment, utilisation of local raw materials and skills and to fulfil the demands of local population. The

spread of village industries would also ensure increase in income levels and quality of life of rural workers, artisans and craftsmen. Therefore, the thrust area will be promotion of village industries under KVIC during the Ninth Plan.

Coir Industry

5.293 The coir industry is one of the traditional cottage industries in India and is primarily located in the Southern States, namely, Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. The coir industry utilises agro wastes of coconut plantations and is labour-intensive. The development of coir industry has all along been in areas where there is concentration of coconut cultivation and availability of coconut husks.

5.294 The coir industry employs more than five lakh persons and is manufacturing finished products such as mats, mattings, carpets, rags etc. In 1996-97, production of coir fibre was 2,76,000 tonnes and the export of coir products is estimated at Rs.212.58 crore. In the terminal year of the Ninth Plan the export of coir products is targetted at Rs. 400 crore.

5.295 The Coir Board was set up as an autonomous statutory body under the provisions of Coir Industry Act, 1953. The Board is vested with the responsibilities of promoting growth and development of the coir industry, promotion of exports and increasing consumption of coir and coir products within the country. The Coir Board implements a number of developmental programmes for the coir sector which include schemes for domestic market development, provision of assistance for participation in exhibitions abroad, production of publicity material on coir products, giving coir industry awards, strengthening of national level training institutes etc. Further, the Board is implementing welfare schemes for the coir workers under the Model Coir Village Programme. A major scheme which is being implemented in the coir sector is the scheme of cooperativisation under which not only financial assistance is given for modernisation but margin money is also provided to various cooperatives. The scheme of cooperativisation is intended to assist the formation of viable cooperatives and also to revitalise the potentially viable but dormant societies. The National Coir Training and Design Centre, Kalavoor and the Central Institute of Coir Technology, Bangalore are engaged in scientific research and technology development in white fibre and brown fibre sectors, respectively. The activities of the two research institutions include steps to improve the process of fibre extraction, development of spinning ratts, improvement of softening/bleaching/dyeing/shade manufacturing, etc.

5.296 The Government has initiated a scheme of Mahila Coir Yojana under which financial assistance is made available to women artisans to the extent of 75 per cent of the cost of motorised ratts subject to a maximum of Rs.7,500. The other major programmes are cooperativisation, welfare measures for coir workers and rebate on sale of coir yarn.

5.297 The main problems being faced by the coir industry are low wage earnings due to use of obsolete machinery and equipment, drudgery, non-availability of medical, educational and other facilities of social welfare. The coir industry is also facing stiff competition in the export market from countries like Sri Lanka and there is an urgent need to modernise the industry. Schemes/programmes for modernisation, diversification, development of new products with rubber/plastic base, alternative uses of coir pith such as for fertilizer and increasing value addition by using new dyes and colour combinations, modernisation of looms, etc, would be implemented by the Coir Board during the Ninth Plan period. New employment-oriented

implemented by the Coir Board during the Ninth Plan period. New employment-oriented schemes like Mahila Coir Yojana would be implemented with additional impetus. Emphasis would be laid upon conversion of part-time jobs to full-time jobs and improving the wage earnings of artisans and quality of their life. Welfare schemes would be implemented to help the artisans in areas like health care, thrift loans, group insurance, etc. Financial/fiscal incentives will be provided to exporters/manufacturers/artisans to increase exports. Emphasis would be laid upon new designs, intensive publicity in export markets, market feedback, etc.

Handlooms

5.298 The handloom sector is providing employment to about 124 lakh persons which is next to agriculture in term of employment intensity. This sector is facing problems like (i) obsolete technology and traditional production techniques, (ii) dependence on rebate, (iii) high price of hank yarn, (iv) inadequate availability of inputs like standard dyes and chemicals in small packs, new designs, training for upgradation of skills, etc, and (v) inadequate market intelligence and feedback. The handloom sector has inherent disadvantages like (i) unorganised structure and its dispersal throughout the country, (ii) weak financial base of the weavers, (iii) bureaucratisation/ politicisation of cooperatives, etc. In spite of these handicaps, it has the potential to be transformed into a self-reliant and export-oriented sector.

5.299 The production of handloom cloth in 1996-97 was 7,235 million square metres (msqm). For the terminal year of the Ninth Plan, production of 8,800 m.sqm. has been envisaged.

5.300 The handloom sector provided employment to 124 lakh persons during 1996-97. By the end of the Ninth Plan, the employment in handlooms is expected to reach about 173 lakh persons.

5.301 The exports of cotton handloom textiles amounted to Rs.1,621.81 crore in 1996-97. For the terminal year of the Ninth Plan a target of Rs.3,170 crore has been kept.

5.302 The developmental schemes/programmes are focussing mostly upon weavers under the cooperative fold. To increase the number of weavers under the cooperative fold and to encourage production of market-oriented items, a scheme of setting up 3,000 Handloom Development Centres (HDCs) and 500 Quality Dyeing Units (QDUs) with an investment of Rs.831 crore was taken up in 1993-94. The Government had approved setting up of 1,588 HDCs and 313 QDUs upto 31.3.1997 and released a sum of Rs.80.91 crore to various State Governments and UT Administrations under this scheme. Based upon the feedback about the problems faced in its implementation and suggestions from the State Governments, suitable corrective measures have been incorporated in the scheme. Setting up of remaining HDCs/QDUs is proposed to be completed during the Ninth Plan.

5.303 A High Power Committee (HPC) was set up to look into the problems and to suggest measures for the growth of handlooms during the Ninth Plan period. The HPC submitted its report in December, 1996. Most of the recommendations of this committee have been accepted by the Government and the schemes/programmes in the Ninth Plan are being formulated on the basis of these recommendations.

5.304 The handloom sector uses bulk of its yarn requirements in the form of hanks along with some quantity of reeled yarn. To ensure a regular supply of hank yarn to handloom weavers at reasonable prices a scheme for supplying hank yarn at mill gate prices through National Handloom Development Corporation (NHDC) is being implemented. Under the hank yarn obligation scheme it is mandatory for yarn producers to supply upto 50 per cent of their yarn production upto 40 counts in the form of hank yarn. This ensures hank yarn supply to the handloom weavers. The National Cooperative Development Corporation (NCDC) is providing financial/loan assistance for setting up new/expansion/modernisation of weavers' cooperative spinning mills.

5.305 The scheme for supply of hank yarn at mill gate prices through National Handloom Development Corporation (NHDC) was under implementation during 1996-97, and the NHDC utilised a subsidy of Rs.1.17 crore in 1996-97 for supply of 46.91 lakh kgs yarn.

5.306 The Janata Cloth Scheme was introduced in 1976 to provide sustained minimum wages to handloom weavers and also to provide cheap cloth to the weaker sections of the society. The scheme is being gradually phased out and the weavers engaged in the manufacture of Janata Cloth are provided training and encouraged to manufacture high-value-added items to provide them gainful employment.

5.307 The Association of Corporations and Apex Societies of Handloom (ACASH) was registered in 1984 under the Societies Registration Act. The ACASH is coordinating and promoting marketing in the handloom sector. It is the nodal agency for supply of handloom goods to the Central Government Departments / Agencies. During 1996-97, orders worth Rs.19.84 crore were executed by ACASH.

5.308 In order to provide welfare measures and better working conditions to handloom weavers, a package of group insurance scheme, health scheme, thrift fund scheme and workshed-cum-housing scheme is being implemented in the handloom sector. These schemes would be continued during the Ninth Plan and suitably modified keeping in view the recommendations of the HPC. The guidelines of workshed-cum-housing scheme and insurance scheme for weavers have been modified and the rates of Central assistance have been stepped up.

5.309 The Handlooms (Reservation of Articles for Production) Act 1985 stipulates the articles reserved for production in the handloom sector, which helps the handloom weavers face the stiff competition from the powerloom sector. This scheme is also proposed to be continued in the Ninth Plan.

5.310 A census of handlooms was carried out in 1988. Many changes have taken place since then and keeping these in view a nationwide census of handlooms has been carried out in 1996. The data collected are being scrutinised by the National Council of Applied Economic Research (NCAER) and the Ministry of Textiles. The final figures of the census are expected to be released shortly.

5.311 During the Ninth Plan period a greater stress would be laid on production of marketable items, reduction in dependence upon rebate, enhanced inputs like dyes and chemicals in small packages, skill upgradation, designs and product, etc., and welfare package to improve the quality of life, and development of the weavers. The Workshed-cum-Housing scheme, with

higher targets, would be implemented during the Ninth Plan to provide better work places and safe environment, resulting in increasing productivity and earnings of weavers.

5.312 The Project Package Scheme, being implemented since 1992-93, is one of the major schemes to provide the requisite support to weavers in an integrated and coordinated manner. Altogether, 717 projects were sanctioned and Central grant to the tune of Rs.60.60 crore was released to assist 1.67 lakh weavers during the Eighth Plan. Similarly, as against a target of 120 villages, 101 villages were covered under the Integrated Handloom Development Scheme (IHVD) to benefit 20,534 households during the Eighth Plan. For this, a sum of Rs.2.40 crore was released as Central grant. Under the scheme of Margin Money for Destitute weavers, 1.14 lakh destitute weavers were covered during the Eighth Plan. All the three Schemes, namely, the Project Package Scheme, IHVD and Margin Money for Destitute Weavers Scheme have been merged into Modified Project Package Scheme and has come into force w.e.f April, 1997.

Powerlooms

5.313 The powerloom sector has emerged as the largest cloth manufacturing sector in the textile industry. Powerlooms have not only succeeded in providing employment to a large number of people/weavers but also achieved higher exports of readymade garments. With the coming into effect of the World Trade Organisation (WTO) regime and gradual phasing out of Multi Fibre Arrangement (MFA), it has become imperative to develop new designs, to adopt more efficient and modern production techniques and machinery for weaving and processing to increase value addition and cater to the needs of the upper segment of export market.

5.314 The setting up of the Powerloom Development Institute, CAD/CAM facilities, more number of Powerloom Weavers' Service Centres (PWSCs) and Modernisation and Technology Development Fund are some of the measures which would be implemented in the Ninth Plan. Adequate credit flow from financial institutions would have to be ensured for the modernisation of the powerloom sector. Stricter implementation of labour laws and other statutory provisions is also being emphasised upon with the State Governments.

5.315 The Government of India appointed National Council of Applied Economic Research (NCAER) to conduct a joint census of handlooms and powerlooms at the national level and the results of this census are expected to be published shortly. There are 13 Powerloom Service Centres (PSCs) functioning under the Office of the Textile Commissioner and 29 Powerloom Service Centres under the Textile Research Associations. During the Eighth Plan period, 20 new PSCs were to be set up, out of which 10 were sanctioned up to March, 1997.

5.316 In order to give a thrust to the development of the powerloom sector and to promote exports of powerloom fabrics, the Government has set up a separate export promotion council called the Powerloom Development and Export Promotion Council (PDEXCIL)

5.317 The Government of India introduced a Group Insurance Scheme for powerloom workers in association with the Life Insurance Corporation of India during 1992-93. All powerloom workers between the ages of 18 and 60 years, who had worked during the year are eligible for insurance under this scheme. Recently, this scheme has been reviewed to make it more effective. The scheme envisages annual premium to be shared equally by the Central Government, State Government and the powerloom worker. For an insurance coverage of Rs 10,000, an

annual premium of Rs.120 is charged. The funds contributed by the Government are channelised through the State Governments on reimbursement basis.

5.318 The Government had allocated five per cent of the export quota of fabrics and made-ups to the quota countries covered by the Multi Fibre Arrangement for the powerloom manufacturers in 1992. There are seven computer-aided design centres functioning under various Textile Research Associations. During 1994-95, three computer-aided design centres were sanctioned by the Government. The aim of such centres is to upgrade the quality and designs of the cloth produced by the decentralised powerloom sector so as to enable the powerloom sector compete in the international markets.

Handicrafts

5.319 In the context of generating employment in rural non-farm sector, a major thrust during the Eighth Plan was to provide marketing opportunities to craftpersons. This necessitated more efforts in organising exhibitions and melas in all the States. Besides, efforts were made to provide permanent market structures at strategic places. As a measure of export promotion, greater attention has been and is being paid to those crafts which are relatively less known and have export potential. In order to achieve this, a number of schemes pertaining to training, design development, market promotion, exhibitions and publicity, export promotion are being undertaken.

5.320 The training centres for craftsmen were mostly being operated departmentally but during the last three years, this scheme was given a new dimension by expanding it to non-governmental organisations and cooperative societies. Several studies have shown that 70 to 80 per cent of the trainees get gainful employment after completing the training. This scheme would be continued in the Ninth Plan.

5.321 Four Regional Design and Technical Development Centres undertake the development of new designs and upgradation of tools and equipment. An Institute of Carpet Technology is being set up at Bhadohi (UP). There are two Common Facility Service Centres at Farrukhabad and Ahmedabad in regard to Hand-Block Printing. The Metal Handicrafts Service Centre at Moradabad has been catering to hi-tech requirements of exporters. Two UNDP projects are also underway to develop jute and wood-based handicrafts.

5.322 The major thrust in recent years has been on promoting grassroot organisations with the intention of organising production on the lines of market demand. In addition, financial assistance is provided to cooperatives and voluntary organisations for opening and expanding emporia to market handicrafts. The Craft Development Centres established in identified pockets, provide extension services in respect of design guidance, supply of raw materials, common facility services and marketing network.

5.323 A complete census of the handicrafts sector by the National Council of Applied Economic Research is underway in all the States. With UNDP assistance, the Government of India has approved a project "Export Promotion of Wood-Based Handicrafts" with the objective of increasing the exports of wood-based handicrafts on a sustainable basis.

5.324 For the promotion of jute-based handicrafts, the UNDP has approved two schemes viz. Design and Market Development and Beneficiary Oriented Programme for implementation during the Eighth Plan period

5.325 A number of schemes have been identified under the Tribal Sub-Plan and the Special Component Plan for SCs and STs. Special employment schemes for women have been initiated to provide employment, exclusively to women.

5.326 In the handicrafts sub-sector, there is a vast potential to achieve higher exports. The exporters/artisans need to be provided with feedback regarding export markets, utility aspects, quality standards and new trends. The proposed schemes in this sector would be suitably modified and would be made market-oriented to help the artisans/ cooperatives/NGOs and Self-Help Groups (SHGs) to produce handicraft items with a blend of traditional and ethnic designs and utility concept. Stress would be on development through a cluster approach.

5.327 There is an urgent need to help the artisans by providing quality raw materials, new designs, improved techniques for manufacture of articles, marketing support as well as welfare and socio-economic benefits, to improve their wage earnings and quality of life.

5.328 During the Ninth Plan, emphasis is being laid on marketing, skill upgradation, modernisation, welfare and preservation of craft heritage. A number of new schemes viz. training of trainers, common facility centres, computerised design development, market workshops, design and development through reputed institutes, craft colleges like NIFT, NID, etc., pension to artisans and development of improved tools & kits, dissemination are proposed to be implemented during the Ninth Plan.

Sericulture

5.329 India is the second largest producer of silk in the world after China. It has the unique distinction of producing all the four varieties of silk: mulberry, eri, tasar and muga. Mulberry accounts for 92.5 per cent, eri 5.3 per cent, tasar 1.7 per cent and muga 0.5 per cent of the total raw silk production in the country.

5.330 Sericulture is an important labour-intensive and agro-based cottage industry providing employment to about 60 lakh persons. Mulberry sericulture is being practised in traditional States like Jammu & Kashmir, Karnataka, Andhra Pradesh, Orissa, Tamil Nadu and West Bengal. Tasar sericulture provides livelihood for the tribal population of Andhra Pradesh, Bihar, Madhya Pradesh, Maharashtra and Orissa. Eri and muga sericulture is practised in all the seven North-Eastern States.

5.331 The production of raw silk is estimated at 14,000 tonnes (t) in 1996-97. The target for the terminal year of the Ninth Plan has been fixed at 20,540 t. The employment in sericulture sector was estimated at 60 lakh in 1996-97 and the target for the terminal year of the Ninth Plan is 74 lakh persons.

5.332 The exports of silk were worth Rs.880.44 crore in 1996-97. The target for terminal year of the Ninth Plan is Rs.1520 crore.

5.333 The Central Silk Board (CSB), a statutory organisation responsible for implementing the developmental schemes in sericulture, supplements the efforts of the States by providing necessary support for research and development and extension and training through its countrywide network of institutions, units and extension centres. The CSB has set up six full-fledged research and training institutes at Mysore (Karnataka), Berhampore (West Bengal) and Pampore (J&K) dealing with mulberry, Ranchi (Bihar) for tasar and Jorhat (Assam) for muga and Mendipathar (Meghalaya) for eri silk. For carrying out R&D in post-cocoon technology, a research institute has been set up at Bangalore.

5.334 The National Silkworm Seed Project (NSSP) is implemented by the CSB and provides basic mulberry silkworm seeds to the rearers. Under this programme, 27 basic seed farms have been established to produce the basic stock and meet the seed requirements of other multiplication farms/State Department Farms. As many as 35 Silkworm Seed Production Centres (SSPCs) have been set up in different States to produce Disease Free Layings (DFLs) for sale to the silkworm rearers. These centres have provided 2.53 crore DFLs during 1996-97.

5.335 The CSB is installing cold storage plants to meet the demand for bivoltine layings in all the seasons. The CSB has established 318 Chawkie Rearing Centres under the Research Extension Centres and SSPCs to arrange supply of healthy young silkworms to the sericulturists. The CSB has also established Basic Seed Multiplication Centres for supply of DFLs of Tasar, muga and eri. With the assistance of Japan International Cooperation Agency (JICA), a Bivoltine Sericulture Technology Development Project is being implemented for evolving suitable mulberry bivoltine silkworm races. JICA has made available the services of experts and trained 20 Indian scientists under the counterpart training programme.

5.336 The Central Silk Research Technological Institute, Bangalore, has developed an indigenous multi-end silk reeling machine with higher productivity for producing quality silk from bivoltine and multi x bivoltine hybrid cocoons. Efforts are being made to make this machine popular among private reelers by providing subsidy.

5.337 A scheme for establishing decentralised peripatetic sericulture centres for farmers has been formulated by the CSB and farmers/rearers are being provided training in improved sericulture practices. With financial participation of the CSB and the Department of Rural Development (Ministry of Rural Areas and Employment), 13 Sericulture Training Schools for farmers have been set up in various States. These provide advice, technical guidance and knowledge about sericulture to the farmers of non-traditional sericulture States.

5.338 Under the National Sericulture Project (NSP), the main thrust was towards strengthening infrastructural facilities in the five traditional States and twelve pilot States to provide long term support for development of sericulture. This project ended on 31st December, 1996. The infrastructural facilities created under NSP are being supplemented in the Ninth Plan to boost production of raw silk, particularly bivoltine variety, with higher productivity.

5.339 The Indian Silk Export Promotion Council provides services for promotion of exports of natural silk goods. It also acts as the registering authority for silk exporters. It produces and disseminates information to its members with respect to market developments in the world, modifications in trade policies and future market trends. The Council is providing sample catalogues containing sample swatches of the full range of silk products available in India.

This information helps the potential buyers, textile import agents and Indian missions abroad. The CSB is implementing test sampling scheme for exports of silk items to ensure adherence to the contracted quality parameters of export orders.

5.340 During the Ninth Plan period, the sericulture sub-sector would be made more vibrant by focussing upon (i) bringing in new more productive and stable silkworm races, (ii) improved silkworm rearing practices, (iii) improvements in reeling by promoting installation of modern technology based machines, (iv) encouragement to plantations for tasar, eri and muga silk, (v) utilisation of infrastructure and organisations created under NSP, (vi) increasing the area under mulberry plantation, (vii) enhancing value addition by improving designs, colour combinations, finishing methods, etc., (viii) increase in exports by diversifying into dress materials and made-ups and (ix) encouragement to bivoltine silk.

Wool Development

5.341 The Central Wool Development Board (CWDB) set up in 1987, with headquarters at Jodhpur in Rajasthan, is looking after the unorganised wool sector. The Board has been implementing schemes like Integrated Sheep & Wool Development Project, Weaving & Designing Training Centre, Carpet Weaving Training Centre, Training Scheme for Woollen Products, Industrial Service Centres, Wool Testing Centres, Wool Scouring Plants, setting up of Machine Shearing-cum- Training Projects, etc.

5.342 The woollen industry in India is small in size and widely scattered. It is an industry where the organised sector, the decentralised sector and the rural sector run complementary to each other towards meeting the requirements of different sections of the domestic market as well as exports. The industry has the potential to generate employment in far flung areas, including hilly regions in the North and desert tracks of the West. It has a wide spectrum of units from the modern sophisticated fully composite mills in the organised sector to handloom and hand-knotted carpet manufacturing units at the village level.

5.343 The woollen industry in India is primarily located in the States of Punjab, Haryana, Rajasthan, Uttar Pradesh, Maharashtra and Gujarat. Forty per cent of the wool units are located in Punjab, 27 per cent in Haryana and 10 per cent in Rajasthan, while the rest of the States account for the remaining 23 per cent of the units. There are about 658 woollen units in the organised sector. Besides, there are a large number of small-scale hosiery units, knotted carpet making units, powerlooms and handlooms in the decentralised handloom and khadi sector. The total number of persons employed in the woollen industry is estimated at around 12 lakh.

5.344 The organised sector consists of composite mills, combing units, worsted and non-worsted spinning units and the machine-made carpet manufacturing units. The decentralised sector includes hosiery and knitting units, powerlooms, handmade knotted carpet units, handlooms and independent dyeing houses. One of the major problems is non-availability of the raw materials required by the industry. The country does not produce enough fine wool and against the total requirement of approximately 30 million kgs. of apparel grade wool, indigenous production is around 4 to 5 million kgs. The balance requirement is met through imports, mainly from Australia.

5.345 The wool produced in India is of medium and coarse varieties which is ideally suited for making carpets, blankets etc. Presently, the total production is estimated at 43.2 million kgs., of which 70 per cent is good carpet grade wool.

5.346 Apart from importing fine wool for worsted mills, medium range wool in large quantity is being imported from New Zealand and many other countries to meet the domestic demand.

5.347 During the Eighth Plan, the programmes/schemes implemented by the CWDB included setting up three more Industrial Service Centres at Pithoragarh and Pashulok in Uttar Pradesh and at Guru Nanakdev University, Amritsar, sanctioning one Wool Testing Centre to Himachal Pradesh State Wool Federation by providing an assistance of Rs.7.1 lakh, assisting 23 weavers at the Weaving and Designing Centre at Jaisalmer and setting up 15 new Carpet Weaving Training Centres.

5.348 The CWDB had also taken up an Integrated Angora Rabbit Development Project in 1994-95. Under this project, many units have been sanctioned which are being implemented in Himachal Pradesh and Uttar Pradesh. The CWDB also publishes a quarterly news magazine "Wool Ways" to disseminate information on important aspects of wool and woollens and also sheep rearing. Further, the Board is preparing video cassettes on important aspects of sheep rearing, wool production and benefits accruing from the schemes of the Board with the help of Gujarat Sheep and Wool Development Corporation Ltd. (GUSHEEL). To expose Indian woollen products to new markets and to ensure a better price for the products made in remote areas, the Board has taken up a scheme called "Wool Expo". The first two Wool Expos were successfully organised by the Board in 1995-96 at New Delhi and Jodhpur.

5.349 In order to give a thrust to the woollen sector, the Government set up the Wool Research Association (WRA) as a cooperative research organisation in 1963. It is functioning under the administrative control of the Ministry of Textiles. The WRA is giving consultancy to CWDB to set up Woollen Industry Service Centres at Bikaner, Jaisalmer, Ahmedabad, Mumbai, Amritsar and Mehboobnagar in Andhra Pradesh. A Computer Aided Design Centre for carpet sector is being established in the cooperative sector at Jaipur with the help of CWDB and WRA. Despite the efforts put in by the Central Wool Development Board and other related organisations such as WRA, the wool sector continues to be in the periphery where the wool growers still live in abject poverty and hardship. One of the biggest problems impeding the growth of the sector is lack of adequate grazing grounds. Besides, there is also a lack of pre-loom and post-loom processing facilities. One of the weakest links in the wool sector is the lack of proper wool grading system, as a result of which, the small producers are being exploited by the middlemen who do not offer prices commensurate with the wool grade. There are also other problems like high import duty on machinery, differential rates of import duty as applied to apparel grade wool and synthetic rags, lack of in-house training facilities, etc.

5.350 During the Ninth Plan period, the Board has proposed to extend its schemes to more areas and improve wool productivity per sheep in coordination with State Governments and Department of Animal Husbandry and Ministry of Agriculture. Special attention would need to be paid to improving the quality and area of grazing pastures.

FOOD PROCESSING INDUSTRY

5.351 India has a tremendous potential for development of food processing industry considering the fact that it has emerged as the largest producer of milk, the second largest producer of fruits and vegetables, the largest producer of spices, groundnut and rape seed and the fourth largest producer of wheat. India also has one of the largest livestock population, apart from a long coastline of 7500 Kms which makes it the seventh largest producer of fish. Thus, India is amongst the top-ranking nations in terms of total production of various raw materials required for development of the food processing industry. Despite all these advantages, India is nowhere in the world map in terms of processing when compared with other countries like Brazil, Phillipines, Thailand and Malaysia which are processing 70 percent, 78 percent, 30 percent and 83 percent respectively, of their total horticultural produce. The corresponding figure for India is only about one percent. This low level of processing, incidentally, is not due to lack of installed capacity. There is surplus capacity available - of which only about 35 percent utilised because of various reasons ranging from narrow product base to technological obsolescence, high cost and unsuitable quality of raw materials etc. Besides, about 25 to 30 percent of the produce is lost by way of post-harvest losses due to poor handling, storage and transportation facilities.

5.352 The Government, being well aware of the prospects for development of food processing sector, has taken various initiatives for its promotion. These include setting up of a separate Ministry for Food Processing and promotional bodies such as Marine Products Export Development Authority (MPEDA), Agricultural and Processed Food Products Export Development Authority (APEDA) and National Horticulture Board (NHB). The other major initiatives taken by the Government have been enumerated earlier in the Chapter.

5.353 Some new measures have been taken in 1997-98 e.g. dereservation of certain items including ice-creams and biscuits, repeal of the Cold Storage Order of 1968, etc. The proposed raising of investment limit for the small-scale industry is also expected to promote investments in this sector, especially in terms of upgradation of technology.

5.354 The policies pursued by the Government in the past have paid rich dividends. Today, the food processing industry contributes about 18 per cent to the industrial Gross Domestic Product (GDP) and employs around 1.5 million persons. The food processing industry, however, is primarily functioning in the informal and unorganised sector. This sector has attracted a lot of foreign investment and till June, 1997, 4,098 Industrial Entrepreneur Memoranda (IEM) envisaging an investment of Rs.47,146 crore had been received.

5.355 It may, however, be mentioned that this growth is nowhere near the potential India has and the factors adversely affecting the growth of this industry include aspects such as primitive technology, inadequate infrastructure, poor quality of raw materials including non-availability in bulk, low productivity of various horticulture crops, poor quality of packaging, inadequate working capital, lack of grading facilities and standards.

Primary Food Processing

5.356 The primary food processing sector includes roller flour milling, rice processing, cereal-based products, maize processing, pulse processing and pasta products. The roller flour milling industry is 100 years old and today, there are about 800 mills with a capacity of 18 million tonnes in this category. The capacity utilisation, however, is not satisfactory.

being only about 40 percent. The major problems being faced by this sector are obsolete equipment, high power consumption, high power rates, excessive levies by local and State Governments at various stages of procurement of wheat, selective credit control and low yields.

5.357 The production of paddy in the country is expected to reach 130 million tonnes by 2000 AD. The processing of paddy is carried out in a variety of mills. While some of the mills are modern, others are traditional shellers or huller-cum-shellers. The Government has taken a few steps, both legislative and promotional, for modernisation of the rice milling industry. Today, good quality machines are available within the country and, in fact, the Bureau of Indian Standards (BIS) has formulated standards on rubber roll dehiskers, cleaners, polishers etc. Separately, the Government has also been implementing the Huller Subsidy Scheme in various States to promote modernisation of the small huller units. At present, there are about 34,000 modern rice mills processing approximately 65 per cent of the paddy production.

5.358 The pace of modernisation of rice mills has not been as fast as expected. There is still considerable scope in the field of modernisation and the State Governments need to actively participate in order to check unauthorised growth of huller mills in the country. The rice milling industry suffers from several constraints such as obsolete machines, low yields, non-recovery of by-products, losses due to poor warehousing and packaging, inefficient use of energy, lack of skilled and trained manpower, lack of R&D etc. Since the rice milling industry is dereserved it will invite state-of-the-art technology into this area and will help improve the quality of rice available to food processing industry.

5.359 The bakery sector is the largest among the processed foods industry. Out of bakery products, bread and biscuits account for 82 per cent of the total production. There are about 75,000 bakery units in the small and cottage sectors whose production accounts for more than 60 per cent of the total output. The current annual turnover of this sector is valued at more than Rs.15,000 crore. By 2002 AD, the output of biscuits will reach 44 lakh tonnes while that of bread will be 20 lakh tonnes. The current figures are 10 lakh tonnes and 14 lakh tonnes respectively. The annual per capita consumption of bread in India is only 1.4 kgs which is well below the average of 25 kgs in most of the industrialised nations. In spite of the vast potential of this sub-sector, the manufacture of bread and biscuits in India has missed out the benefits of the modern technology and also on economies of scale during the last many years. With the recent dereservation of biscuit industry, it is expected that the industry will be able to exploit economies of scale and also bring about the necessary modernisation. The bakery units need different grades of wheat with varying protein content and gluten strength which are not presently available in the country. The Indian Council of Agricultural Research (ICAR) will have to provide the necessary inputs to grow appropriate varieties of wheat in India.

5.360 The increase in pulses production in India has been rather slow and has not been able to keep pace with the growth in population. The per capita availability of pulses today is in fact lower than what it was in 1950-51. More than 75 per cent of the pulses produced in the country are converted into dals in about 10,000 mills of varying capacity all over the country. Originating in the household sector, the pulse processing sector has developed now as an organised industry. There are a number of difficulties faced by the traditional pulse milling industries, e.g. low yields of pulse crops, labour-intensive techniques, inadequate pre-milling treatment, processing time extending to several days or weeks, etc. Dal milling industry has been dereserved recently, which will promote induction of modern technology into this area.

5.361 Vermicelli, noodles, macaroni and spaghetti, better known as pasta products, are becoming increasingly popular. Pasta products have gained popularity in the recent past, primarily in the urban areas and particularly in metropolitan cities. The growth in demand is consequent to the rising trend of urbanisation due to industrial growth which necessitates a person's absence from home for considerable duration. The installed capacity of pasta products in the country is estimated at 34,000 tonnes per year per shift of eight hours. It is estimated that a total of 178 units exist in the small-scale sector producing pasta products. The demand for pasta products is expected to rise phenomenally in future though there will be problems in the growth of this sector due to lack of pasta machinery manufacturers and adequate packaging materials. Appropriate steps would need to be taken to promote manufacture of pasta machinery.

Horticulture

5.362 The total cropped area in the country is about 180.36 million hectares out of which horticulture accounts for about 6.7 per cent. India is the second largest producer of fruits and vegetables in the world, after China. The estimated production of fruits and vegetables in the country was expected to reach about 110 million tonnes by the end of the Eighth Plan. Unfortunately, the post-harvest losses are intolerably high and estimated to be about 25 to 30 percent of the output. India has not been able to exploit its large output as far as processing is concerned as only about one percent of its total horticultural produce is being processed. Ironically, India is not able to utilise its existing installed capacity which stands at about 17.5 lakh tonnes.

5.363 The marketing practices are not conducive to the growers who realise only 30 to 40 per cent of the price ultimately paid by the consumers. The balance amount is being shared by intermediaries at various stages. Apart from the inhibiting factors mentioned above, other major constraints faced by this sub-sector include high cost of packaging, non-availability of packaging machinery, non-availability of quality raw materials, lack of basic infrastructural facilities, complexity of land and food laws, inadequate linkages between farmers and processors, inadequate induction of technology, etc.

Dairy Industry

5.364 India has become the largest milk producing country in the world. India's output of liquid milk reached 69 million tonnes in 1996, surpassing that of USA. Milk production was almost stagnant from independence till about 1970 with an annual growth rate of only one per cent. Thereafter, there has been an improvement and during the Eighth Plan, it has registered an annual growth rate of 4.5 per cent.

5.365 The milk production target of 70 million tonnes at the end of the Eighth Plan is likely to have been achieved with per capita availability of 204 gms. per day against the recommended nutritional requirement of 220 gms per day. The Indian dairy industry has an installed processing capacity of 20 million litres per day with an estimated investment of Rs. 12,000 crore. About 60% of the installed processing capacity is in the cooperative sector. Along with the increase in milk production, there has been a simultaneous increase in the production of milk powder including baby food, malted food products, condensed milk, etc. As a result of liberalised industrial policy announced by the Government in 1991, import of technology and machinery has become easier. This has resulted in the industry taking up manufacture of new

products like edible casein, pharmaceutical grade lactose and whey protein concentrate and other high value products which are export oriented.

5.366 The dairy industry, however, faces several constraints as the industry has traditionally been subjected to licensing and other restrictions. The Government policy in this regard has been to give preference to the establishment of milk processing plants selling liquid milk. This policy was guided by an overall shortage of milk and the national milk production falling short of nutritional requirement in the earlier years of planning era. Consequently, the processing plants manufacturing products have received a lower priority. Appropriate policy measures would need to be worked out to give a fillip to this sector.

5.367 The PFA standards for the quality of milk and milk products, which were formulated in the early 1950's, have become outdated. They are also not in conformity with international standards. The problem becomes more acute since there are very few testing laboratories and testing kits for rapid quality testing at the grassroots level are not available. It is imperative to closely examine the Prevention of Food Adulteration Act and carry out appropriate modifications at an early date.

5.368 Packaging of milk and milk products is another grey area, which needs attention. Dairy products, incidentally, are not included in the mandate of the Indian Institute of Packaging and only limited work could be done in the area of development of packaging at the National Dairy Research Institute, Karnal. The industry also faces an acute shortage of cold storage facility for dairy products in major consumption centres. The milk products industry also faces the problem of levy of sales tax at multi points adding to the cost of the final product. The system needs rationalisation to give a boost to this industry.

Fisheries

5.369 Fish production in the country has increased from 7.8 lakh tonnes in 1951 to 47.89 lakh tonnes in 1994-95. The average annual growth rate in fish production during the last decade has been around 5.6 per cent. While the growth rate in the marine product sector has been about 5 per cent, the inland fishery sector has grown slightly faster at 6.7 per cent annually. Exports from the seafood sector have done well and crossed the one billion US\$ mark during 1994-95 when 3,07,300 metric tonnes of marine products were exported, valued at Rs.3,375.27 crore. Fish production is estimated to reach about 63.67 lakh tonnes by the turn of the century. Out of this, about 33.12 lakh tonnes will be contributed by the marine sector and the remaining 35.55 lakh tonnes will originate from the inland sector. At this level, the per capita availability of fish will be 11 kg. per annum as against the present per capita availability of 9 kg. per annum.

5.370 The current annual marine fish production is around 26.92 lakh tonnes against a potential of 39 lakh tonnes. The exploitation of resources in the coastal zone i.e. upto a depth of 50 metres has been rather heavy whereas resources beyond 50 metres are still under-exploited. The contribution of deep-sea fishing to the total marine production has been less than 2 per cent. The Government of India, therefore, had introduced the New Deep-Sea Fishing Policy in 1991 to give a thrust to deep-sea fishing in the country. The policy on deep-sea fishing, however, came under severe criticism from the traditional fishermen who complained of large-scale poaching and ecological disturbances perpetrated by the deep-sea fishing vessels. On the recommendations of the Murari Committee, which was set up to

study these aspects, the Government has decided to discontinue giving licences for deep-sea fishing.

5.371 India has a tremendous potential for the development of fish processing and there were 367 units in 1996 having a total capacity of 6,496.0 tonnes per day. About 45 per cent of these units are modern. The capacity utilisation of fish processing units, however, is very low. At present, hardly 20 per cent of the total fish production is being processed. This sector, as in the case of other food processing sectors, faces an acute shortage of infrastructure in the form of cold chains. The industry is also not equipped with basic facilities which are required for hygienic processing and this is going to seriously affect India's exports to the Western countries as most of them have formulated stringent standards of hygiene and quality control. This calls for urgent remedial action.

Meat and Poultry Sector

5.372 India has the largest livestock population in the world. However, the quality of the livestock remains poor. The present production of meat is about 3.7 million tonnes while production of high-value-added processed meat products is only about 50,000 tonnes. The per capita consumption of livestock products in India is considerably lower than in other countries, e.g., the per capita poultry meat consumption in India is only about 12 per cent of that in China. The annual per capita consumption of eggs in India is 29, and in rural areas, it is even lower. It is also far below the recommendations of the National Institute of Nutrition which stipulates 180 eggs and 9 kgs. of all kinds of meat per annum.

5.373 There are about 3,600 slaughter houses in the country which are being managed by Municipal Corporations and other local bodies. There are also 121 small meat processing units manufacturing high-value-added products like ham, bacon, sausages, etc. Though the demand for meat and meat products is expected to increase due to the rise in per capita income, the meat industry has several constraints which impede its growth. The industry is using extremely primitive techniques and hygiene leaves much to be desired. There are only a few modernised abattoirs and lack of good hygienic production is affecting exports adversely. Meat exports from India primarily consist of buffalo meat followed by mutton. Export of poultry meat, eggs or processed meat is insignificant. However, export of egg products in the form of powder or frozen products has started. Other factors impeding the growth of the meat industry are lack of infrastructure like cold chain, inadequate availability of feed, poor transportation facilities, absence of an inspection and quality control system, etc. These need to be attended to during the Ninth Plan period.

Packaging

5.374 The packaging industry in India is still at the infant stage though, as consumer awareness and standard of living improves gradually, the need for packaged commodities is increasing. Most of the raw material requirements of the packaging industry are met by indigenous production, with the exception of tin plates and plastics. Though the supply of various packaging media has been increasing over the years, the demand-supply gap has been widening. During 1995-96 the quantum of packaging material produced/consumed is placed at 6 million tonnes, valued at approximately Rs.10,000 crore.

5.375 The consumption pattern of some of the primary packaging media in India is in sharp contrast to the world situation. While in the developed countries, the usage of plastics is proportionately more vis-a-vis paper and paper boards, the situation in India is exactly the reverse. The consumption of packaging media in India is much lower than in the developed countries. This is evident from the fact that the per capita consumption of paper and board in India is only 1.3 kg. as against 310 kgs. in USA and for plastics, it is only 0.7 kg. in India as against 50 kgs. to 90 kgs. in the developed countries. The growth rate of consumption and demand for packaging in India is envisaged to be of the order of 12 per cent per annum and by 2000 AD, the total requirement of all packaging will increase to about 9.33 million tonnes from the present level of about 6 million tonnes, implying an increase of 55 per cent.

5.376 Testing, quality control and other laboratory facilities are available at the Indian Institute of Packaging and its Regional Centres and also at the Packaging Division of the Central Food and Technology Research Institute (CFTRI). These facilities, however, not only need to be enhanced but also need to be made more exhaustive to cover all packaging media and products packaging. The Bureau of Indian Standards (BIS) has separately developed technical specifications for packaging vanaspati, oils and ghee. The packaging requirements relating to edible oils and a host of other processed foods and fruits like mangoes, tomato pulp, and mushrooms, etc. have still to be developed/specified. These require adequate attention during the Ninth Plan period.

5.377 Based on the experiences of the Eighth Plan and keeping in mind the recommendations made by the Working Group on Food Processing Industries, specific policy measures have to be prescribed for each of the sub-sectors. In the case of primary food processing sector, due emphasis will have to be given to aspects such as strengthening training and extension work, improving backward linkages for maize/coarse grains, improving efficiency of pulse milling industry, making energy audits compulsory for improving efficiency of existing units, bringing about modernisation in the roller flour milling and rice milling industry.

5.378 For horticulture-based sector, a relook needs to be taken at some of the existing laws, apart from effecting improvements to enhance infrastructural facilities. Amongst the laws to be reviewed, amendment of the Seed Policy would be one of the vital areas in order to induct suitable strains. Other important areas would be amendment of the Pesticides Act to ban the use of BHC, etc. and amendment of Food Laws to allow irradiation. Other policy support required by this sub-sector would include continuance of the exemption of excise duties for all food and vegetable products, reduction of sales tax on food and vegetable products levied by the States, providing fiscal incentives by way of direct tax incentives for post-harvest infrastructure including cold chains, providing tax holidays in backward areas, setting up quality control laboratories, etc.

5.379 As regards the dairy sector, the focus in the previous Plans has been on the processing of liquid milk. A conscious attempt needs to be made in the Ninth Plan to promote the development of indigenous milk products. The country produces a wide variety of sweets based on milk but the export potential of these sweets has not been tapped.

5.380 Other areas which would need attention during the Ninth Plan are creation of cold storages, promotion of research and development in product development and technology upgradation, quality assurance, packaging, consumer awareness, etc.

5.381 The development of meat and poultry processing sector needs to be directed towards achieving the goal of hygienic production and processing of meat and meat products, bringing about technological improvements and improving transport and storage facilities for efficient operation. At present, there are only a handful of modernised abattoirs and all efforts of the Government in the past to modernise other abattoirs/slaughter houses have not been successful. A fresh initiative in this respect during the Ninth Plan would be required. The Government has encouraged the growth of meat processing units by offering financial incentives and through this, some joint sector projects have been successfully set up. Development of marketing infrastructure for meat and poultry products, however, was not taken up in the earlier Plans. Only a few schemes of transport and storage were taken up and that too, in the public sector. The Government will have to induce sufficient investments into this area in order to catalyse the growth of meat processing sector. Separately, investments will also have to be ensured for the establishment of quality control laboratories. A special emphasis has to be laid on the North Eastern States where meat and poultry processing, especially pork, is an important activity which is being done in unhygienic circumstances due to non-availability of necessary infrastructure.

5.382 The main objectives of the development of the fishery sector during the Ninth Plan will be to create infrastructure for storage and transportation of fish in order to reduce wastage, to sufficiently strengthen the fish processing sector for greater value addition by adopting improved hygienic standards, better quality control measures, product diversification, induction of modern technology, improving packaging standards, etc. The aim would be to ensure remunerative prices to fisher folk and better wages for the labour. One important element to be added in the Ninth Plan is strengthening of traditional technologies such as fish drying and utilisation of low-value fish to make value-added products. Separately, adequate emphasis will also be laid on promotion of fishery cooperatives to develop the export and domestic market for fishery products. Continued support will have to be given to the Coast Guards for monitoring and surveillance of the Exclusive Economic Zone (EEZ). For improving the survey work, the Fishery Survey of India (FSI) needs to be duly strengthened by replacing its obsolete fleet of ships.

5.383 The packaging industry in India, by and large, being in the small-scale sector, suffers from inadequate research and development facilities. The industry needs to be encouraged in order to enable it to grow to international standards. Besides, pilot projects may be set up in selected institutions to cater to the needs of the packaging industry. The Government should promote product package-wise studies. Export package specifications should be drawn up in detail and wherever necessary, as a code of practice. The facilities available within the country in some of the institutions have to be enhanced since their equipment has become obsolete. The BIS may be encouraged to develop further specifications in consultation with the industry. Due emphasis has to be given to develop low-cost paper and pulp from natural fibre agro-wastes for packaging applications, as there is already a scarcity of raw material for paper. Appropriate legislative measures will be useful to discourage the use of second grade packaging materials like tin plates or recycled plastics.

5.384 The food processing industry faces the problem of finance, both working capital and also long-term finance. It is interesting to note that the food processing industry, while contributing to about 19 per cent of the industrial GDP, has access to only about 5.2 per cent of the total investments made in the industrial sector. This sector is also not in a position to generate large internal resources and has to depend only upon external sources of finance. Given the fact that a sum of Rs.28,250 crore would be the investment required during the Ninth Plan, as estimated

by the Working Group, it is imperative that the financial institutions adopt a more positive and pragmatic approach towards this industry. In this regard, it is felt that the field officers in the banks/financial institutions should be imparted necessary training since the parameters involved in this sector are very different from those of the manufacturing industry as a whole. The Government may even examine the possibility of creating a specialised bank for food processing industry with the equity subscribed by the different financial institutions.

5.385 Finally, there is the question of availability of trained manpower for this industry, keeping in mind that it is expected to grow at a faster rate during the Ninth Plan period than in the last few years. There are very limited institutions within the country which are providing training in the field of food processing and the number of people being trained every year is grossly inadequate. Necessary funding has to be forthcoming for this area to ensure that the growth of this industry does not get hampered by non-availability of technical manpower.

Statement 5.1
Profitability profile of Public Sector Enterprises

(Rs. Crore)

Details	1980-81	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97
1. No. of operating enterprises	168	207	211	214	220	226	233	236	237	239	240	241	239	236
2. Capital employed	18207	36382	42965	51835	55617	67629	84760	102084	117991	140110	159836	162451	173874	202021
3. Gross margin	2401	7386	8270	9897	11082	13438	16412	18312	22223	25227	27707	33384	40526	44501
4. % Gross margin to capital employed	13.19	20.30	19.25	19.09	19.93	19.87	19.36	17.94	18.83	18.01	17.33	20.55	23.31	22.03
5. Depreciation & deferred revenue expendit	983	2758	2983	3376	4142	4866	5790	7210	8548	9270	9151	10754	12537	13927
6. Gross profit	1418	4628	5287	6521	6940	8572	10622	11102	13675	15957	18556	22630	27989	30574
7. % Gross profit to capital employed	7.79	12.72	12.31	12.58	12.48	12.68	12.53	10.88	11.59	11.39	11.61	13.93	16.10	15.13
8. Interest	1399	2529	3115	3420	3587	4167	5329	7601	9673	10881	11901	12862	13924	15101
9. Pre-tax profit / loss	19	2099	2172	3101	3353	4405	5293	3501	4002	5076	6655	9768	14065	15473
10. Tax	222	1190	1000	1329	1323	1411	1504	1229	1647	1805	2110	2581	4187	5215
11. Net profit/ Loss	-203	909	1172	1772	2030	2994	3789	2272	2355	3271	4545	7187	9878	10258
a. Profit of profit making enterprises	557	2021	2857	3478	3775	4917	5751	5394	6079	7384	9768	12070	14704	16120
b. number of profit making enterprises	94	113	119	108	114	117	131	124	133	131	121	130	134	129
c. Loss of loss making enterprises	760	1112	1685	1706	1745	1923	1962	3122	3723	4113	5223	4883	4826	5862
d. number of loss making enterprises	74	92	90	100	103	106	98	111	102	106	116	109	101	104
e. No. of units making no loss no profit		2	2	6	3	3	4	2	2	2	3	2	4	3
12. % Net profit /Loss to capital employed	-1.11	2.50	2.73	3.42	3.65	4.43	4.47	2.23	2.00	2.33	2.84	4.42	5.68	5.08
13. Dividends	83	176	191	297	320	353	323	413	687	792	1028	1436	2205	3080
14. Retained profit	-286	733	981	1475	1710	2641	3466	1859	1668	2479	3517	5751	7673	7178

Statement -- 5.2

ACTUAL EXPENDITURE FOR INDUSTRY AND MINERAL PROJECTS IN THE CENTRAL SECTOR

(Rs. Crore)

Sl. No.	Ministry / Department	Eighth Plan Outlay	Actual Expenditure During Eighth Plan											
			1992-93		1993-94		1994-95		1995-96		1996-97@		Total Eighth Plan	
			A	B	A	B	A	B	A	B	A	B	A	B
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1.	Steel	14579.00	2831.92	2686.23	2559.10	2155.94	3201.93	2474.83	3104.50	2242.50	3250.51	2194.35	14947.96	11753.85
2.	Mines	2083.00	271.63	256.23	220.27	185.74	204.01	157.24	211.62	152.16	502.73	338.45	1410.26	1089.82
3.	Fertilizers	5484.00	228.79	207.11	264.86	223.14	608.02	469.95	1691.35	1221.74	2171.99	1466.29	4965.01	3588.23
4.*	Petroleum & Natural Gas	2552.00	99.73	91.08	172.16	145.07	278.59	215.32	631.40	456.09	874.68	614.67	2056.56	1522.23
5.	Chemicals & Petro-Chem	2402.00	313.50	286.30	400.89	337.81	544.86	421.13	1078.25	778.86	1318.04	926.24	3655.54	2750.34
6.	Industrial Dev./IP&P	1162.00	881.22	804.77	747.49	629.73	252.94	191.91	253.56	178.19	267.71	175.78	2402.92	1980.38
7.	Heavy Industry	2771.00	433.90	396.26	297.08	250.28	313.76	238.06	329.89	231.83	307.22	183.40	1681.85	1299.83
8.*	Surface Transport	152.00	11.00	10.05	13.10	11.04	16.34	12.40	23.66	16.63	41.98	26.16	106.08	76.28
9.	Electronics	588.00	73.03	66.69	162.99	137.31	126.93	96.31	149.15	104.81	160.54	95.84	672.64	500.96
10.*	Atomic Energy	1300.00	147.55	134.75	149.52	125.97	166.61	128.77	155.84	112.43	204.61	138.13	824.13	640.05
11.*	Civil Supplies	21.00	4.33	3.95	4.30	3.62	4.40	3.34	5.00	3.51	5.00	3.28	23.03	17.70
12.*	Bio-Technology	5.00	12.42	11.34	8.21	6.92	10.74	8.30	19.13	13.82	4.50	3.16	55.00	43.54
13 *	Economic Affairs	1400.00	457.41	417.73	1211.99	1021.05	840.66	638.07	412.55	289.94	891.84	585.77	3814.45	2952.56
14.	Textiles	177.00	23.71	21.87	4.99	4.20	4.80	3.69	9.50	6.84	31.55	21.25	74.55	57.85
15.*	DSIR	19.00	5.16	4.71	7.99	6.73	0.00	0.00	7.53	5.29	6.10	3.64	26.78	20.37
16.	Supply	13.00	1.98	1.81	3.61	3.04	4.06	3.08	3.90	2.74	2.89	1.90	16.44	12.57
17.*	Commerce	127.00	23.30	21.74	52.87	44.54	88.45	67.13	74.50	52.36	188.10	123.55	427.72	309.32
18.	Planning (NIC)	300.00	58.17	53.12	56.85	47.89	77.79	59.02	83.08	58.38	97.96	64.45	373.85	282.86
19.*	Ocean Development	15.00	3.37	3.11	0.98	0.83	2.42	1.87	1.74	1.25	4.50	3.03	13.01	10.09
Total (Indus. & Mineral) A:		35150.00	5882.62	5478.85	6339.25	5340.85	6747.31	5190.42	8246.15	5929.37	10332.45	6969.34	37547.78	28908.83
Village & Small Industry														
1.	Department of SSI, A & R I	1629.55	302.88	276.60	326.67	275.21	429.06	331.83	544.58	393.48	491.42	331.81	2094.61	1608.93
2.	Textile (VSI)	1157.00	129.45	118.22	182.59	153.82	196.62	152.06	216.02	156.08	207.29	139.96	931.97	720.14
3.	Food Processing Industry	146.00	30.01	27.41	38.47	32.41	39.58	30.61	40.41	29.20	35.88	24.22	184.35	143.85
Sub Total VSI B:		2932.55	462.34	422.23	547.73	461.44	665.26	514.50	801.01	578.76	734.59	495.99	3210.93	2472.92
Grand Total (A+B)		38082.55	6344.96	5901.08	6886.98	5802.29	7412.57	5704.92	9047.16	6508.13	11067.04	7465.33	40758.71	31381.75

A: Current Price

@: Revised Estimates

B: 1991-92 Prices.

* I&M Component only.

Statement - 5.3

OUTLAYS FOR CENTRAL INDUSTRIAL & MINERAL PROJECTS FOR NINTH PLAN
(1997-2002)

(Rs. crore)

Sl. No.	Ministry / Department	Eighth Plan Outlay	Ninth Plan Period (1997-2002)			
			Outlay	GBS	DBS	IEBR
<u>A. Industry & Minerals</u>						
1.	Steel	14579.00	16232.50	85.50	85.50	16147.00
2.	Mines	2083.00	7753.96	844.96	686.05	6909.00
3.	Fertilizers	5484.00	11013.38	1043.38	800.00	9970.00
4.*	Petroleum & Natural Gas	2552.00	4386.62	0.00	0.00	4386.62
5.	Chemicals & Petro-Chem.	2402.00	7176.65	171.00	171.00	7005.65
6.	Industrial Dev.	1053.00	1353.75	1353.75	1353.75	0.00
7.	Indus. Policy & Promotion	109.00	570.00	570.00	570.00	0.00
8.	Heavy Industry	2771.00	2027.00	551.00	551.00	1476.00
9.	Surface Transport	152.00	161.80	161.80	161.80	0.00
10.	Electronics	588.00	897.37	542.37	542.37	355.00
11.	Atomic Energy	1300.00	807.50	807.50	807.50	0.00
12.	Sugar & Edible Oils	*	1.80	1.80	1.80	0.00
13.	Consumer Affairs	*	28.37	28.37	28.37	0.00
14.	Bio-Technology	5.00	7.00	7.00	7.00	0.00
15.	Economic Affairs	1400.00				
16.	Textiles	177.00	144.51	144.51	144.51	0.00
17.	DSIR	19.00	22.50	22.50	22.50	0.00
18.	Supply	13.00	22.19	22.19	22.19	0.00
19.	Commerce	127.00	893.75	859.75	859.75	34.00
20.	Planning (NIC)	300.00				
21.	Ocean Development	15.00	84.23	84.23	84.23	0.00
<u>B. VSI Sector</u>						
1.	SSI & RI	1629.55	4303.85	3786.85	3786.85	517.00
2.	Textile (VSI)	1157.00	1270.00	1270.00	1270.00	0.00
3.	Food Processing Industry	146.00	235.04	235.04	235.04	0.00

Note:-

* The Ministry of Food Civil Supplies has been renamed the Ministry of Food and Consumer Affairs consisting of three Departments - Sugar & Edible Oils, Consumer Affairs and Food.

Statement - 5.4

NINTH PLAN (1997-2002) OUTLAYS - STATES/UNION TERRITORIES

(Rs. Lakh)

Ninth Plan (1997-2002)					
Sl. No.	States / Union Territories	Large & Medium Industries	Mining	Village & Small Industries	Total
1.	2.	3.	4.	5.	6.
STATES					
1.	Andhra Pradesh	56240.00	525.00	39448.00	96213.00
2.	Arunachal Pradesh	806.00	372.00	3432.00	4610.00
3.	Assam	19500.00	1027.00	17477.00	38004.00
4.	Bihar	140.35	62.00	197.65	400.00
5.	Goa	500.00	100.00	2855.00	3455.00
6.	Gujrat	82340.00	1195.00	36965.00	120500.00
7.	Haryana	3164.00	121.00	11183.00	14468.00
8.	Himachal Pradesh	6700.00	300.00	8000.00	15000.00
9.	Jammu & Kashmir	*	*	*	*
10.	Karnataka	45400.00	700.00	56500.00	102600.00
11.	Kerala	60686.00	1000.00	50900.00	112586.00
12.	Madhya Pradesh	77712.00	2103.00	31482.00	111297.00
13.	Maharashtra	52835.00	1195.00	36230.00	90260.00
14.	Manipur	*	*	*	*
15.	Meghalaya	5800.00	1200.00	3200.00	10200.00
16.	Mizoram	534.00	385.00	5973.00	6892.00
17.	Nagaland	1674.00	1900.00	8528.00	12102.00
18.	Orissa	3079.00	2400.00	6869.00	12348.00
19.	Punjab	25458.00	256.00	2416.00	28130.00
20.	Rajasthan	50051.00	95224.00	30063.00	175338.00
21.	Sikkim	*	*	*	*
22.	Tamil Nadu	79500.00	791.00	60000.00	140291.00
23.	Tripura	*	*	*	*
24.	Uttar Pradesh	31000.00	1218.00	20447.00	52665.00
25.	West Bengal	*	*	*	*
SUB-TOTAL (States)		603119.00	112074.00	432155.00	1147358.00
UNION TERRITORIES.					
1.	A & N Islands	0.00	0.00	3800.00	3800.00
2.	Chandigarh	*	*	*	*
3.	Dadra & Nagar Haveli	*	*	*	*
4.	Daman & Diu	232.00	0.00	128.00	360.00
5.	Delhi	5010.00	0.00	5990.00	11000.00
6.	Lakshadweep	0.00	0.00	915.71	915.79
7.	Pondicherry	10700.00	0.00	7800.00	18500.00
SUB-TOTAL (Uts)		15942.00	0.00	18633.71	34575.79
GRAND TOTAL		619061.00	112074.00	450788.71	1181933.79

* Not included.

Statement 5.5

INDICATIVE PRODUCTION TARGET -- NINTH PLAN 1997-2002
INDUSTRY & MINERAL DIVISION

Sl. No.	Industry	Unit	1992-93 Target	1992-93 Actual	1993-94 Target	1993-94 Actual	1994-95 Target	1994-95 Actuals	1995-96 Target	1995-96 Actual	1996-97 Target*	1996-97 Actual	2001-2002 Target
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Iron ore	Mill.Ton	62.50	57.47	62.50	55.47	62.50	63.00	67.00	65.90	72.00	65.13	100.00
	Basic Metals												
2	Hot Metal (Integrated Steel	-do-	18.74	15.20	17.07	15.94	17.61	17.58	18.89		18.74	19.89	27.00
3	Pig Iron for sale	-do-	1.69	1.68	1.54	1.98	1.82	1.70	1.62	2.79	2.16	3.20	4.00
4	Crude Steel(Intgr St.)	-do-	14.17	13.36	15.33	13.67	15.31	15.62	16.85		18.23	16.67	23.00
5	Saleable Steel(Intd.St)	-do-	16.62	11.33	17.67	11.98	17.38	12.80	14.32	14.20	15.87	14.59	20.00
6	Aluminium	Tho.Tonne	525.00	482.23	480.00	465.50	533.00	479.80	530.00	518.00	656.00	524.00	750.00
7	Copper	-do-	44.00	45.28	39.00	39.00	45.00	45.60	42.00	40.90	52.00	38.40	425.00
8	Zinc ingots	-do-	153.00	126.60	154.10	145.10	131.00	149.10	155.00	141.60	167.00	140.10	161.10
9	Lead ingots	-do-	58.50	52.50	58.50	37.41	46.00	43.80	60.00	35.10	96.00	43.78	78.50
	Non-Metallic Mineral Products												
10	Cement	Mill.Ton	51.00	54.54	62.00	57.96	62.00	62.00	68.00	67.72	76.00	76.00	113.00
	Basic Chemicals												
11	Caustic soda	'000 ton	1100.00	1085.60	1150.00	1080.00	1130.00	1156.10	1167.00	1356.80	1600.00	1459.30	1600.00
12	Soda ash	-do-	1520.00	1351.40	1550.00	1404.00	1420.00	1408.60	1430.00	1464.30	2000.00	1485.30	1968.00
13	Calcium carbide **	-do-	100.00	94.00	115.00	94.00	110.00	97.40	110.00	95.30	170.00	91.30	120.00
	Agricultural Chemicals												
14	Nitrogenous fertilisers	'000 ton	7700.00	7430.30	7800.00	7231.20	8115.50	7950.70	8632.50	8777.00	9800.00	8599.40	14000.00
15	Phosphatic fertilisers	-do-	2750.00	2306.20	2200.00	1815.80	2331.00	2492.80	2667.20	2558.00	3000.00	2555.90	3300.00
16	B.H.C	-do-	20.00	23.80	24.50	23.53	21.00	25.40	21.00	34.30	25.00	24.80	0.00
17	D.D.T.	-do-	8.00	6.70	8.00	6.00	7.00	7.00	8.00	4.40	8.00	8.00	5.00
18	Malathion	-do-	3.00	2.30	3.00	3.00	3.00	1.44	3.00	2.14	4.00	2.51	6.00
	Thermo Plastics and Synthet												
19	L.D. polyethylene	'000 ton	170.00	175.95	170.00	171.00	200.00	180.80	190.00	223.66	180.00	218.15	185.00
20	H.D. polyethylene/LLDPE	-do-	270.00	49.58	270.00	224.81	310.00	319.45	380.00	203.42	400.00	276.23	774.00

Statement 5.5 (Contd.)

Sl. No.	Industry	Unit	1992-93 Target	1992-93 Actual	1993-94 Target	1993-94 Actual	1994-95 Target	1994-95 Actuals	1995-96 Target	1995-96 Actual	1996-97 Target*	1996-97 Actual	2001-2002 Target
1	2	3	4	5	6	7	8	9	10	11	12	13	14
21	Polyvinyl chloride	-do-	230.00	276.47	300.00	358.45	496.00	496.00	550.00	392.48	450.00	424.76	738.00
22	Polypropylene	'000 tonne	100.00	95.20	100.00	91.36	110.00	107.38	180.00	115.00	155.00	320.00	387.00
23	Polystyrene	-do-	22.00	27.75	30.00	40.87	40.00	51.84	95.00	50.88	110.00	57.89	193.00
24	Styrene butadiene rubber	-do-	40.00	35.51	40.00	28.89	28.00	34.11	45.00	35.00	50.00	50.00	76.00
25	Polybutadiene rubber	-do-	16.00	17.32	16.00	14.80	18.00	19.24	28.00	21.38	25.00	30.00	45.00
Petrochemical Intermediates													
26	Acrylonitrile	'000 tonne	26.00	26.52	26.00	26.00	27.00	26.51	24.00	26.60	27.00	27.00	27.00
27	DMT/PTA	-do-	290.00	357.34	370.00	369.23	450.00	440.76	480.00	455.00	450.00	577.00	911.00
28	Caprolactam	-do-	40.00	58.32	85.00	91.00	110.00	97.17	101.00	113.00	150.00	105.00	113.00
29	Detergent Alkylate	-do-	165.00	206.87	209.00	211.51	230.00	214.00	220.00	225.00	200.00	230.00	260.00
30	Methanol	-do-	185.00	219.90	260.00	262.10	265.00	377.00	275.00	380.00	300.00	300.00	450.00
31	Phenol	-do-	52.00	52.60	55.00	48.78	55.00	57.80	56.00	60.00	75.00	58.00	67.00
Man-made fibres													
32	Viscose filament yarn	'000 tonne	58.00	47.95	57.00	53.00	52.00	70.30	60.00	87.60	60.00	91.00	110.00
33	Viscose staple fibre	-do-	170.00	162.45	190.00	183.30	190.00	250.00	190.00	286.60	200.00	297.60	360.00
34	Viscose tyre cord	-do-	10.00	7.50	8.00	7.50	7.00	12.40	10.00	12.40	10.00	12.10	19.00
35	Nylon filament yarn **	-do-	30.00	32.47	35.00	37.34	39.38	40.00	40.00	68.60	48.00	63.90	102.00
36	Polyester staple fibre **	-do-	140.00	161.03	165.00	200.00	210.00	220.00	230.00	218.80	317.00	270.70	622.00
37	Polyester filament yarn **	-do-	215.00	245.01	260.00	286.21	320.00	294.00	350.00	332.00	363.00	395.80	814.00
38	Acrylic fibre **	-do-	50.00	56.35	75.00	67.57	85.00	81.39	80.00	40.06	85.00	34.67	103.00
* Under Broadbanding													
Drugs and Pharmaceuticals													
39	Bulk Drugs	Rs. Crores	860.00	1150.00	1130.00	1320.00	1450.00	1518.00	1570.00	1822.00	1500.00	1720.00	5439.00
40	Formulations	Rs. Crores	4620.00	6000.00	5960.00	6900.00	7300.00	7935.00	8030.00	9125.00	6000.00	9080.00	21104.00
Food Products													
41	Sugar	Million to	12.81	10.60	11.00	9.70	12.00	12.61	14.00	14.78	15.30	14.50	19.50
42	Vanaspati	'000 tonne	900.00	900.00	940.00	1000.00	1100.00	907.40	1100.00	974.60	1050.00	994.50	1100.00
Textiles													
43	Spun Yarn	million kg	1940.00	1895.00	1860.00	2067.00	2150.00	2090.00	2150.00	2292.80	2400.00	2376.30	3755.00
44	Cloth (mill sector)	mill mtr.	2810.00	2000.00	2255.00	1990.00	2000.00	1886.90	2000.00	1958.00	4150.00	1908.40	2600.00
45	Cloth (decentralised)	Mill mtr.	19350.0	23045.00	21530.00	23482.0	25000.00	15770.90	26300.00	16072.80	25450.00	18223.00	41400.00

Statement 5.5 (Contd.)

Sl. No.	Industry	Unit	1992-93 Target	1992-93 Actual	1993-94 Target	1993-94 Actual	1994-95 Target	1994-95 Actuals	1995-96 Target	1995-96 Actual	1996-97 Target*	1996-97 Actual	2001-2002 Target
1	2	3	4	5	6	7	8	9	10	11	12	13	14
46	Jute manufacture Leather and Rubber Goods	'000 tonne	1480.00	1310.00	1400.00	1448.00	1400.00	1364.60	1400.00	1430.80	1600.00	1401.10	1790.00
47	Leather footwear (Orgn.)	Mill. pair	27.00	16.53	30.00	21.45	30.00	20.31	30.00	19.42	42.00	21.13	50.00
48	Rubber footwear (orgn.)	-do-	45.00	28.42	47.50	35.60	32.00	33.50	40.00	27.80	60.00	28.30	40.00
49	Bicycle tyres (Organ.)	Million no	35.00	19.30	38.00	20.44	22.00	9.70	30.00	10.43	50.00	10.45	11.00
50	Automobile tyres Paper and Paper Products	-do-	28.00	19.56	29.00	20.60	21.00	21.00	25.00	21.97	32.00	22.47	35.00
51	Paper and paper board	'000 ton	2250.00	2146.00	2362.00	2270.00	2250.00	2510.00	2730.00	2710.00	2900.00	2800.00	4200.00
52	Newsprint Industrial Machinery	-do-	313.00	311.00	350.00	361.00	500.00	450.00	480.00	410.00	300.00	300.00	750.00
53	Machine Tools	Rs.Crs.	950.00	1043.80	1200.00	890.00	1050.00	1032.80	850.00	974.03	1150.00	1284.93	2300.00
54	Mining Machinery	-do-	80.00	82.40	90.00	88.70	88.00	93.20	110.00	129.74	130.00	133.81	156.00
55	Metallurgical Machinery	-do-	110.00	143.60	130.00	119.90	110.00	173.80	200.00	156.37	200.00	145.17	427.00
56	Cement Machinery	-do-	35.00	169.50	120.00	323.70	300.00	295.20	390.00	365.80	475.00	455.34	675.00
57	Chem. & Phar. Machinery	-do-	400.00	506.90	450.00	795.40	720.00	685.70	800.00	759.98	650.00	881.12	2300.00
58	Sugar Machinery	-do-	90.00	102.80	120.00	78.30	73.50	96.80	95.00	126.29	150.00	100.48	400.00
59	Paper & Pulp Machinery	-do-	40.00	60.30	60.00	49.20	47.25	51.90	51.90	76.20	80.00	68.50	85.00
60	Textile Machinery Electrical Power Equipments	-do-	600.00	1100.00	1200.00	1150.00	1200.00	1200.00	1200.00	1051.00	800.00	1204.80	5400.00
61	Steam Turbines	Th MW	2.59	3.12	3.78	3.74	4.11	4.11	3.69	3.72	3.96	4.11	7.00
62	Hydro Turbines	-do-	0.75	0.26	1.09	0.80	0.96	0.96	0.79	0.79	1.00	0.96	2.00
63	Transformers	MKVA	38.00	34.80	15.00	33.50	36.00	41.50	40.00	37.95	60.00	33.07	53.00
64	Electric Motors	MHP	7.00	5.30	6.00	6.00	6.93	6.60	6.10	6.30	8.00	7.20	13.00
Construction Machinery													
65	Earthmoving Equipment	Nos.	2750.00	2149.00	2700.00	1605.00	2100.00	2191.00	2500.00	3863.00	4200.00	4734.00	7500.00
Agricultural Machinery													
66	Tractors	Th. Nos.	465.00	146.00	170.00	138.60	147.00	157.80	180.00	201.73	240.00	244.76	301.00

Statement 5.5 (Concl'd.)

Sl. No.	Industry	Unit	1992-93 Target	1992-93 Actual	1993-94 Target	1993-94 Actual	1994-95 Target	1994-95 Actuals	1995-96 Target	1995-96 Actual	1996-97 Target*	1996-97 Actual	2001-2002 Target
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Rail & Water Transport Equipment													
67	Elec. Locomotives +	Nos.	140.00	140.00	135.00	135.00	155.00	155.00	155.00	160.00	195.00	155.31	200.00
68	Diesel Locomotives +	-do-	225.00	555.10	555.00	150.00	135.00	135.00	135.00	114.00	142.00	135.27	160.00
69	Railway Coaches +	-do-	1800.00	2500.00	2481.00	2481.00	1900.00	1900.00	1900.00	1362.00	1696.00	1903.80	2500.00
70	Railway Wagons +	Th.Nos.	25.00	25.00	30.00	19.20	24.00	14.70	16.00	19.04	25.00	23.50	68.00
71	Ship Buildings & Repairs	Rs.crore	175.00	578.40	62.00	486.90	440.00	610.40	550.00	671.12	800.00	790.80	1796.00
Road Transport Equipment													
72	Commercial Vehicles	Th.Nos.	170.00	133.20	150.00	140.70	141.75	195.00	250.00	278.00	200.00	142.03	485.00
73	Passenger Cars.	-do-	185.00	162.60	170.00	209.70	240.00	261.90	300.00	345.00	250.00	241.20	800.00
74	Jeeps	-do-	40.00	39.30	45.00	48.10	72.00	48.60	50.00	59.60	45.00	72.36	120.00
75	Scooters, Motor Cycles, Mopeds & Three wheelers	-do-	2000.00	1118.00	1600.00	1329.30	2640.00	1544.60	1900.00	1819.00	2400.00	2650.57	4600.00
76	Electronics												
	(A) Consumer Electronics	Rs.Crore	3800.00	3360.00	3900.00	4150.00	4600.00	4665.00	5400.00	5800.00	8500.00	6500.00	17000.00
	(B) Industrial Electronics	-do-	1700.00	1720.00	1950.00	1770.00	2300.00	2110.00	2750.00	2900.00	4500.00	3100.00	7700.00
	(C) Communication & Broadcasting	-do-	2200.00	2800.00	3400.00	3150.00	4200.00	3250.00	5200.00	2600.00	7000.00	3000.00	21650.00
	(D) Computer Systems	-do-	1000.00	1530.00	1250.00	1820.00	1500.00	2450.00	1850.00	2225.00	4300.00	2740.00	17850.00
	(E) Components	-do-	2200.00	2240.00	2650.00	2680.00	3100.00	3150.00	3600.00	3550.00	7600.00	3700.00	15600.00
	(F) Strategic Electronics	-do-	650.00	385.00	400.00	500.00	450.00	600.00	500.00	1075.00	1500.00	1300.00	2250.00
	(G) Software for Exports	-do-	550.00	675.00	900.00	1020.00	1300.00	1535.00	1800.00	2550.00	2600.00	3700.00	36500.00
	(H) Domestic Software**	-do-	400.00	490.00	600.00	695.00	1500.00	1070.00	2700.00	1690.00	-	2600.00	19800.00

Note : * Target as per Eighth Plan.

** Not included in Eighth Plan Target

Statement - 5.6

**VILLAGE & SMALL INDUSTRIES - NINTH FIVE YEAR PLAN (1997-2002)
INDICATIVE TARGETS**

S.NO.	INDUSTRY/SUB-SECTOR	UNIT	PRODUCTION		EMPLOYMENT		EXPORT	
			1996-97 ACHVT	2001-02 TARGET	1996-97 ACHV	2001-02 TARGET	1996-97 ACHVT	2001-02 TARGET
01	SMALL SCALE INDUSTRIES	Rs. crore	412636	725000	160	185	39249	78900
02	Khadi Cloth	M.Sq. Mtrs.	125	230	12	18	-	-
03	Village Industries	Rs. Crore	4120	7260	48.17	65	-	-
04	Coir Fibre Industries	000 Tonnes	271	350	5.5	6	208	400
05	Handloom Cloth	M.Sq. Mtrs.	7235	8800	124	173	1622	3170
06	Powerloom Cloth	M.Sq. Mtrs.	19352	32000	70.79	80	400.89	9000
07	RAW SILK	MT.TONNES	14126	20540	59.61	74	880	1520
08	HANDICRAFTS	Rs. crore	29600	47000	70.82	90	5628.62	9000
09	RAW WOOL	MT.TONNES	44	56	N.A	6	-	-

CHAPTER 6

ENERGY

Overview

6.1 Energy is a critical input for economic development and the development experience all over the world is associated with a massive increase in energy requirement. The fifty years since independence have seen an expansion in the total energy use in the country with a shift from non-commercial to commercial sources. The use of commercial energy has increased ten fold over this period. Nevertheless, per capita energy use in India remains very low and growth in future requires a large increase in commercial energy. This calls for optimising the capacity to expand, domestic production of commercial energy and the ability to do so will be a crucial constraint upon future growth. Even with the best efforts in this area India will remain energy deficient and import of energy in the form of crude oil & petroleum products and also coal will continue. Efforts at managing energy demand through rational energy pricing will be especially important in the years ahead.

Non-Commercial Primary Energy Resources

6.2 Fuelwood is an important source of energy for cooking and heating in the rural and, to some extent, in the urban households. The total forest area in the country adds up to nearly 75 million hectares. The growth in use of wood for industry, construction, cooking, etc. has exceeded the annual incremental availability of wood from local sources and social forestry schemes. This has resulted in gradual deforestation with consequent adverse impact on the environment.

6.3 Fuelwood is supplemented by dung and crop residues in meeting the domestic energy needs in the rural areas. The annual availability of wet dung is estimated to be about 960 million tonnes. Greater use of dung cake as a source of energy reduces the availability of dung as a valuable organic manure. Total availability of crop residues is estimated to be 450-500 million tonnes. The draught animal population in the country has been estimated at 70 million and animal energy continues to be used in agricultural operations and for rural transportation.

Commercial Primary Energy Resources

Coal

6.4 India accounts for about 0.8 per cent of the total geological reserves and 5.7 per cent of the proven reserves of coal in the world. The geological coal reserves in the country are estimated to be about 205 billion tonnes compared to 196 billion tonnes assessed at the beginning of the Eighth Plan. The proven minable reserves are currently estimated at 72.7 billion tonnes as against 67 billion tonnes at the beginning of the Eighth Plan.

Lignite

6.5 Since the Seventh Plan, considerable emphasis has been laid on the exploration of lignite especially in the States of Tamil Nadu, Rajasthan, Gujarat and Pondicherry. These States are located at a considerable distance from the coal fields. Lignite reserves are now estimated at 27.45 billion tonnes as against 6.5 billion tonnes estimated at the beginning of the Eighth Plan. The lignite deposits have been found suitable for power generation and are already being exploited for this purpose in Tamil Nadu.

Oil and Natural Gas

6.6 India has about 0.04 per cent of the world's proven reserves of hydrocarbons. The prognosticated geological resources of hydrocarbons in the country are estimated at 21.31 billion tonnes, of which 61 per cent are offshore and 39 per cent onland. Out of this, the geological reserves established are, however, only of the order of 5.32 billion tonnes. It is assumed that half of the prognosticated resource represents natural gas, of which only 12 per cent has till now been established. As of the beginning of 1995, the balance of recoverable reserves are placed at 732 million tonnes of crude oil and 660 billion cubic meters of natural gas.

Hydro Power

6.7 Based on a systematic survey carried out during the Seventh Plan, the hydro-electric potential in the country is estimated at 600 Bkwh (billion kilowatt hour) per year as against 472.15 Bkwh per year assessed earlier. This assessment of hydro power potential is provisional as further studies are in progress and the estimates could be revised. Out of the total potential available, nearly one-fifth has either been developed or is being developed. Apart from this, the Central Electricity Authority (CEA) had also undertaken extensive studies to identify the sites for the development of pumped storage schemes. Sixty three sites have been identified for this with a probable potential of about 94,000 MW. There exists another 6,780 MW of potential for exploitation through mini/micro hydel schemes. A number of such schemes are under implementation.

Nuclear Resources

6.8 The country has uranium resources adequate to meet the life-time requirement of the first stage of nuclear power development programme of 10,000 MW. Apart from this, there are also large deposits of thorium available in the country. The present estimates show that the known deposits may yield 363,000 tonnes of thorium oxide. Thorium resources, when used through breeder reactors, may produce 900,000 Bkwh of electricity.

6.9 Table 6.1 gives the regional distribution of the primary commercial energy resources of the country. It is evident that the distribution of primary commercial energy resources is quite skewed. Whereas the Eastern region accounts for nearly 70 per cent of the total coal reserves the Western region has over 70 per cent of the hydrocarbon reserves in the country. Similarly, more than 70 per cent of the total hydel potential in the country is located in the Northern and the North-Eastern regions put together. The Southern region, which has only 6 per cent of the coal reserves and 10 per cent of the total hydel potential, has most of the lignite deposits occurring in the country.

Table 6.1
Regional Distribution of Primary Commercial Energy Resources

Region	Coal (BMT)	Lignite (BMT)	Crude Oil (MMT)	Natural Gas (BCM)	Hydro Power (TWH)
Northern	1.1	1.1	-	4	225.00
Western	48.2	0.5	584	497	31.40
Southern	13.1	25.9	-	-	61.80
Eastern	141.4	-	-	-	42.50
North-Eastern	0.9	-	148	159	239.30
Total	204.7	27.5	732	660	600.00

6.10 In addition, there also exists the potential of coal bed methane, oil shale and gas hydrates in the country. As per the present estimates available the potential is placed at 850 billion cubic meters of coal bed methane, 6156 trillion cubic meters of gas hydrates and 600 million tonnes of oil shale.

Non-Conventional Resources

6.11 A large potential of non-conventional sources of energy exists in the country. These include bio-gas, solar PV and solar thermal, bio-mass gasifier, wind power, small hydro power, bagasse co-generation, etc. Table 6.2 gives the present assessment of the potential of these sources and their status of exploitation.

Table 6.2
Renewable Energy Potential

Source/Technology	Potential/ Availability	Potential Exploited
Biogas Plants	12 million	2.7 million
Biomass-based power	17,000 MW	69.5 MW
Efficient Woodstoves	120 million	20 million
Solar Energy	5×10^{15} Whr/yr	25 MW
Small hydro	10,000 MW	250 MW
Wind Energy	20,000 MW	1,000 MW
Ocean Thermal	50,000 MW	
Sea Wave Power	20,000 MW	
Tidal Power	9,000 MW	

6.12 Even though the size of primary commercial energy reserves appears fairly large, their availability in per capita terms is quite moderate on account of the large population of the country. If no significant additions to reserves are made in the future, the per capita availability is going to decline further in the wake of rising population. Table 6.3 gives the details of per capita reserves and reserves to production (R/P) ratios of some of the conventional sources of energy as well as the major implications associated with development of these forms of energy sources.

Table 6.3
Per Capita Availability of Commercial Energy Resources

Resource	Availability		R/P Ratio	Implications
	Total	Per capita		
Coal	72 BMT	76 Tonnes	90	Moderately high R/P, Land degradation/ Resettlement constraints/ Need for Large Imports Soon
Oil	0.8 BMT	0.8 Tonne	21	Low R/P, Large Imports Necessary
Gas	660 BCM	700 cm ³	30	Low R/P, Large Imports Necessary
Hydro	600 TWH	631 KWh	-	Large Untapped Potential, Environmental, Resettlement Constraints, Need for Large Investments
Nuclear	350,000 Mwe*		-	Large Potential, Technology / Safety Issues and Need for Large Investments

*Including Thorium Resources

Trends in Commercial Energy Production

6.13 Over the last five decades the country has taken major strides in stepping up the production of commercial energy as shown in Table 6.4.

Table 6.4
Trends in Production of Primary Commercial Energy

	Units	Production					
		1950-51	1960-61	1970-71	1980-81	1990-91	1996-97*
Coal	MMT	33	55.67	72.95	114.01	211.73	288.65
Lignite	MMT	-	0.05	3.39	4.80	14.07	22.54
Crude Oil	MMT	0.26	0.45	6.82	10.51	33.02	33.87
Natural Gas	MCM	-	-	1445	2358	17998	22890
Hydro Power	BkWh	2.52	7.84	25.25	46.54	71.66	68.63
Nuclear Power	BkWh	-	-	2.42	3.00	6.14	9.01
Wind Power	BkWh	-	-	-	-	0.03	0.85

* Provisional

6.14 Coal continues to be the main source of primary commercial energy not only for direct energy use in industry but also for indirect energy use through power generation. Concerted efforts made in exploration and development of hydrocarbons has led to a significant step-up in the production of oil and natural gas. However, in recent years, the production of crude oil has been stagnating. The hydro-electric generation has also increased significantly. There have been additions to nuclear power generation capacity as well as power generation from nuclear power plants. The wind power generation has also picked up significantly during last five years.

6.15 As shown in Table 6.5 the share of commercial energy in total primary energy supply has increased substantially from 28 per cent in 50s to 66 percent in 1996-97. The share of non-commercial fuels has declined from 74 per cent in 1950-51 to about 34 per cent in 1996-97. Fuelwood accounts for nearly 65 per cent of the total non-commercial energy consumed in the country. Of the indigenous primary commercial energy production, the relative share of oil and natural gas has increased from 1.2 per cent in 1950-51 to 27.9 per cent in 1996-97, the terminal year of the Eighth Plan. The share of coal which was 98% in 1950-51 has declined to 64.6 per cent in 1996-97. The changes in the pattern of primary energy supplies are shown in Table 6.5.

Table 6.5
Changes in the Pattern of Primary Energy Supply

(MTOE)

	Production					
	1953-54	1960-61	1970-71	1980-81	1990-91	1996-97
Commercial Primary Energy						
Coal	23.62	35.64	36.48	56.96	94.68	124.09
Lignite	-	0.01	0.81	1.23	3.34	6.05
Crude Oil	0.19	0.46	7.01	10.79	33.92	34.78
Natural Gas	-	-	0.60	1.41	11.73	18.89
Hydro Power	0.24	0.67	2.17	4.00	6.16	5.90
Nuclear Power	-	-	0.63	0.78	1.60	2.35
Wind Power	-	-	-	-	-	0.07
Total	24.05	36.78	47.67	75.19	151.43	192.13
Net Imports	2.20	6.04	12.66	24.63	31.69	62.29
St. Changes (-)	0.24	2.87	0.69	3.80	5.37	7.83
Intl. Bunkers (-)	0.53	0.50	0.24	0.21	0.14	0.16
Total Commercial Energy Supply	25.48	39.45	59.40	95.81	177.61	246.43
Non-Commercial Primary Energy Supply	64.13	74.38	86.72	108.48	122.07	127.51
Total Primary Energy Supply	89.61	113.83	146.12	204.29	299.68	373.94

6.16 Fuelwood accounts for nearly 65% of the total non-commercial energy use in the household sector. In absolute terms, the consumption of fuelwood is estimated to be 161.4 million tonnes in 1996-97. The consumption of dungcake and crop residue is estimated to be 88.6 million tonnes

Primary Energy Imports

6.17 The country is not self-sufficient in oil and oil products and the import dependence of the country for oil has been increasing over time. The degree of self-sufficiency in oil which was around 35 per cent in 1975 has been increasing upto 1984-85 and was the highest at 70 per cent during that year. It has started declining thereafter in the wake of decline in indigenous production of crude oil and rising demand for petroleum products. In addition to POL imports, imports of superior quality coal are needed for use in the steel industry. Imports of coal touched the 10 million tonnes mark in 1996-97. A limited quantity of electricity of around 1.5 billion units per annum is also imported from Bhutan. As shown in Table -6.6 the share of primary energy imports in total primary commercial energy supplies in the country increased from 8.63 percent in 1953-54 to 25.28 in 1996-97. Import dependence of POL declined in the 1980s, because of the impact of Bombay High oil production but it has started to increase again in the 1990s as domestic oil production has stagnated.

Table 6.6
Share of Net Energy Imports in
Primary Commercial Energy Supply

(%)				
Year	Coal	POL	Electricity	Total
1953-54	(-)5.02	13.65	-	8.63
1960-61	(-)2.08	17.39	-	15.31
1970-71	(-)0.40	21.71	-	21.31
1980-81	0.25	25.45	-	25.70
1990-91	2.22	15.56	0.07	17.85
1996-97	2.83	22.40	0.05	25.28

Pattern and Growth of Final Energy Consumption

6.18 The total final energy consumption in the economy has increased from 84.5 MTOE in 1953-54 to 290.4 MTOE in 1996-97 at an implicit rate of growth of 2.91% per annum compound. The share of commercial energy in the final energy consumption has increased from 24.1% to 56.1% during this period whereas that of non-commercial energy has declined from 75.9% to 43.9 percent. The changes in the relative shares of commercial and non-commercial sources in the primary energy supplies and the shares of different sources in the final commercial energy consumption are shown in Table 6.7.

Table 6.7
Changes in Pattern of Energy Consumption

Year	Primary Energy		Final Commercial Energy				Total
	Commercial	Non-Commercial	Coal	Pet. Prod.	Nat. Gas	Electricity	
1953-54	28.4	71.6	80.1	16.7	0.0	3.2	100.0
1960-61	34.7	65.3	75.3	19.9	0.0	4.8	100.0
1970-71	40.6	59.4	56.1	34.1	0.6	9.2	100.0
1980-81	46.9	53.1	47.9	40.3	1.1	10.7	100.0
1990-91	59.3	40.7	35.9	43.6	5.5	15.0	100.0
1996-97	65.9	34.1	28.9	47.7	6.3	17.1	100.0

6.19 As may be seen from Table 6.7, the share of coal is declining in the final commercial energy consumption whereas that of oil & gas and electricity is increasing. Oil and gas accounted for nearly 54% of the total final commercial energy consumption in 1996-97. Since these figures relate only to final energy consumption, only the direct use of coal, oil and natural gas in industry, households, transport sectors, etc. has been considered. The use of these energy sources for indirect use through power generation is not included. Presently, about 71% of total coal consumption and 30% of total natural gas consumption is used for power generation.

6.20 Table 6.8 shows the changes in the relative shares of the different sectors in final commercial energy consumption over the years.

Table 6.8
Percentage Share in Final Commercial Energy Consumption by Different Sectors

Sector	Percentage Share in Consumption						
	1953-54	1960-61	1970-71	1980-81	1990-91	1994-95	1996-97*
Industry	39.9	41.5	49.6	49.6	44.7	42.1	41.9
Transport	43.7	40.2	28.2	23.5	19.8	20.8	22.3
Household	9.6	9.7	12.2	9.7	11.8	12.3	12.1
Commercial	0.5	0.3	1.2	0.9	1.1	1.2	1.2
Agriculture	1.4	1.6	2.7	6.3	8.2	9.3	9.0
Feedstocks	0.5	0.3	4.2	5.6	10.4	10.3	9.5
Non-energy	2.9	4.7	1.5	4.0	3.1	3.0	3.1
Others	1.5	1.7	0.4	0.4	0.9	1.0	0.9

*Provisional

Energy Needs of a Growing Economy

6.21 The elasticity of total primary energy consumption with respect to GDP at constant prices works out to 0.78 as compared to 1.25 for commercial energy for the period 1953-96. The elasticity of total final energy consumption works out to 0.67 as compared to 1.14 for final commercial energy consumption for the same period. However, there have been changes in the pattern of consumption of energy over time as well as in the fuelwise elasticities. The changes in the pattern of energy consumption/GDP elasticities are shown in Table 6.9

Table 6.9
Energy Consumption/GDP Elasticities

Period	Primary Energy		Final Commercial Energy Consumption			
	Total	Commercial	Coal	Pet. Prod.	Electricity	Total
1953-60	0.87	1.62	1.22	2.14	2.98	1.46
1960-70	0.68	1.13	0.32	2.69	3.06	1.13
1970-80	1.06	1.59	0.99	2.09	2.06	1.52
1980-90	0.69	1.13	0.42	1.10	1.58	0.95
1990-96	0.65	0.97	0.22	1.15	1.28	0.87
1953-96	0.78	1.25	0.57	1.74	2.11	1.14

6.22 There has been a declining trend observed in the point-to-point elasticity of energy consumption with respect to GDP in the decades of the eighties and the nineties. This has to be considered with due care since the past trends in the consumption of commercial energy do not really represent the growth of demand for such energy but merely reflect the growth of its actual availability in view of the prevailing energy shortages. However, a declining trend in energy consumption-GDP elasticity does include the increasing efficiency of energy use in the economy.

6.23 As may be seen from Table 6.7, the economy is progressively becoming oil-intensive in view of the increasing share of natural gas and petroleum products in the final commercial energy use. This is due to the increasing use of oil products in sectors like household and transport. The transport sector has become more oil-intensive on account of larger than anticipated share of road transport in freight and passenger traffic in preference to railways and a mushrooming growth in

personalised transport modes like cars and 2-wheelers. The trends in the relative shares of oil products like LPG, SKO, MS, and diesel during the last three decades are shown in Table 6.10.

Table 6.10
Share of LPG, SKO, MS and Diesel in POL Consumption

	Percentage Share in Consumption (excluding RBF)			
	1970-71	1980-81	1990-91	1996-97
LPG	1.0	1.3	4.4	5.4
SKO	18.3	13.7	15.3	12.8
MS	8.1	4.9	6.4	6.3
Diesel	27.5	37.1	41.1	45.9
Total	54.9	57.0	67.2	70.4

6.24 The share of the four oil products under consideration has increased from 54.9% in 1970-71 to 70.4% in 1996-97. If these trends continue in future as well it will give rise to severe balance of payments problems since all these products, except motor spirit, in addition to crude oil are imported at the margin. Increase in dependence on oil for meeting the final energy needs of the economy results in a heavy outgo of foreign exchange as is indicated in Table 6.11.

Table 6.11
Share of POL imports in Total Imports and Exports

(Rs Billion)

Year	Net POL Imports	Total Imports	Total Exports	Net POL Imports as % of Total	
				Imports	Exports
1970-71	1.3	16.3	15.3	8.1	8.6
1975-76	12.4	52.7	40.2	23.6	30.8
1980-81	52.6	125.5	67.0	41.9	78.4
1985-86	43.2	196.6	102.5	22.0	42.1
1990-91	97.7	431.9	325.5	22.6	30.0
1994-95	162.5	899.7	826.7	18.1	19.7

Long-Term Energy Scenario - Some Key Issues

6.25 Based on end-use analysis and past income elasticities, it is estimated that the requirement for primary energy is likely to increase from 374 MTOE at the end of Eighth Plan to around 475-500 MTOE by the end of the Ninth Plan i.e. an annual growth rate of 4.9%. Of this, the share of commercial energy is expected to increase from 66 percent at the end of Eighth Plan to 75 percent at the end of Ninth Plan while that of non-commercial energy will decline from 34 percent to 25 percent. The annual growth rate of commercial energy is therefore 6.8%.

6.26 The energy import dependence is also expected to increase from about 25 percent at the end of Eighth Plan to 28 percent at the end of Ninth Plan. This raises the issue of energy security. In view of stagnant domestic oil production, higher oil imports appear inevitable. Uncertainties regarding prices and availability make the developing countries like India more vulnerable than the developed countries. Both refining and marketing operations have been opened to the private

sector. A new exploration licencing policy for making exploration and production competitive has been announced. The growing requirement of coal and the inability of the domestic production to meet this requirement may necessitate increased imports of coal even for power generation. Allowing the entry of private sector in coal production, without the captive consumption restriction, will go a long way in increasing the availability of coal.

6.27 The need for energy conservation and other demand management measures can not be over-emphasised. Some efforts are already being made in this direction. However, the results achieved have not been to the desired level. There is a need for R&D and technology development in this field also.

6.28 The demand for oil is increasing faster than the addition to hydrocarbon reserves in the country. The efforts made during the last few years by the oil industry have not yielded the expected results. There is a need for enhancing the pace of exploration and development in the hydrocarbons sector in order to add to the recoverable resources. Concerted efforts are required in this area through the adoption of better techniques of oil exploration. Similarly, adoption of latest technology would also improve the recovery from existing wells.

6.29 Indian coal is not of a very good quality as the ash content of the coal is very high. This not only leads to difficulties in utilisation but also generates larger quantities of fly ash, management of which becomes a difficult problem. Clean coal technologies are a must in order to reduce the detrimental environmental effects associated with high-ash coal utilisation. Also, there is a need for induction of improved mining technologies in order to mine coal from lower seams which will help improve the quality of coal.

6.30 The key issues facing India which have energy implications are, therefore, rising population, need for economic growth, access to adequate commercial energy supplies and the financial resources needed to achieve this, rational energy pricing regime, improvements in energy efficiency of both the energy supply and consumption, technological upgradation, a matching R&D base and environmental protection.

Investment on Energy Supply System

6.31 Energy is a capital intensive sector. Large investments are required to be made for meeting the rapidly growing demand for energy from different consuming sectors. The relative share of expenditure on energy sector in the total Plan expenditure / outlay during successive Five Year Plans is shown in Table 6.12.

Table 6.12
Plan Expenditure and the Share of Energy Sector

Plan	Period	Plan Expend. (Rs.Cr.) @	Share of Energy Sector (%)				Total
			Power	Oil/Gas	Coal	NRSE	
First	1951-56	1,960	-	-	-	-	19.7
Second	1956-61	4,670	9.7	0.8	1.9	-	12.4
Third	1961-66	8,580	14.6	2.6	1.3	-	18.5
Fourth	1969-74	15,780	18.6	1.9	0.7	-	21.2
Fifth	1974-79	39,430	18.7	3.6	2.9	-	25.2
Sixth	1980-85	109,290	16.7	7.8	3.5	0.1	28.1
Seventh	1985-90	220,220	17.4	7.3	3.2	0.3	28.2
Eighth*	1992-97	434,100	18.4	5.5	2.4	0.2	26.5

*Outlay

@ Expenditure at current price at the base year of the respective Plans.

6.32 The share of energy sector in the total public sector outlay has been increasing over the various Plan periods with the power sector accounting for the major part. **Further in the Ninth Plan, a major thrust will be given to infrastructure development, particularly energy and power, and public expenditure in the sector would be enhanced.**

Energy Pricing

6.33 The principles of pricing adopted for energy products have greatly influenced the pattern of growth of the energy sector in the country. The economic implications of energy pricing are multi-dimensional. Firstly, they have a direct bearing on the efficiency of allocation of resources within the energy sector as well as in the overall framework of the economy. This includes the impact of energy prices on inter-fuel substitution. Secondly, the end-use efficiency in the sector is directly influenced by energy prices. Pricing of resources that are used in energy production is also important in view of the efficient use of these resources. Thirdly, the pricing system determines the viability of the sector and its financial autonomy. Finally, in a country where income disparities are wide, energy prices could lead to distributive implications unless adequate safeguards are built in.

6.34 Until recently the prices of commercial energy sources in the country were entirely administered. The basic approach was to arrive at a retention price that will permit full recovery of the average costs and allow a reasonable rate of return on the capital employed in the industry. However, this system did not always work in this manner and there was a tendency to under price both coal and petroleum. There is an urgent need for dismantling the administrative pricing regime. More recently there has been a move to deregulate energy prices and shifting to market-based pricing. Where subsidies are necessary, they should be transparent and well focussed.

6.35 There has been a growing concern about the subsidies, both direct and hidden. Fixation of administered prices is often done in not so transparent a manner and it also ignores sound economic principles on efficiency and sometimes on equity grounds. These subsidies have tended to be open-ended and have accrued to those who were not envisaged to be the real beneficiaries.

Energy Conservation

6.36 At present, over 60% of the oil requirement is met from imported sources. As a result, petroleum products account for the outgo of a large proportion of the total exports earnings of the country in foreign exchange. In 1996-97, India imported crude oil and petroleum products worth \$9.3 billion (Rs.31,000 crore). The degree of self-sufficiency (measured as the ratio between indigenous production of crude oil and consumption of petroleum products in the economy in crude oil equivalent terms) is currently about 38 percent. The level of exports earnings will have to increase in a sustained manner to pay for the energy imports particularly in view of the increase in the requirements of oil products and near stagnation in indigenous production of crude oil.

6.37 Energy conservation has received considerable attention since the first oil shock in 1973. The Fuel Policy Committee (1974) and the Working Group on Energy Policy (1979) had laid emphasis on the need for energy conservation. The Report of the Inter-Ministerial Group on Energy Conservation in 1983 examined specific areas of energy conservation in different sectors. The Advisory Board on Energy (ABE) had recommended the setting up of a National Energy Conservation Organisation (NECO), backed by comprehensive legislation on energy conservation. The Petroleum Conservation Research Association (PCRA) under the Ministry of Petroleum & Natural Gas has done pioneering work in bringing about general awareness of the need to conserve the use of oil. The Department of Power set up the Energy Management Centre to undertake studies and suggest an action plan for energy conservation and more efficient use of energy. Energy audits are being carried out in a number of industries. There has been some improvement over the years in the efficiency of use of commercial energy in several sectors of the economy. Table 6.13 below gives the energy savings potential for some sectors in comparison with the international consumption levels.

	India	World
Industry	(GCal/Tonne)	
Aluminium	14.55	12.35
Steel	8 to 9.55	4.0
Cement	1.0	0.8
Transport		
(Saving (%))	80% per tonne km. If freight moved from road to rail	
Urban Transport	For every 1 tonne of petrol Saved, 0.33 tonnes of HSD is Required (savings 67%)	
Agriculture		
Pump Sets	30%	
Domestic		
CFL Vs Filament lamp	76%	

6.38 The actual realisation of this potential will depend on policies including pricing both for energy products as well as for end-use equipment/devices and on institutional changes that take place in the energy sector.

Energy and Environment

6.39 Often, the use of energy is accompanied by adverse impact on environment and ultimately on the human health. Combustion of fossil fuels generates gases and contributes to atmospheric pollution. The major source of such pollution is fuel combustion in power plants and industry as well as in motor vehicles, which result in the deterioration of the ambient air quality. Inefficient chullahas in the household sector result in indoor air pollution which is damaging to the health particularly of the women. It therefore, becomes imperative that the future energy strategy should try to meet the requirement of energy, particularly that of the poor without having an adverse impact on environment and in a cost-effective manner. Greater penetration by improved chullahs will help in achieving this objective.

6.40 Energy issues will have to be analysed more from the efficient end-use and service point of view rather than merely aiming at augmenting the supply. Such an approach would take into account the possibility of improvements in the efficiency of energy production and use so that it is possible to continue the growth process on a sustainable basis.

Energy Sector Reforms

6.41 The most recent series of policy changing in the Energy Sector were initiated in the year 1991 vide Industrial Policy Resolution announced in that year. The policy to promote private participation in the Energy Sector programmes is guided by the need for additional investment and competitiveness. Environmental management, protection & conservation of the natural resources has also emerged as a key priority in the reform process in the Energy Sector in functional terms.

Power Sector Reforms

6.42 The Power Sector Reforms included functional reforms in the form of investment promotion; structural reforms in the form of unbundling the existing vertically integrated monopoly and separate generation, transmission & distribution activities for rationalising their management; setting up of Central & State level Electricity Regulatory Commissions etc. Various tax incentives, a certain assured rate of return to the investors have been granted. Liberalised tariff reforms for hydro electric projects have also been notified. This has been discussed in details in the Chapter on Power.

Coal Sector Reforms

6.43 These include permitting private sector in commercial coal mining by the required legislative amendments, offering coal blocks both for exploration and mining on competitive bidding basis, deregulation of coal prices, setting up of regulatory authority, re-structuring the coal sector by giving full autonomy to the various coal producing companies of Coal India Limited (CIL) and doing away with the concept of holding company, accelerating the efforts for exploration of coal deposits etc.

Petroleum Sector Reforms

6.44 Functional Reforms in the form of investment promotion have concentrated on private participation in upstream and downstream activities. Both refining and marketing operations were opened to private sector. A package has been formulated to attract private investment in the exploration of oil and gas which includes attractive fiscal concessions. A new exploration licensing policy for making exploration and production competitive has also been announced. Setting up of refineries in the private and joint sector have also been permitted. The structure reforms is being considered in the form of regulatory mechanism to a co-ordinated approach at the national level.

6.45 Along with promoting the role of market forces in the energy sector, this sector also has a role in promoting human and social development. This is particularly relevant in the Indian context where there exists considerable poverty, ill-health, illiteracy, etc.

Energy Strategy for the Future

6.46 The energy strategy for the future could be divided into short-term strategy, medium-term strategy and long-term strategy. The various components of short/medium term-strategy could be -

- Rationalising the tariff structure of various energy products, particularly the prices charged by the State Electricity Boards (SEBs) from the various categories of consumers. This is an important component, if not a pre-requisite for the re-structuring of the SEBs in order that they become bankable and credit-worthy. The SEBs have to be re-structured so as to permit them to operate on commercial lines.
- Dismantling of the Administered Pricing Mechanism (APM) in a fairly short time-frame
- Strengthening of the institutional reforms that have been initiated during the Eighth Five Year Plan e.g. deregulation, etc.
- An optimum utilisation of existing assets
- Efficiency in production system and reduction in transformation losses, including those in traditional forms of energy sources.
- Promoting the R&D, transfer and use of technologies and practices for environmentally sound energy systems, including new and renewable energy sources
- Improving energy efficiency in accordance with national socio-economic and environmental priorities
- Promoting appropriate energy efficiency and emission standards to reduce adverse impact on the environment.
- Establishing or enhancing, as appropriate and in cooperation with private sector, labeling programmes for products to provide decision makers and consumers with information on opportunities for energy efficiency.
- Adoption of energy-efficient technologies in major energy-intensive industries like iron, steel, chemicals, petroleum, pulp paper and cement.

6.47 The energy challenges need to be tackled in such a way that social, environmental, economic and security problems are ameliorated and not aggravated, as is typically the case with conventional energy strategies which either ignore these problems or do not deal with them adequately. Therefore, in the medium to long-term, it is necessary to adopt measures that will reduce the energy intensity of the economy, some of which are listed below

- Demand management through greater conservation of energy, optimum fuel mix, structural changes in the economy, an appropriate modal mix in the transport sector, i.e. greater dependence on rail than on road for the movement of goods and passengers and a shift away from private modes to public modes for passenger transport, greater reliance on co-generation, recycling, changes in design of different products to reduce the material intensity of those products, etc.
- There is a need to shift to less energy-intensive modes of transport. This would include measures to improve the transport infrastructure viz. roads, better design of vehicles, use of Compressed Natural Gas (CNG) and synthetic fuel, etc. Similarly, better urban planning would also reduce the demand for energy use in the transport sector.

- There is a need to move away from depletable to inexhaustible resources viz. solar, wind, biomass energy, etc.
- Greater emphasis has to be laid on the exploitation of hydro-electric power, particularly for meeting peak demand.
- Greater attention will have to be paid to research, development, transfer and use of energy- efficient technologies and practices in the supply as well as end-use sectors. Attention will also have to be paid to factors like rehabilitation of displaced people, environmental considerations, etc. while adopting these technologies.

6.48 From the above, it is evident that the demand for energy registered a high rate of growth, contributed largely by the rising population, rapid urbanisation, increasing income levels, changing life styles and structural changes in the economy. To some extent, subsidised prices of certain forms of energy also led to end-use inefficiencies and, consequently to an increase in the energy demand. The development of some of these energy resources is also beset with serious environmental implications. In the sections that follow, the various sources of energy viz. coal, oil, electricity as well as issues relating to conservation etc. are dealt with in greater detail.

POWER SECTOR

6.49 Electricity is one of the key inputs for the overall socio-economic development of the country. The basic responsibility of the power supply industry is to provide adequate electricity at economic cost, while ensuring reliability and quality of the supply. Despite significant progress in capacity addition since Independence, the demand for electricity continues to outstrip the supply with the result that energy and peaking shortages continue to plague the economy. With the increasing pace of economic development facilitated by the reforms initiated by the Government, the demand for power in both rural and urban areas is likely to increase rapidly in the coming years. The major task of the power sector during the Ninth Plan will, therefore, be to ensure that the anticipated demand is met adequately and in a reliable and cost-effective manner. The capacity addition, both in the public as well as private sector, fell short of the levels envisaged in the Eighth Plan and the total addition has been lower than what had been achieved during the Seventh Plan. It is expected that the impediments to private sector participation in the power sector would have since been sorted out and the public sector investment would be adequately supplemented by capacity additions in the private sector during the Ninth Plan.

6.50 The Ninth Plan will lay emphasis on maximising benefits from the facilities already available in the power sector, through improvements in the operational efficiency of the power generation units, an overall reduction in system losses and enhancement in the efficiency of the end-use of electricity. Significant savings could accrue through integrated operations of the State and regional power systems and the Ninth Plan will lay stress on drawing up an active plan to move in that direction. The ongoing projects will be accelerated and completed at the earliest and, finally, the Ninth Plan will provide for advance action to be taken for the Tenth Plan projects with special emphasis on accelerating hydro development during the Tenth Plan onwards to ensure a balanced development of the power system in different regions.

6.51 The Public sector will continue to contribute significantly to capacity additions and substantially to transmission and distribution during the Ninth Plan. This would be made possible through reforms of power utilities, enabling them to mobilise adequate resources for funding their projects. Project implementation and management procedures will also have to be honed up for the power sector in the coming years to play a vital role.

REVIEW OF THE EIGHTH PLAN PROGRAMME

Generation

6.52 The gross energy generation from utilities at the beginning of the Eighth Plan was 286.7 Billion Units (BU). The Eighth Plan envisaged a gross energy generation requirement of 418.2 BU from utilities in the terminal year of the Eighth Plan i.e 1996-97. As against this, the energy generation during the year 1996-97 was 394.5 BU. This works out to a compound growth rate of 6.59 % during the Eighth Plan. The slippage of 23.7 BU is mainly attributable to shortfall in generation in hydro and nuclear sectors.

Capacity Addition

6.53 The all -India installed generating capacity in Utilities at the beginning of the Eighth Plan was 69,065 MW. This comprised 19,194 MW of hydro, 48,086 MW of thermal (including 3095 MW of gas based capacity) and 1,785 MW of nuclear. The Eighth Plan programme envisaged a capacity addition of 30,538 MW. As against this, 16422.6 MW was added during the Eighth Plan. The details are shown in Table 6.14.

Table 6.14

Additions to Installed Capacity during the Eighth Plan

Eighth Plan (1992-97)

Type	Target				Achievement (MW)			
	Central Sector	State Sector	Private Sector	Total	Central Sector	State Sector	Private Sector	Total
Hydro	3260	5860	162	9282	1465	794.7	168	2427.7
Steam	5890	7050	2340	15280	4310	5098	500	9908.0
Gas	2608	1960	305	4876	1942	942.5	762.4	3646.9
Nuclear	1100	-	-	1100	440	-	-	440.0
Total	12858	14870	2810	30538	8157	6835.2	1430.4	16422.6

6.54 The actual capacity addition of 16,422.6 MW during the Eighth Plan is about 46 percent less than the targeted addition and 23.26 percent less than the capacity added during the Seventh Plan. The slippages in the case of hydel capacity are as high as 73.8 percent of the target. The sector-wise percentage slippages are: Central 36.6 percent, State 54.0 percent and Private 49.4 percent. The achievement of 16422.6 MW during the Eighth Plan period represents an addition of 3284.6 MW per annum, compared to the targeted growth rate of 6108 MW per annum.

6.55 The main reasons for the shortfall in capacity addition are inadequate funding of the State as well as the Central sector projects, procedural delays mainly in land acquisition and environmental clearances, unresolved issues in fuel linkages, contractual failures, suspension of World Bank support and problems/delays in entrusting the projects to the executing agencies etc.

Power Supply Position

6.56 At the beginning of the Eighth Plan, the energy deficit was 7.8% and peak deficit of 18.8 percent. With the targeted capacity addition of 30538 MW the anticipated power supply position assessed by the Central Electricity Authority (CEA) indicated a peaking deficit of 20.7 percent and energy deficit of 9 percent. However, at the end of the Eighth Plan period, with the actual capacity addition of 16422 MW, the peak deficit was restricted to 18.0 percent and energy deficit to 11.5 percent mainly due to a marked improvement in Plant Load Factor (PLF) of the thermal plants.

Further Reduction in the Share of Hydro-Electricity

6.57 The share of hydel generation in the total generating capacity of the country has declined from 34 percent at the end of the Sixth Plan to 29 percent at the end of the Seventh Plan and further to 25.5 percent at the end of the Eighth Plan. The share is likely to decline even further unless suitable corrective measures are initiated immediately. Hydel power projects, with storage facilities, provide peak time support to the power system. Inadequate hydel support in some of the regions is adversely affecting the performance of the thermal power plants. In Western and Eastern regions, peaking power is being provided by thermal plants, some of which have to back down during off-peak hours.

Increase of Central Share in Total Installed Generation Capacity

6.58 The Central sector undertakings viz. the National Thermal Power Corporation (NTPC) and the National Hydro Electric Power Corporation (NHPC) continue to play an important role in adding new generation capacities in different parts of the country. The Central share in the total installed generation capacity increased from 25.6 percent at the end of the Seventh Plan to 31.9 percent at the end of the Eighth Plan. It is likely to be around the same level at the end of the Ninth Plan.

Performance of Thermal Power Plants

6.59 The performance of the thermal power plants in the country registered an overall improvement during the Eighth Plan. The all-India average Plant Load Factor (PLF) of the thermal power plants increased from 55.3 percent at the beginning of the Eighth Plan to 64.4 percent by the end of the Eighth Plan. This is largely attributable to the concerted efforts put in by the Ministry of Power, the Central Electricity Authority, the State Governments and the Utilities. The modernisation (Renovation & Modernisation) programme (Phase-I) undertaken in respect of some of the older generation units in different parts of the country contributed substantially to the overall improvement in generation during the last few years. The R&M programme (Phase-II) taken up during the Year 1990-91 covered 44 thermal power stations comprising 198 units, totaling up to a capacity of 20869 MW. The R&M programme specifically aimed at increasing the average PLF by about 4 to 5 percentage points. The progressive addition of larger sized units in the power system has also contributed to the overall improvement in the performance of the thermal power stations in the country. While this is the position at the national level, the thermal plants in certain regions and States continued to function below satisfactory levels. The best performance during the Eighth Plan was observed in the Southern region, followed closely by the Western and the Northern regions. The plant performance in the Eastern and the North Eastern regions continued to remain below satisfactory level.

Transmission and Distribution Facilities

6.60 The major portion of the 400 KV transmission network planned to be set up during the Eighth Plan was in the Central sector, while that of 220 KV in the State sector. The implementation of the transmission programme during the Eighth Plan has been by and large satisfactory. The details of the targets and achievements during the Eighth Plan in respect of major transmission projects are as in Table 6.15.

Table 6.15
Targets and Achievements during the Eighth Plan in respect of major transmission lines.

Sector	400 KV (ckt. km)		220 KV (ckt. km)	
	Target based on annual programmes	Achievement	Based Target On annual Programmes	Achievement
Central	6126	5949	1896	1727
State	5159	5391	12824	13425
Total	11285	11340	14720	15152

In addition to these, 20 Km. of 800 KV transmission line was set up in the Central Sector during 1996-97 for the first time in the country.

Transmission & Distribution (T & D) Losses

6.61 The T&D losses in the power systems throughout the country continued to remain high during the Eighth Plan. The all-India average T&D losses during 1994-95 were reported as 20.85%, thereby achieving a reduction of about one percentage point from the level of 22% at the beginning of the Eighth Plan. However, in the absence of satisfactory metering arrangements for agricultural consumers, the level of losses indicated by the States could at best be an estimate of the energy not accounted for in the system including theft of power. The continuing high T&D losses could be partly attributed to the low investments made on T&D facilities in different States and the extensive low-voltage distribution network in rural and urban areas. These factors have also contributed to the poor quality of electricity supplies in many areas. There is a strong case for privatising distribution in order to reduce the present high level of theft and pilferages. A beginning can be made by mandatory privatisation of distribution in urban area with population of one million and above.

Policy Initiatives to Encourage Private Sector Participation in the Power Sector

6.62 Due to paucity of resources with the Central/State PSUs and SEBs and in order to bridge the gap between demand and availability of power, a policy to encourage private sector participation was initiated in 1991 with the objective of mobilising additional resources for power generation, transmission and distribution. The legislation governing the electricity sector was amended in 1991 to facilitate the raising of capital from domestic and foreign markets and to provide a more liberal, financial and legal environment to allow the private investors to set up generation capacities or operate as Licensee (Distribution) companies, which was hitherto a monopoly of the SEBs or public sector undertakings.

6.63 Private investors are now allowed to set up generation capacities which would supply power in bulk to the grid. These companies can also supply power directly to consumers with the concurrence of the State Governments. A two-part tariff notification governs the tariff for supply of power by the generating companies. The policy permits private developers to set up power projects of any capacity and of any type (coal, gas, wind or solar). The policy also allows liberal capital structuring and an attractive return on investment. Considering that the coal resources are concentrated in certain parts of the country, a policy has also been evolved to facilitate the setting up of large-sized power plants located at pitheads in the country, in order to derive the benefits of economies of scale. Mega projects, having a capacity of 1000MW and above and supplying power to more than one State, would be identified by CEA, the Feasibility Reports prepared by NTPC and POWERGRID would facilitate the selection of investors and finalisation of the transmission details.

6.64 The Government has been simplifying the procedures for clearances of the projects. A notification was issued in September, 1996 enhancing the limit of capital expenditure of schemes requiring the concurrence of the Central Electricity Authority from Rs. 400 crore to Rs 1000 crore in the case of generating station schemes to be set up by Independent Power Producers (IPPs) selected through the process of competitive bidding. In the case of projects on the MoU/LoI route, the Government has clarified that Engineering, Procurement, and Construction (EPC) contracts have to be finalised by the promoter on the basis of International Competitive Bidding. Further, two-stage clearance viz 'In principle' clearance, followed by techno-economic clearance (TEC), has been introduced. **Administrative clearance has been a serious impediment in the implementation of the project. Such bottleneck, wherever exists, needs to be removed in order to expedite project completion.**

6.65 Besides promoting conventional power projects, the 'Private Power Policy' addresses other possibilities of augmenting power generation through improved productivity and efficiency such as captive and co-generation plants, renovation & modernisation etc.

6.66 The Government of India has made competitive bidding mandatory for the development of new power projects. Though the process of bidding is quite complex and requires a lot of preparatory work to be done before bids can be initiated, it is encouraging to note that the State Governments have adapted to the needs of the bidding process quite well. In all, nearly 127 expressions of interest have been registered, aggregating to proposed investment of nearly Rs.250,000 crore for setting up over 69000 MW of installed capacity. Presently, there are about 14 projects (costing more than Rs.1000 crore) on the bidding route with proposed installed capacity of 9353 MW, involving an investment of about Rs. 30,917 crore. The progress of the private power projects on the negotiated routes has also been quite significant. Of the total 95 projects on the negotiated route, some projects require the Central Electricity Authority's techno-economic clearance (costing more than Rs.1000 crore). In all, 29 of these project proposals have been accorded techno-economic clearance by the CEA while 68 have been given 'in principle' clearance, which include negotiated and bidding routes. Besides the projects requiring CEA's techno-economic clearance, there is a very large number of projects, both on the competitive bidding route and the MoU/LoI route (costing less than Rs.1000 crore) which are being processed at the State level.

6.67 The existing policy structure does not adequately address certain issues. For instance, there has been less than satisfactory response in the area of hydro power development. Only 29 expressions of interest for hydro power development of 12,780 MW capacity have been received. The lack of the desired level of response is believed to be mainly on account of hydrological and geological risks associated with hydro projects. The existing policy needs to be suitably modified to facilitate greater flow of investment in hydro, R&M and T&D. In addition the Ninth Plan should continue to lay emphasis on public sector investment in these areas

Financial performance of the SEBs

6.68 There has been a significant improvement in the physical performance of the SEBs during the Eighth Plan period. While the PLF of the thermal plants under SEBs improved from 50.6 percent in 1991-92 to 60.3 percent in 1996-97 and the specific oil consumption declined from 7.8 ml/Kwh in 1992-93 to 5.8 ml/Kwh in 1996-97, the T&D losses continued to remain high during the Eighth Plan period. The financial performance of SEBs has also deteriorated over the period. This can be seen from the Table 6.16:

Year	Commercial losses (Rs. crore)	ROR(%)	Net I.R. (Rs. crore)
1992-93 (Actual)	4560	(-)12.7	(-) 161.5
1993-94 (Actual)	5888	(-)13.3	(-)1036.5
1994-95 (Actual)	6643	(-)14.4	(-) 103.2
1995-96 (Actual)	8324	(-)15.1	(-) 735.7
1996-97 (RE)	9453	(-)17.2	(-)2807.9
Total (Anticipated)	34868		(-)4844.8

6.69 The commercial losses without subsidy increased from Rs. 4117 crore at the beginning of the Eighth Plan to Rs. 9453 crore at the end of the Plan. The ROR for the year 1996-97 was (-)17.2 percent. The tariff charged on electricity on an average remained below the average cost of supply. The gap was 37 paise in 1996-97. Agriculture and domestic sectors continued to be subsidised heavily. The average tariff charged from these categories was 21 paise and 92 paise respectively in 1996-97, compared to an average supply cost of 186 paise. The hidden subsidy for the agriculture and domestic sector in 1996-97 according to the Revised Estimates was Rs. 19,862 crore and is projected to further go up to Rs. 23,010 crore in 1997-98. The subsidy for agricultural sector alone is Rs. 15,628 crore in 1996-97(RE) and estimated to be Rs. 18,296 crore in 1997-98. If the agricultural tariff is increased to minimum of 50 paise per unit, the additional revenue mobilisation in 1997-98 would be of the order of Rs. 2418 crore. On the other hand, industrial and commercial categories partly cross subsidise the losses on account of sales to agriculture and domestic categories.

Plan expenditure during the Eighth Five Year Plan

6.70 An analysis of the Plan expenditure on the basis of actuals for 1992-93, 1993-94 and 1994-95 (for Central/State & UTs) and the actual revised estimates for 1995-96 and 1996-97 for the Central sector and the revised estimates for the 1995-96 & 1996-97 for the State sector reveals the following

Central Sector

6.71 The actual expenditure on power by the Central sector during the Eighth Plan accounted only for 76.21% of the approved Eighth Plan outlay at constant prices and 99.45% at current prices. The estimated Net Budgetary Support (GBS-External aid) during the Eighth Plan was Rs.4593.40 crore, which works out to about 102%, (at constant price) and about 134% (at current price) of the approved amount of Rs.3441 crore. The major shortfall in the Central sector was due to non-mobilisation of resources through I.R. and Bonds and delay in the clearance of projects such as Chamera II, Talcher II etc.

State Sector

6.72 The Plan expenditure for the State sector during the Eighth Plan was 71.26% of the approved outlay at constant prices and 93.08% at current prices. The major shortfalls were in the States of Assam, Bihar, Haryana, Meghalaya, Orissa and Uttar Pradesh. The areas most affected by the shortfalls were transmission and distribution.

NINTH PLAN

6.73 **The Ninth Plan priorities are as follows:**

- * Accelerated completion of the ongoing projects and initiation of measures to facilitate investment in new projects
- * Maximisation of benefits from the existing plants by improving their operational efficiency and capacity utilisation, improvement and augmentation of T&D network and dealing effectively with the problem of T&D losses and theft of power.
- * Facilitating the setting up of appropriate institutional and legislative mechanism for reforms and restructuring of the power sector which would act as a catalyst in improving the capabilities of power sector Utilities for undertaking long-term investments as well as leverage funds from the private sector for the development of the power sector. **For this purpose long term funds in the national and international market will be accessed for augmenting public expenditure to give a fresh impetus to growth.**
- * Greater emphasis by both the public and the private undertakings in generation, transmission and distribution sectors for improving the reliability and quality of power supplies to the consumers in different parts of the country and for increasing access to electricity in rural areas. Special emphasis will be placed on accelerated electrification of the remaining villages with due attention to decentralised energy resources.
- * Undertaking advance action on hydel projects to improve the hydro-thermal mix by the end of the Tenth Plan and revamp the existing institutional structure and financing arrangements which are not presently conducive for hydro projects development. **A suitable policy for development of hydro projects needs to be formulated. In addition hydel projects would require enhanced budgetary support from the Government.**

- * Emphasis on the setting up of high capacity inter-regional transmission links to facilitate evacuation of power from pit-head Mega projects envisaged during the Ninth and the Tenth Plans.
- * Facilitating gradual shifting from the State/Regional grid-based operations to an integrated National Grid.
- * Simplification and streamlining of the procedures for clearances and investment decisions in the public sector.
- * Encouragement to captive and co-generation power plants to supplement the capacity addition programmes envisaged in the Ninth Plan.

Capacity Additions Required During the Ninth Plan

6.74 According to the 15th Electric Power Survey, the electricity requirement at busbar (utilities only) in 2001-02 will be as in Table 6.17.

Region	Energy Requirement (MKWh)	Peak Load (MW)
Northern	181649	31735
Western	176732	28430
Southern	134671	21975
Eastern	68243	11846
North-Eastern	8148	1722
Andaman & Nicobar Isl.	180	41
Lakshadweep	27.4	7.7
All India	569650	95757

6.75 The methodology adopted in the 15th EPS report is partial end use method developed in CEA and is generally comprehensive and consistent with the available data base for projecting the power demands over short and medium time spans. End use technique has been adopted to forecast the electricity requirements where sufficient data regarding the programme for future is available such as all the major industrial and non-industrial loads with a demand of 1 MW & above and agricultural loads.

6.76 The Working Group Report on Power has envisaged a capacity addition requirement of 57734 MW during the Ninth Plan, comprising 11870 MW in Central sector, 17621 MW in State sector and 28244 MW in private sector.

6.77 The rate of capacity utilisation, of the total installed generation capacity in position, realised in 1996-97 was 4646 Kwh/KW. If this rate of utilisation of capacity is maintained during the Ninth Plan, the installed capacity requirement in 2002 works out to nearly 131726 MW. As on March 1997, the installed generation capacity in the country (utilities) is 85019.3 MW. Therefore, the capacity addition requirements during the Ninth Plan period, according to this, works out to about 46814 MW.

6.78 As against the above, keeping in view the status of the ongoing, sanctioned and new projects in the pipeline, it is assessed that a capacity addition of the order of 40,245 MW would be feasible during the Plan period as per the details indicated in Table 6.18.

Table 6.18
Benefits from Sanctioned/CEA Cleared & New Schemes
During Ninth Plan (MW)

Source	Ongoing/ sanctioned schemes	CEA Cleared/New Schemes	Total
Hydro	9126.7	693.0	9819.7
Thermal	12647.0	16898.5	29545.5
Nuclear	880.0	-	880.0
Total	22653.7	17591.5	40245.2

6.79 Out of the total addition of 40,245 MW envisaged during the Plan period, 11,909 MW will be in the Central sector and 10,748 MW will be in the State sector which works out to 29.6% and 26.7% of the capacity addition respectively. A capacity addition of 17588.5 MW, constituting about 43.7% of the capacity to be added during the Ninth Plan, is proposed to be in the private sector. The capacity addition proposed to be supplemented by the private sector, if it materialises fully, would be quite significant in the Ninth Plan period compared to earlier Plans and works out to 0.78 MW of capacity addition for every 1 MW capacity added in the Public sector.

6.80 The Common Minimum National Action Plan for the power sector has envisaged an improvement in the performance of thermal power stations as the "PLF of those thermal power stations having less than 40% PLF at present would be increased by 3% annually, by 2% in case of those plants with PLF between 40% and 60% and by 1% for those plants with PLF more than 60 percent". The overall PLF in the State sector in the country is expected to increase to a minimum of 65% and the national average to 70% by 2002 A.D. Realisation of these targets would further reduce the requirement of capacity addition and help meet the demand during the Ninth Plan period.

6.81 A major portion of the incremental capacity of 40,245 MW referred to above can materialise only during the later years of the Ninth Plan. This implies the likelihood of power shortages during the first three years of the Ninth Plan. To overcome this, at least partially, it is imperative that all-out efforts are made to operate the power system efficiently. In addition, it may also be necessary to take up short-gestation power projects based on naphtha/gas in a selective manner to tide over the situation, though this has substantial foreign exchange implications.

6.82 The capacity addition indicated above will be contingent upon fuel linkages being firmed up and early start of work on new projects. For the new projects in Public sector, particularly in the Central sector, it is essential that the procedure for input linkages/TEC/Investment clearance is streamlined and simplified. In the case of private sector projects, the clearance procedures have to be streamlined. It will also be necessary to set up a regulatory mechanism as envisaged in the Common Minimum National Action Plan for Power. Based on the above, the cumulative generation capacity in the country by the end of 2001-02 will be as in Table 6.19.

Table 6.19
Generating Capacity Anticipated at the end of the
Ninth Plan (in MW)

	Hydro	Thermal	Nuclear	Total
Capacity as on 31.3.1997	21644.8	61149.5	225	85019.3
Addition during Ninth Plan	9819.7	29545.5	880	40245.2
Total Capacity on 31.3.2002	31464.5	90695.0	3105	125264.5

6.83 The capacity addition of about 40245 MW as envisaged by the Planning Commission will fall short of the projected requirement. As already stated, to some extent the gap could be reduced by improving the performance of the existing power stations, reducing the T&D losses and adopting the Demand Side Management (DSM) measures.

Power Supply Position

6.84 At the beginning of the Ninth Plan the energy deficit was 11.5% and peaking deficit was 18.0 percent. With the capacity addition of 40245 MW during the Ninth Plan the anticipated power supply position in 2001-02, as assessed by CEA, indicates an energy deficit of 1.4% and peaking deficit of 11.6 percent.

Private Sector

6.85 The initial response of the domestic and foreign investors to the policy of private participation in power sector has been extremely encouraging. However, many projects have encountered unforeseen delays. There have been delays relating to finalisation of power purchase agreements, guarantees and counter-guarantees, environmental clearances, matching transmission networks and legally enforceable contracts for fuel supplies. The shortfall in the private sector was due to the emergence of a number of constraints which were not anticipated at the time the policy was formulated. The most important is that lenders are not willing to finance large independent power projects, selling power to a monopoly buyer such as SEB, which is not financially sound because of the payment risk involved if SEBs do not pay for electricity generated by the IPP. Uncertainties about fuel supply arrangements and the difficulty in negotiating arrangements with public sector fuel suppliers, which concern penalties for non-performance, is another area of potential difficulty. It is important to resolve these difficulties and evolve a framework of policy which can ensure a reasonable distribution of risks which make power sector projects attractive and financeable (see Box).

Partners in Progress

Privatisation

The policy of inducing private investment into the power sector, initiated in 1992, was expected to add 2810 MW of power in the Eighth Plan. The actual achievement was 1430 MW which is only 51% of the target. The achievement ratio for the Central Sector was higher at 63% but the ratio for the State Sector was lower at 46%.

The shortfall in the private sector was due to the emergence of a number of constraints which were not anticipated at the time the policy was formulated. The most important is that lenders are not willing to finance large independent power projects, selling power to a monopoly buyer such as SEB, which is not financially sound because of the payment risk involved if SEBs do not pay for electricity generated by the IPP.

Some small projects were able to get financing because the payment risk was deemed to be acceptable. Five projects have received Central Government counter-guarantees and two more are eligible subject to resolution of other problems. The Central Government will not provide counter-guarantees for power projects in future. A number of private sector projects are seeking credit enhancement by escrowing certain receipts of the SEBs to assure payment of IPP dues. The scope for escrow arrangements is limited and in any case they do not increase the overall financial viability of the SEB. Rather, by earmarking part of the SEB's existing receipts for new private sector projects, they reduce the viability of the rest of the system.

The ability to attract private investment into the power sector on a significant scale in future therefore depends crucially upon bringing about improvements in the financial condition of SEBs. This in turn depends upon the progress achieved in reforming the SEBs including especially reforms of the tariff structure and reform in distribution to reduce T&D losses. International experience suggests that privatisation of distribution is most likely to pave the way for a quicker induction of private investment into generation.

An important initiative could be to allow large users to buy power directly from generating companies with distribution companies being obliged to wheel the power to the user at a pace to be fixed by the SERC.

The progress of private sector power in India will also depend upon the ability of the IPPs to enter into reliable fuel supply and transport arrangements which incorporate suitable penalty clauses to compensate IPPs for non-delivery of fuel. Public sector generating stations have typically not sought such arrangements because of the expectation that problems on this account will be resolved through inter-ministerial mechanisms. Private sector investors are likely to want more contractually water tight arrangement.

Private Sector - Where we Stand !

Status of Private Power Projects (As on 1st February, 1999)

DESCRIPTION	NUMBER	CAPACITY (MW)
Projects Techno-economically Cleared by CEA	48	22987
Projects having in-principle Clearance of CEA	25	14309
Private power projects commissioned in last 5 years	17	3018
Private power projects under construction	21	5168.8
Private power projects with finances tied up with Indian Financial Institutions (IFIs)	51	15873
Private power projects seeking financial tie up with IFIs	55	16980

6.86 The incremental capacity of 40,245 MW referred to above, includes around 17,588 MW to be added by private generating companies. In order to achieve the targeted private sector capacity creation during the Ninth Plan, the following additional facilitating measures have recently been suggested by the promoters. Most of these have been accepted while some of them are under the consideration of the Government.

i) Speedy Environmental Clearance:

The Ministry of Environment and Forests has agreed to delegate the powers to States for environmental clearance of :

- a) all co-generation plants and captive plants up to 250 MW;
- b) coal-based plants upto 500 MW using fluidized technology subject to sensitive areas restrictions;
- c) power stations upto 250 MW on conventional technology;
- d) Gas/Naphtha-based stations upto 500 MW.

ii) Access to Institutional Funds:

At present, there is a 15% limit on lending by the IFIs to any one sector e.g power. Keeping in view the large requirement of funds for the power sector and considering that adequate budgetary support for such projects is not available, this 15% limit on the IFIs lending for infrastructure sectors has been removed. There is need to create capital market and debt market to boost investment in the sector.

iii) Fuel Linkages:

Firm fuel linkage is being provided for the addition of capacity based on liquid fuels.

iv) Viability of SEBs:

The financial health of the SEBs will be improved through rationalisation of tariff, restructuring and reforms to make them economically viable and their projects bankable to generate energy on economic rate, to provide quality services to the consumers and to ensure a fair return to the investors. This can be best achieved by unbundling single entity (SEBs) and corporatising the same for the above activities. In this context, some of the States have taken initiative by unbundling their respective SEBs into separate companies for Generation and Transmission & Distribution.

v) Regulatory Bodies:

The Government of India has promulgated Electricity Regulatory Commission Act, 1998 for setting up of Independent regulatory bodies both at the Central level and at the State level viz. the Central Electricity Regulatory Commission (CERC) and the State Electricity Regulatory Commissions (SERCs) at the Central and the State levels respectively. These regulatory bodies would primarily look into all aspects of tariff fixation and matters incidental thereto.

Independent Regulatory Commissions for Power

Reform of the Power Sector would be greatly aided by the establishment of Independent regulatory agencies responsible for setting tariffs and regulating power purchase agreements. The Electricity Regulatory Commission Act, 1998 provided the legal basis for setting up a Commission at the Central level with separate Commission at the State level.

Central Electricity Regulatory Commission

- ❖ The Central Electricity Regulatory Commission (CERC) was constituted on 24.7.1998. The main functions of the CERC are:
- ❖ to regulate the tariff of generating companies owned or controlled by the Central Government
- ❖ to regulate the tariff of generating companies, other than those owned or controlled by the Central Government, if such generating companies enter into or otherwise have a composite scheme for generation and sale of electricity in more than one State,
- ❖ to regulate the inter-State transmission of energy including tariff of the transmission utilities,
- ❖ to regulate inter-State bulk sale of power and to aid & advise the Central Government in formulation of tariff policy.

State Electricity Regulatory Commission

- ❖ Section 17(1) of the Central Electricity Regulatory Commission Act, empowers the State governments to establish an Electricity Regulatory Commission for the State. State Regulatory Commission has been set up in Orissa and Haryana and it is expected that most States will establish regulatory commission within 1998-99. The main functions of the SERC would be:
- ❖ to determine the tariff for electricity, wholesale, bulk, grid or retail;
- ❖ to determine the tariff payable for use by the transmission facilities,
- ❖ to regulate power purchase and procurement process of transmission utilities and distribution utilities,
- ❖ to promote competition, efficiency and economy in the activities of the electricity industries, etc.
- ❖ Subsequently as and when each State Government notifies, other regulatory functions could also be assigned to SERCs.

Power Sector Reforms:

6.87 The National Development Council had constituted a Committee on Power to evaluate the working of the power sector and, in this context, to examine inter alia the measures to make the SEBs viable by taking appropriate measures. The Committee submitted its report to the then Prime Minister on 10th March, 1995. Some of the major issues which have been discussed in the report are as under:

- i) Restoration of the autonomy and professionalisation of the State Power Utilities and allowing such Utilities to have tariff structures that would generate adequate resources for the State Electricity Boards.
- ii) Setting up of Tariff Boards at the National and regional level for regulating the tariff policies of public and private Utilities. The minimum agriculture tariff should gradually be increased so that it is not less than 50% of the cost of supply.
- iii) Fuel supply agencies, the Railways and power Utilities should enter into a legally enforceable tripartite contracts with suitable bonus and penalty clauses to take care of quality, quantity and punctuality of despatches. The Ministry of Power should also evolve a long-term fuel policy for power generation in consultation with concerned Ministries taking into consideration, the availability of resources, their geographical distribution, status of technology, economies of their utilisation and environmental aspects.
- iv) The conversion of loans of State Electricity Boards (SEBs) into equity with debt equity ratio of 1:1. Subsequently, the State Government equity is to be reduced in the first instance to 51% and thereafter to 26% in the final phase.
- v) Role of the Central Electricity Authority -

- The CEA should function as an apex agency for evolving tariff policy at the national level. It should modernise the appraisal system and function as a nodal agency for Planning, Research and Development.
 - The CEA should continue to act as a single window agency for obtaining various statutory & non-statutory clearances. To achieve this, the Government should constitute Empowered Committees at the National and State levels to facilitate the timely clearance of the power projects
- vi) To streamline forest clearance, "Forest Banks" may be created in advance in various States by the Forest Departments. Forest clearance could be accorded against specific schemes and the extent of compensatory afforestation involved for such schemes could be debited to the "Forest Bank Account" of the concerned power Utility which will deposit additional funds to the forest department to take further necessary action towards afforestation.
 - vii) Power Grid should function as a clearing house for trading power between the State/Region.
 - viii) The private sector should be involved in the generation and supply of power to well identified areas and in the installation of regional power stations by utilising inter-State transmission networks. The power projects identified for the private sector should be awarded through competitive bidding route rather than MoU route.
 - ix) A "Power Development Cess" of 10 paise per Kwh should be levied by State /UT Governments on the total quantity of electricity consumed in the country for funding hydro development, electricity conservation, the R&D and other activities in the power sector.

6.88 Most of the above recommendations have since been included under the Common Minimum National Action Plan on Power approved by the Chief Ministers of States/UTs.

Current Problem of Power Sector

6.89 The most important cause of the problems being faced in the power sector is the irrational and unremunerative tariff structure. Although the tariff is fixed and realised by SEBs, the State Governments have constantly interfered in tariff setting without subsidising SEBs for the losses arising out of State Governments desire to provide power at concessional rates to certain sectors, especially agriculture. Power supply to agriculture and domestic consumers is heavily subsidised. Only a part of this subsidy is recovered by SEBs through cross subsidisation of tariff from commercial and industrial consumers. The SEBs, in the process, have been incurring heavy losses. If the SEBs were to continue to operate on the same lines, their internal resources generation during the next ten years will be negative, being of the order of Rs. (-) 77,000 crore. This raises serious doubts about the ability of the States to contribute their share to capacity addition during the Ninth Plan and there after. This highlights the importance of initiating power sector reforms at the earliest and the need for tariff rationalisation.

6.90 The programme of capacity addition of 17588 MW in the private sector may not involve any Plan funds but is critically dependent upon the financial credibility of States as well as the operational performance of State Utilities. Any investment by IPPs or even the bilateral and multilateral finances from donor agencies can materialise only if the State Governments are able to provide concrete evidence that efforts in the direction of improving the operational and financial performance have been initiated by them. Reforms and restructuring are thus no longer a matter of choice but a necessity and precondition for the success of the Ninth Plan as well as for setting up a viable and sustainable basis for the programmes beyond the Ninth Plan.

6.91 A plan for power sector reforms cannot be designed and implemented without the consensus and active participation of State Governments. Accordingly discussions were held with the Chief Ministers of the States/UTs and a Common Minimum National Action Plan on Power (CMNAPP) was agreed upon in December 1996. A copy of the Plan is at Annexure 6.1.

6.92 Rationalisation of tariffs is one of the steps that needs to be taken urgently. It is recognised that SEBs require urgent restructuring not only to improve their financial health but also to enable public and private sector companies to inject the much-needed incremental capital investment in generation, transmission and distribution and also to introduce competition in the power sector for bringing greater efficiency which could, in the long run, reduce tariffs for the consumers and ensure better service for them. The CMNAP seeks to carry out the rationalisation of tariff and restructuring of SEBs within a definite time frame. The Plan also envisages that SEBs should be allowed maximum possible autonomy and run on commercial lines. It acknowledges the need for private sector participation and also creation of Regulatory Commissions. It deals with several related issues including forest clearances, development of hydro potential, mega power projects at pitheads and setting up of coal washeries. The CMNAP needs to be strictly implemented for removal of bottlenecks and faster development of the power sector.

Power Sector Reforms Set in Motion

The objective of power sector reforms must be to generate electricity at an economic cost, provide a reliable and high quality service to the consumers, and ensure that the sector is financially viable and also provides an attractive environment to bring in private investment. To achieve these objectives, it is desirable to reconsider the present arrangement in which the State Electricity Boards operate as an integrated unit, with generation, transmission and distribution all bundled in a single entity. Unbundling the SEBs and separating generation, transmission and distribution into separate corporations makes it possible to monitor efficiency levels in each activity and also to create appropriate incentives for efficiency in each area. Unbundling also makes it easier to allow entry of private sector operators in each area in a suitable manner which ensure competitive efficiency. Several states have initiated power sector reforms along these lines as indicated below:

Orissa

Orissa was the first State to initiate reform of the Power Sector w.e.f April 1, 1996. The reform envisaged setting up of separate generating as well as Transmission and Distribution (T& D) agencies. Accordingly, the State's Electricity Board has been split into three entities viz. *Orissa Power Generation Corporation* (OPGC- for thermal power), *Orissa Hydro Power Corporation* (OHPC - for hydel power) and *Grid Corporation of Orissa* (GRIDCO - for transmission and distribution network). A Separate Regulatory Commission has been constituted as a statutory and autonomous institution to regulate and co-ordinate the activities of all these corporations. The state is now geared up to privatise the distribution network w.e.f 1-4-1999.

Haryana

The State Electricity Board was converted into two separate entities on August 14, 1998. It has set up corporations namely *Haryana Power Generation Corporation* (HPGC) for generation and *Haryana Vidyut Prasaran Nigam* (HVPNL) for transmission of power. On the lines of the Orissa model, the State recently constituted a Regulatory Commission. It has also appointed a Consultant to advise it on the privatisation of distribution. There are plans to limit the distribution zones to two due to the wide variations in load across the state.

Andhra Pradesh

The SEB is to be spun off into three entities on the lines of Orissa model. Distribution in Andhra will be divided into 8 zones in which 51 per cent will be offered to the private sector. The State has received Presidential assent for the Electricity Reform Bill 1998 paving the way for constituting a regulatory commission and dismantling the SEB.

Rajasthan

One of the first states to have proposed the model of privatising power distribution by hiving off a majority stake to the private sector. Despite this, the actual process of privatisation has been stalled due to various reasons. The plan is to hive off seven zones through the licensing route, whereby private operators' financial operations are governed by law and do not have to rely on a regulator for direction.

6.93 The agenda for rationalisation of tariff and implementation of other reforms in the power sector in various States is in the initial stage and may take some time to yield results. The capacity addition programme during the Ninth Plan period, particularly in the State sector depends upon the ability of State Utilities to mobilise adequate funds for their on-going projects as well as for implementing the R&M and T&D programmes. To supplement the efforts of State Utilities, additional funds **are being** made available to them from PFC on concessional interest rates for completion of on-going projects, maximising benefits from existing assets and improving the T&D network during the Ninth Plan.

6.94 The CMNAPP foresees private sector participation in distribution. The State governments may embark on a gradual programme of private sector participation in distribution of electricity. The process of private participation should be initially in one or two viable geographical areas covering both urban and rural areas in a State and the State may extend them to other parts gradually. In this context, the Ministry of Power has circulated a document entitled "Sample agreement for private management of SEB distribution systems" to provide assistance to SEBs in the privatisation of their distribution system. Orissa has already taken steps for private sector participation in Cuttack, Bhubaneshwar and Denknal districts. The Noida area in U.P. has also been handed over to the private sector for distribution. The situation regarding induction of the private sector in distribution will vary from State to State. The nature of generation plants and the pattern of loads will have a bearing on the timing and scope of this policy reform.

Renovation & Modernisation (R & M)

6.95 Much greater emphasis than at present needs to be given to R&M schemes to ensure regular maintenance and upgradation of power plants to obtain optimal performance. A comprehensive evaluation should be undertaken of the projects where R&M schemes have been implemented to ascertain the actual returns accruing through the R&M investments. Plant betterment and life extension schemes should be taken up immediately to improve the capacity utilisation of the existing facilities. The R&M of existing power plants should be done in a time-bound manner. The PFC and Central financial institutions should provide enhanced funding to R&M schemes. Clearance of R&M projects may be given by State Governments. No clearance from CEA/PIB need to be required.

6.96 Investments in R&M have distinct cost advantage over new generation capacity. The instruments required to attract investment in these areas need to be defined and prioritised during the Ninth Plan.

Transmission and Distribution Management

6.97 It had been recommended by the Rajadhyaksha Committee (1980) that the investment on transmission & distribution should not be less than the investment on power generation. In practice, however, the investment on T&D has been considerably lower than on generation, thus affecting the system efficiency. The T&D losses in the country are as high as 21.4 percent. These comprise of 6-7% transmission losses and 14-15% distribution losses and include theft of power. With every reduction of 1% in T&D losses there could be a saving of 800 MW of new capacity addition. This would be possible if comprehensive action plans for system improvement works are drawn up by the SEBs/ State Governments and the funds are made available to them by PFC and REC. Necessary amendments in the relevant Acts/Rules to allow private participation in transmission and distribution are being carried out.

6.98 In order to avoid backing down of base load stations and to utilise fully the power generated from private sector projects likely to be commissioned during the Plan period, the Ninth Plan recommends even development of loads as well as strengthening of T & D systems. **An exclusive interest subsidy scheme for improvement of sub-transmission and distribution system for North-Eastern region is to be initiated.**

Losses - How long ? Transmission & Distribution

- The present level of Transmission and distribution losses is very high. The All India T&D loss is nearly 23% and the losses in some States are much higher. Losses in Delhi are as high as 50%.
- While a part of the T&D losses is due to technical deficiencies in the system and the large spread of low voltage distribution in rural area, a large portion of the line losses is due to theft & pilferage compounded by connivance on the part of line personnel.
- There are large scale unmetered connections particularly for Agriculture sector apart from its low power tariff. Even if supply of electricity to agriculture is to be subsidised it should be metered so that proper accounting can be maintained.
- The proliferation of Low Tension (L.T) distribution lines has led to a low load density (as measured by demand in MW divided by length of T& D system) and high ratio of LT to HT lines. This needs to be brought down preferably by upgrading the system voltage. This would also check large amount of pilferage and reduce the losses considerably.
- There is a strong case for privatising distribution in order to reduce the present high level of theft and pilferages. A beginning can be made by mandatory privatisation of distribution in urban area with population of one million and above.
- The Ninth Plan should target a reduction on T&D losses at the rate of 1% per year. Each reduction of 1% in T& D losses is equivalent to generation of an additional revenue of about Rs.590 crore at an average tariff prevailing in 1995-96.

6.99 Compulsory metering at substations and on all major feeders should be introduced. Compulsory metering of all new electricity connections as also of connections to agriculture sector exceeding 10 HP must be undertaken and completed in two years. All electric supplies should be metered by 2002 AD.

6.100 The existing bulk sale tariff for electricity does not take into account the time of supply. The SEBs should introduce the concept of time-related tariff to encourage efficient operation of the power system.

6.101 The need for a national grid for integrated operation of the power system is well recognised. The ground work for the national grid to be functional in a time-bound manner is proposed to be worked out during the Ninth Plan period.

Project Implementation

6.102 In every Plan, there have been delays in project implementation resulting in cost overruns in both the Central and State sectors. These overruns have not only eroded the available resources but also have adverse impact on mobilisation of additional resources. This is a matter of concern specially when a large-scale capacity addition programme is being contemplated during the Ninth Plan and efforts must be made to optimise the use of scarce resources. **Languishing unfinished State projects should be transferred to Centre/private sector.**

6.103 As far as externally-aided projects are concerned, although there has been an improvement in the utilisation of total external aid in the Central sector during the Eighth Plan, utilisation in respect of State sector projects has been below the target. The main reason was non-availability of counter-part funds with the States. The States could not provide these funds due to irrational tariff structure for electricity in the States. In the Ninth Plan, utmost importance will be given to streamlining the investment clearance procedure at all levels (Centre, State and Private). A Task Force to monitor the implementation of ongoing projects should be constituted and adequate funding should be made available to reduce the time and cost over runs.

Regional Disparities

6.104 Regional disparities in electricity availability have widened over the years, inspite of the phenomenal progress made in capacity addition and generation during the successive Plans. The Ninth Plan takes cognizance of these disparities as also the need for corrective actions. The Central PSUs including PFC and REC as well as the State PSUs will have to play an important role in removing these regional disparities.

Nuclear Power

6.105 In the early 1980s the Department of Atomic Energy initiated a long-term plan for achieving substantial expansion with a programme for adding nuclear generation capacity of 10,000 MWe by 2000 A.D. based on the uranium resources available in the country. As regards the potential, it was noted that by adopting the fast breeder technology a nuclear capacity of about 3,00,000 MWe could be added by using the indigenously available uranium resources. The country also has one of the largest reserves of thorium which could also be exploited through the fast breeder technology for generation of electricity. Advance action by way of procurement of long delivery equipment and material was initiated for implementing the 10,000 MWe by 2000 A.D programme. However, due to severe constraint of resources, there have been slippages in the implementation of this programme and it had to be scaled down to 3820 MWe. The current nuclear capacity of 2225 MWe constitutes only 2.65% of the total installed capacity in the country. The Nuclear Power Corporation of India Ltd (NPCIL), has limited capability for generation of internal resources. A major area of concern has been the delays in project implementation and the consequent cost over runs. However, the performance of nuclear power stations has improved considerably by the terminal year of the Eighth Plan and the present average PLF is to the tune of 55.9% as against 52.1% in 1992-93. This needs to be improved further.

6.106 The Nuclear Power Corporation does not presently have adequate financial strength to implement the programme. There are inherent constraints to NPCIL's ability to mobilise funds from external sources or private equity. The Corporation heavily relies on Government support for the present. **For the development of nuclear power, budgetary support to the corporation needs to be continued.** However, it has to commercialise its operations and achieve greater economic viability in the years ahead.

6.107 Keeping in view the experience of private sector participation in power sector (for thermal and hydro generation), there is a need to explore the possibility of private sector participation in the nuclear power programme. There could be impediments in the process but some innovative initiatives need to be explored. Since in the long run, nuclear power has to play an important role in the energy mix of the country, all possible alternatives for enlarging nuclear power generation need to be explored. We have to ensure that the high degrees of self-reliance that has been achieved in the nuclear power generation is consolidated, upgraded and utilised for higher capacity addition. **R&D in nuclear technology should be continued.**

Fuel for Power Sector

6.108 Coal will continue to be the major fuel for the power sector in India. Based on the study conducted in the Planning Commission on cost of generation with different fuels, it has emerged that the domestic coal and the natural gas at current price level are the cheapest fuels for power generation. However, the domestic production of coal and gas is projected to fall short of the requirements during the Ninth Plan period. In order to meet this situation, increased imports of coal and gas may be necessary. Some liquid fuel imports for short gestation capacity addition of 12000 MW, mainly using Naphtha and Furnace Oil may also be necessary. A Model Fuel Supply Agreement (FSA) for supply of liquid fuels to be imported by the National Oil Companies has already been circulated to the States. In the long run, in order to promote the use of environment-friendly fuels, LNG import has been put under OGL. Gas is likely to be a major source of energy during the 21st Century. As the country enjoys a closer proximity to large gas resources in Middle East, gas imports to meet the energy demand of the country may also be more economical than imports of other fuels.

Captive power Generation

6.109 Industrial sector is the largest consumer of electricity. Besides purchasing power from the Utilities, a number of industries namely aluminium, cement, fertilizer iron, steel, paper, sugar etc. have their own captive power plants either to supplement the electricity supply from the Utilities or for generating electricity as a by-product by using high pressure steam while utilising low pressure steam in their industrial process. The all India installed capacity of non-Utility power was 9302 MW at the beginning of the Eighth Plan. This capacity increased to 11889 MW by the end of March 1996 and yielded a generation of about 38 billion units in 1995-96 as against the target of 45 billion units during the Eighth Plan.

6.110 As per the Common Minimum National Action Plan for Power, the State Governments should encourage co-generation/captive power plants and facilitate evacuation of power from these plants to the grids. The State Governments should formulate a clear and transparent policy for purchase of power and wheeling charges which provide fair returns to the co-generation/captive power plants owners. Captive power plants should also sell electricity to a group of industries as well as to other categories of consumers in the State industrial zone or area. Wheeling of power from captive power plants to consumers located at a distance either physically or on displacement basis should be encouraged and the States should issue clear and transparent long-term policy in this regard.

6.111 To some extent the increase in captive power generation based on diesel is due to the very high subsidy being allowed on diesel prices under the Administered Price Mechanism. Users may, therefore, find diesel-based power generated by their captive units cheaper than grid-supplied power, especially because the price of power supplied by Utilities to industry bears the burden of cross subsidisation to agriculture and household sectors. It is important that tariff rationalisation measures to be evolved in the Ninth Plan should minimise the effect of such distortions.

R & D

6.112 The Power sector is highly technology-intensive. Therefore, technological upgradation and modernisation assume an important role, specially towards realising the utmost economy in generation, T & D and efficient utilisation of electrical energy.

6.113 The R&D programmes must necessarily provide inputs to future power programmes relating to both generation as well as transmission and distribution. Full advantage should be realised of the large base of R&D capabilities that already exist in the country. Emphasis must be laid on solving field problems adversely affecting the production of power, creating bottlenecks in power system operation and affecting the quality of power supplied.

6.114 Considering the large capacity additions required during the Ninth and Tenth Plans, there is a need for upgrading the relevant technologies by promoting the existing R&D institutions, transfer and use of advanced technologies and practices for environmentally sound energy systems, including new and renewable sources of energy. This should cover (i) creation of infrastructure facilities in high-tech areas such as - synthetic testing for 800 KV EHV/UHV transmission lines across the country; (ii) Mission mode R&D programmes to cater to the needs of Utilities and manufacturing industry with the participation of beneficiary industry for example, development of clean coal technologies (coal beneficiation/gasification), flexible AC transmission for operational flexibility of power system; (iii) experimental and demonstration projects in the State-of-the-art technology areas as for example NHVDC 2nd phase and third phase programme for the further development of HVDC system in the country, application of High Temperature Fuel Cells in stand alone systems feeding rural/remote areas and iv) environmental aspects including fly ash utilisation. To achieve these objectives and in order to acquire the new technologies, the existing testing facilities and research centres should be strengthened. Already, a long-term perspective called Technology Vision for India 2020 has been prepared, which could form the basis for technology development programme for the power sector during the 9th Plan.

Manpower Development

6.115 During the Eighth Plan, there has been no appreciable change in the number of employees in the State Government, Utilities and electricity departments due to increasing automation as well as the conscious policy of redeploying surplus manpower. Not only a number of SEBs but also the Central power Utilities must continue to identify surplus manpower which could be redeployed through training and upgradation of skills. The Ninth Plan is likely to add an average generating capacity of 8,000 MW annually compared to 3000-4000 MW annually in the past. Additional manpower would be needed not only in the public sector Utilities but also in the private sector to meet the requirement of capacity additions envisaged for generation, transmission and distribution and to compensate for normal decline due to retirement, death, migration etc. It is estimated that around 15 lakh employees may be manning the power sector by the end of Ninth Plan. The manpower per MW works out to around 10 in contrast to about 13 at the end of the Eighth Plan.

6.116 To sustain quality in performance, induction level training programmes, as well as periodic refresher courses would be needed. The modern techniques and tools like simulators will have to be used and the existing institutional arrangements have to be strengthened. This is essential in view of the rate at which technological upgradation is taking place in this sector.

Environmental Management

6.117 Energy is one of the basic inputs for economic growth. All conventional fuels have varying degree of impact on environment when subjected to energy transformation and use. In India, the general awareness about environmental impact of power projects has increased significantly and the measures for controlling and minimising the impact have been a subject of

public debate. This has resulted in more strict implementation of pollution control laws. Environmentally-benign energy systems, particularly new and renewable sources of energy, are being encouraged. The Ninth Plan will place considerable emphasis on integrating energy, environment and economic policy decisions for sustainable development. Special importance will be accorded to programmes aimed at catchment area treatment and reclamation of degraded land, in case of all major hydro electric projects. In case of thermal power projects the emphasis will be on restricting air and water pollution to the prescribed levels. Mega power projects using high sulphur content fuels should set up fuel gas desulphurisation (FGD) units to maintain the SO_x emissions within the prescribed limit in future. In order to promote the use of environment-friendly fuels, LNG would be an important source of energy during in power generation the 21st century. High priority will also be accorded to enforcement of rigorous safety standards in all nuclear power projects.

6.118 In addition to the above, the following measures are suggested for minimising the adverse impact on the environment:

- i) Demand and supply side measures for conservation of energy as stated in Para 6.2.88
- ii) Various measures such as afforestation, use of washed coal etc. have to be encouraged to reduce the Green House Gasses (GHG) emission in the environment.
- iii) Portable gen-sets being run on diesel/petrol and used by the commercial and domestic consumers should be minimised by ensuring reliable supply of electricity.

6.119 The utilisation rate of fly ash in India is of the order of 2% as compared to 80% in Germany followed by 20% in Holland. The poor rate of utilisation is attributed to (a) non-availability of proper machinery; (b) ignorance regarding potential of fly ash utilisation in various applications. (c) lack of clear policies to promote fly ash utilisation, etc.

- i. Private entrepreneurs should be encouraged to set up facilities to utilise fly ash in building materials such as bricks, cement etc. For this purpose, the State Governments may exempt the end products of ash from Sales Tax, in line with Excise Duty exemption given to ash-based product having minimum 25% ash given by Central Government. Total exemption from Excise Duty/Sales Tax may also be accorded in case of indigenous equipment and total exemption from import duty, may be given to all imported equipments required for manufacture of ash based products.
- ii Financial institutions may extend loans to ash-based industrial products on priority.
- iii In order to promote manufacture of fly ash-based Portland Pozzлана Cement (FAPPC) Government Departments like CPWD, DDA, Power Utilities should be advised to use FAPPC for majority of applications.
- iv All new Thermal Power Stations should be advised to earmark land in the planning stage itself for ash-based industries.

- v. Stowing of underground mines using fly ash in place of riversand is to be considered in all coal projects.

Resettlement & Rehabilitation (R & R)

6.120 The setting up of large hydel and thermal plants often necessitates clearing of large tracts of land, affecting the lives of people, flora & fauna. Since the displacement of people becomes unavoidable, Government of India has already evolved certain compensation packages which should be implemented in the proper manner. These are (a) providing early financial compensation and settlement in land requirement; (b) resettlement of people including construction of dwellings in new areas. (c) providing subsidy for farming in the new areas. (d) starting of special training programmes in the areas of poultry, breeding, handicraft and cottage industries (e) employment avenues in the project and (f) provision of education, medical and drinking water facilities.

6.121 The feasible capacity addition during the Ninth Plan period would be of the order of 40245 MW of which 22656.7 MW is likely to come up in the public sector (11909 MW from Central sector and 10747.7 MW from State sector). The outlays assessed by the Planning Commission for the Ninth Plan for the power sector fully cover the requirements of all ongoing schemes in the public sector which will yield benefits of 16653.7 MW capacity (9126.7 MW of hydro, 6647 MW of thermal and 880 MW of nuclear) during the Ninth Plan. In addition, these outlays are expected to take care of a major portion of the requirements of new generation schemes which will yield benefits of 6003 MW capacity (143 MW of hydro and 5860 MW of thermal) during the Ninth Plan period.

Rural Electrification

6.122 The rural electrification programme is viewed as a prime mover for rural development. Electricity is not only the basic pre-requisite for industrialisation but it also contributes significantly to increasing agricultural productivity and other job and income generation activities, besides enhancing the quality of life in rural areas and controlling migration from rural to urban areas. Electricity, therefore, deserves to be classified as a basic amenity along with others like housing, drinking water, health and education. The time-span in which the objective of "Electricity to All" can become a reality will depend upon the priority assigned, the resources allocation, political will, the administrative skill and active interest of all agencies and people concerned associated with economic development of the nation.

6.123 As per the 1991 census, there are 5,87,288 villages in the country of which about 85% have been electrified by the end of March, 1996. As many as 13 States in the country have completed 100% village electrification. However, this achievement is to be viewed with the existing definition which declares 'a village as electrified if electricity is used for any purpose within the revenue boundary of that village'. Thus, even in all these electrified villages, power connection may or may not be available on demand. A large number of hamlets and harijan bastis adjoining the villages are yet to be electrified. In this context, the Government of India has notified a change in the definition of village electrification as follows:

“ A village will be deemed to be electrified if electricity is used in the inhabited locality, within the revenue boundary of the village for any purpose whatsoever” against the old definition “ a village

should be classified as electrified if electricity is being used within its revenue area for any purpose whatsoever”.

6.124 The latest estimate of pump sets potential in the country by the Central Ground Water Board is about 195 lakh. As against this, only 115 lakh pump sets have been energised so far leaving a balance of 80 lakh pump sets yet to be energised. Rural Electrification Corporation (R.E.C) ensures that the overexploitation of the ground water resources does not occur and accordingly extends loans for pumpset energisation only in such areas where sufficient potential is available. Nevertheless efforts will continue to avoid over exploitation of ground water. In spite of large-scale pump sets energisation, the prevailing low tariff for agriculture does not provide any incentive to the farmer to adopt energy-efficient measures to optimise the consumption of electricity.

6.125 A large number of pump sets are of sub-standard quality and operate at sub-optimal efficiency. Often the pumps have wrong features e.g high discharge head, inefficient foot-valves, pipes with excessive friction, oversized motors and motors without capacitors. It is estimated that the country could save 57 billion Kwh of electricity if higher efficiency is achieved in this sector. The investment required is estimated to be of the order of Rs.1100 crore. **In this context an interest subsidy scheme for financing efficient agricultural pumpsets needs to be introduced.**

6.126 Rural areas are facing serious problems with regard to quality and reliability of electricity supply. A long L.T distribution network with inadequate capacity of transformers results in low voltage condition and higher T&D losses. These difficulties can be overcome only by adopting large scale system improvement works including installation of capacitors, using higher voltage rural distribution lines and augmentation of transformer capacities.

6.127 The electrification of dalit bastis and tribal villages is to be taken up on a priority basis. Separate funds should be earmarked for their electrification under the Special Component Plan or Tribal Sub-Plan.

6.128 There is also a need to review the guidelines for MNP taking note of national average electrification level of 85 percent. Around 86000 villages which are left out of electrification are located in remote and difficult areas. Around 18,000 of these are in such localities where extension of grid will be costly and uneconomical and where development of load growth is unlikely due to thinly dispersed population. These remote areas in the country need to be provided access to electricity and this can best be achieved through non-conventional energy sources.

6.129 A target to electrify 30000 villages and energise 20 lakh pump sets during the Ninth Plan has been set. It is necessary to earmark institutional and funding arrangements for achieving these targets. The Ninth Plan will also deal with the problem of providing institutional support through the involvement of decentralised private companies, rural cooperatives and panchayats not only for implementing the schemes but also for the upkeep and maintenance of the assets created.

ENERGY CONSERVATION

Review of Eighth Plan.

6.130 The National Energy Efficiency Programme (NEEP) was initiated during the Eighth Plan which included components of policy package, financial arrangements including creation of revolving funds, technical assistance, technology development, selective legislation and developing institutional capabilities. The targets of electricity saving equivalent to an additional capacity of 5000 MW in the power sector and saving of 6 million tonnes of petroleum products by the terminal year of the Eighth Plan were set for the National Energy Efficiency Programme. An outlay of Rs. 1,000 crore was provided for the purpose of energy conservation during the Eighth Plan which included activities of energy conservation being carried out in different Energy Departments.

6.131 The Ministry of Power prepared an Action Plan to achieve the Eighth Plan targets, which envisaged conservation of 2250 MW on the supply side and 2750 MW on the demand side. The supply side programmes included renovation and modernisation of old generating units, reduction in auxiliary power consumption in thermal power stations and reduction in T&D losses. These programmes had earmarked funds. The Central Electricity Authority has reported a saving of 2900 MW comprising 2030 MW on account of saving through the programmes of renovation and modernisation and auxiliary consumption reduction and the balance through reduction in transmission and distribution losses.

6.132 The Ministry of Power implemented various demand side saving measures through several programmes carried out by the Energy Management Centre (EMC), set up in 1989 under the Ministry of Power. The EMC has coordinated a large number of training programmes, awareness campaigns, projects and studies, demonstration projects, data base on energy efficient processes and technologies and implementation of multilateral and bilateral energy efficient projects etc.

6.133 The demand side management measures resulted in significant achievements in reduction of specific electric consumption in major energy intensive industries like cement, steel, pulp and paper, etc. Further, the rectification of pump sets taken up through limited pilot programmes have also resulted in saving of energy to some extent in the agriculture sector. In the domestic sector, energy efficient lighting and other energy saving devices have been introduced. However, the actual savings in terms of Mega-Watts could not be quantified.

6.134 Energy audits have been conducted in different types of industries. The State Governments of Kerala, West Bengal and Tamil Nadu have issued notifications for mandatory energy audits in respect of high tension consumers. Other States have also been requested to make energy audits compulsory for such industries. The response from various States are not encouraging. The Ministry of Power has proposed to amend the provisions of the Electricity Act to provide for compulsory energy audit for such industries classified as energy intensive.

6.135 In the petroleum sector a saving of 3.6 million tonnes of products was achieved during the first three years of the Eighth Plan. During the following years of the Eighth Plan, the Petroleum Conservation Research Association (PCRA), oil refineries, marketing companies and other users were able through their various programmes to achieve the target set for Eighth Plan.

NINTH PLAN PROGRAMME

6.136 The programmes started during the earlier Plans would continue. The new initiatives for energy conservation during the Ninth Plan include electricity tariff rationalisation, effective role of financial institutions in funding energy conservation programmes, and standards and labelling for equipments and gadgets. It has been suggested that a Central Legislation on Energy Conservation could help coordinate the efforts of both Centre and the State in more effective implementation of the conservation programmes. However such a legislation should not replicate the work already being done by other agencies.

Targets for Ninth Plan

- (i) On the supply side thermal power stations should aim at a reduction of 10% in heat rate by the end of the Ninth Plan.
- (ii) The T&D losses should be reduced at least by 1% during each year of the Ninth Plan.
- (iii) The auxiliary consumption especially in the old thermal stations should be reduced at least by 1 per cent.
- (iv) The demand side measures should be implemented through comprehensive programmes in each sector e.g., industrial, domestic, commercial and agricultural. Each programme should provide for targeted savings, their quantification as also proper evaluation to ascertain the achievement.
- (v) Compulsory annual energy audit of large consumers should be undertaken.
- (vi) Time of the day metering should be introduced initially for large power consumers for better load management. Its coverage should be slowly extended.

Demand Side Management

6.137 Demand Side Management (DSM) which is now increasingly being used in the developed countries is an effective instrument to bridge the gap between demand and supply. It ensures that the electricity consumption can be effectively used in an optimal manner. The DSM options include staggering of the load during the day so as to cut down the peak demand by flattening the load curve. This in turn would result in a substantial saving of additional capacity of generation.

6.138 Another DSM option is time of the day metering which improves capacity utilisation of power systems to reflect better the real cost of electricity. Because of all-round energy shortages, this option is not often feasible in India. But it could be effective in the Western and Northern regions, where there is predominance of thermal generation and surplus power available at night which can be sold at concessional tariffs. Night power could also be sold at a concessional rates to selected large industrial consumers. The DSM does not require substantial investments but only involves cooperation of the users.

Tackling Peak Power Demand?

A special feature of the Indian Power Sector is that the level of demand at peak times in a day is very high compared to the demand at off peak time. For example, in the NCT of Delhi, which has a large number of domestic/commercial consumers, the ratio of maximum and minimum demand is almost as high as 1.5:1 or 2:1.

In such a situation, we require double the installed capacity to meet demands at the peak time. It also results in heavy overloading of T & D system, causing operational problem and to some extent increase the distribution losses in the system.

The problem needs to be tackled by adopting demand side management Techniques to “flatten the Load Curve” i.e reduce the peak load hour demand and create additional load during off-peak hours in the following way:

- Introduce differential pricing according to time of day thus giving incentives to users to shift their demand to the off-peak period. This requires introduction of electronic time of day (T.O.D) metering.
- Having a two-part tariff for all categories of consumers in which the consumers have to pay an amount that depends on the maximum demands he makes, plus a charge for each unit of energy consumed.
- Utilise Hydro Resources for peaking Generation. This also provides power at cheaper rate..
- Segregation of Irrigation Feeders from Domestic Feeders. Irrigation Feeders will be made on only at off-peak hours.
- Staggering of Office timings
- Commission the National grid to take advantage of different peaking time of different Regions. Introduction of more than one time zone in the country would help in this process.

6.139 The industrial sector still consumes a significant amount of electricity of about 34% and therefore, there is greater scope for implementing energy efficiency programmes in this sector. One of the major constraints in the implementation of energy conservation programme in the industrial sector is non-availability of energy efficient equipment and technologies. There is a need to develop the capability for manufacturing these equipments. Manufacturers should be motivated by providing necessary incentives such as concessional financing and reduction in custom and excise duties, sales tax, etc. to increase their production capacities for energy efficient equipments.

6.140 The agriculture sector accounts for about 28 to 30% of the total electricity consumption in India. Around 12 million electrically operated pumps and 6 million diesel pumpsets are in operation in the country. Thus, this area has greater importance for energy conservation and there is a large scope for energy conservation by carrying out simple pumpset rectification measures. Most of these pumps in operation are having sub-optimal efficiencies. A comprehensive pumpset rectification programme will significantly increase the efficiency of the pumpsets and the result would be savings up to 50% electricity consumption.

6.141 The funds to meet the expenditure of the programmes on the supply side like improvement in heat rate of thermal stations, reduction in auxiliary consumption of old thermal stations, reduction in T&D losses etc. are to be provided by the Power Finance Corporation (PFC) and Rural Electrification Corporation (REC) of the Ministry of Power under the overall co-ordination of the energy conservation cell of the Ministry of Power. These funds could be in the form of loans.

6.142 For the demand side programmes, funds may have to be found from the budget allocations of the Central and State Governments.

Financial Outlays

6.143 The Ninth Plan (1997-2002) assessed outlays for the power sector is given at Annexure 6.2.

COAL & LIGNITE

6.144 The Ninth Plan envisages a major thrust to infrastructure development, particularly Energy and Power. Coal and Lignite are the major energy resources for power generation. Almost 70% of the country's power generation is based on these two resources. The Plan, therefore, has made special emphasis on rapid and proper development of these resources, which forms the main thrust of the country's long term strategy. Lignite is also called brown coal and unless the context indicates otherwise, reference to coal is deemed to include lignite. After nationalisation in 1975, development of coal has been confined to the public sector. It is only recently that the sector has been opened up for private participation. The major coal producing companies in the country are Coal India Ltd. (CIL), a centrally owned public sector undertaking and Singareni Collieries Co. Ltd. (SCCL), a joint public sector undertaking of Government of Andhra Pradesh, as major equity shareholder and Government of India. Besides, captive collieries of TISCO/IISCO/DVC are also producing coal for captive consumption. Besides Neyveli Lignite Corporation (NLC), a public sector undertaking, lignite is also being produced by Gujarat Mineral Development Corporation (GMDC) and recently by Rajasthan State Mineral Development Corporation (RSMDC), both in the State Sector.

REVIEW OF EIGHTH PLAN

6.145 Some of the major objectives for coal sector during the Eighth Plan were: a co-ordinated approach for production, transportation and pithead stock reduction of coal to meet fully the consumer demand, maximisation of the use of indigenous coking coal for steel making, beneficiation of non-coking coal, streamlining of project implementation procedures, introduction of an effective environmental management plan, improvement of productivity, lignite development, scientific evaluation of coal & lignite resources and making the coal industry viable and self-supporting.

Exploration & Coal Resources

6.146 The Eighth Plan objective for coal exploration was aimed at meeting the demand for coal over a 15 years perspective, through intensification of regional exploration in new areas and promoting recent discoveries.

6.147 The potential areas and the new finds that were identified during the Eighth Plan period with good quarriable prospects are located in the East Bokaro Coalfield, South Karanpura and Sohagpur Coalfields for metallurgical coal; Birbhum (coal seams under cover of trap rocks), Sohagpur, Mand-Raigarh (Phutamura area with Grade A coal), Tatapani - Ramkola and Korba for superior grade non-coking coal and Talcher, Korba, Rajmahal and Auranga Coalfield for inferior grade non-coking coal.

6.148 As a result of intensified regional/promotional and detailed exploratory efforts, coal reserves have increased from a level of 196 billion tonnes (bt) at the beginning of the Eighth Plan i.e. as on 1.1.1992 to a level of 204.65 bt as on 1.1.1997. Large quantities of coal reserves have been added in the coalfields of Raniganj, Domra and Birbhum in West Bengal, East Bokaro, Auranga, South Karanpura and Rajmahal group of coal fields in Bihar, Talcher and Ib in Orissa, Sohagpur, Mand-Raigarh, Korba, Bistrampur and Tatapani-Ramkola in Madhya Pradesh and Godavari in Andhra Pradesh. Of these, coking coal reserves are about 15% and

non-coking coal reserves are 85%. Category-wise about 35% are proved, 44% are indicated and 21% are inferred reserves. Grade-wise reserves of non-coking coal comprise 1.18% Gr. 'A', 3.96% Gr. 'B', 9.36% Gr. 'C', 13.4% Gr. 'D', 48.92% Gr. 'E', 'F' & 'G' and 23.18% ungraded coal. Similarly, depth-wise about 67% of coal reserves are distributed in the range of 0 - 300 m, 26% in the range of 300 - 600 m and 7% in the range of 600 - 1200 m.

6.149 The coal reserves under proved category have increased from 61.14 billion tonnes (bt) at the beginning of the Plan to 72.73 bt as on 1.1.1997. This is only about 35% of the available geological reserves. This brings in the necessity for further expediting the exploration efforts to upgrade the geological reserves to proved category for augmenting coal production in line with the growing demand.

6.150 Against the Eighth Plan regional exploration drilling target for coal & lignite of 403400 metres, the achievement was about 299658 metres upto Sept. 1996.

6.151 The geological reserves of lignite have increased from 6.473 bt as on 1.1.1992 to 27.45 bt as on 1.1.1997. Of these, 25.88 bt (94%) are in Tamil Nadu and Pondicherry, 1.02 bt (3.7%) in Rajasthan and 0.47 bt (1.7%) in Gujarat.

Coal Demand

6.152 Against the annual average growth of 7.34% in the consumption of coal during the Seventh Plan, the projected growth for the Eighth Plan was 6.32%. The overall coal demand in the terminal year of the Eighth Plan (1996-97) was estimated at 311 mt (excluding 7 mt of washery middlings) against a coal consumption of 228.94 mt (excluding 2.3 mt of washery middlings) in 1991-92. As against this, the actual coal demand in 1996-97 has been 325 mt (excluding 7.7 mt of washery middlings) with the share of power sector (Utilities) at 215 mt including 5 mt of washery middlings against the initial demand estimates of 190 mt, which is followed by steel, cement etc. Though the addition of new coal based generation capacity has been only 9488 MW against the envisaged capacity addition of 14340 MW during the Plan, the increase in coal consumption in the power sector has been mainly due to improved PLF performance of the existing plants. The power sector foresaw a shortfall of around 20 - 25 mt in the indigenous availability of coal to meet their requirements during 1996-97 at the time of the formulation of the Annual Plan 1996-97. In the case of steel sector, availability of coking coal has fallen short of requirements and imports have increased to a level of around 9 mt during 1996-97 against 3.5 mt originally envisaged. There has been shortfalls in supply of indigenous coal to the cement sector as well. The demand of this sector was partly met by lignite particularly in the case of cement plants located in Southern India and by some duty-free imports of coal made against exports of cement. Besides, coal from the open market was also reportedly consumed by the sector for which no reliable data is available. The main reasons for shortfalls in the availability of domestic coal are regional demand supply mismatches, quality problems and inadequate rail evacuation facilities. Besides, the constraints of domestic coal production have affected the demand materialisation in the later part of the Eighth Plan. The growth in consumption during the Eighth Plan was about 5.3%, with the actual consumption of 295.98 mt excluding 4.74 mt of washery middlings. The broad sectoral coal demand is given in Table 6.20 and details are given in Annexure 6.3.

Table 6.20
Sectoral Coal Demand
(million tonnes)

Sector	E I G H T H P L A N		N I N T H P L A N		G R O W T H R A T E				
	1991	1992	1996-97		1997	2001	1996-97	2001-02	
	-92	-93	Orig.	Rev.	Provl.	-98	-02	1996-97	2001-02
	-----	-----	Targ	Targ		-----	-----	-----	-----
	Actual	Actual				Target	Target	1991-92	1996-97
COKING									
Steel	31.66	32.43	42.00	40.50	34.71	41.40	49.60	1.86	7.4
Coke Ovens						2.00			
Sub-Total: (Coking)	31.66	32.43	42.00	40.50	34.71	41.40	51.60	1.86	8.25
NON COKING									
Power (Utilities)	134.60 (2.30)	147.04 (2.49)	185.30 (4.70)	210.00 (5.00)	199.26 (2.58)	205.90 (4.10)	262.00 (5.00)	8.16	5.63
Cement	9.97	10.89	17.50	17.50	11.25	18.20	21.40	2.45	13.72
Others	52.71 (2.30)	51.33 (2.70)	66.20 (2.16)	57.00 (2.70)	50.76 (2.70)	57.88	77.20	-0.75	8.75
Sub-Total: (Non-Coking)	197.28 (2.30)	209.26 (2.49)	269.00 (7.00)	284.50 (7.70)	261.27 (4.74)	281.98 (6.80)	360.60 (7.70)	5.78	6.66
TOTAL:	228.94 (2.30)	241.69 (2.49)	311.00 (7.00)	325.00 (7.70)	295.98 (4.74)	323.38 (6.80)	412.20 (7.70)	5.27	6.85

Note: Figures in brackets are washery middling, and are not included in the totals.

Coal Production

6.153 Against the average growth in coal production of 6.4% annually during the Seventh Plan, production of coal in the Eighth Plan was projected to grow at an average rate of 6.08% annually. The target for coal production in the terminal year of the Eighth Plan was fixed at 308 mt against an achievement of 229.29 mt in 1991-92. However, the production increased at an annual rate of about 4.5% only. This has been mainly due to fixation of lower production targets for Coal India Ltd. with a view to liquidate the mounting pithead stocks in the initial years of the Plan. Domestic coal availability, however, fell short of the demand in the subsequent years of the Plan. The target of coal production in 1996-97 was set at 288.65 mt (CIL 252 mt, SCCL 30.2 mt & Others 6.45 mt) against the initially envisaged target of 308 mt (CIL 270 mt, SCCL 33 mt & Others 6.5 mt). The domestic availability was lower than the estimated demand in 1996-97. The decision of the Ministry of Coal (MOC) not to take up coal projects yielding less than 16% of IRR has delayed work on a large number of new projects and has led to significant shortfalls in coal availability from new projects during the Eighth Plan. The new underground projects could not be taken up due to costs of production far exceeding the prevailing prices. As a result, the underground:opencast production ratio has declined and touched a low of 25:75

in 1996-97 as against 28.72 at the beginning of the Plan. Besides, there have been severe shortfalls in capacity additions from new projects as a result of resource constraints and delays in the implementation of ongoing projects which have adversely affected the coal production programme. The details of coal production are given in Table-6.21 and the company-wise production details are given in Annexure 6.4.

Company	EIGHTH PLAN					NINTH PLAN		GROWTH RATE	
	1991	1992	1996-97			1997	2001	1996-97	2001-02
	-92 Act- ual	-93 Act- ual	Orig. Targ.	Rev. Targ.	Provl.	-98 Targ.	-02 Targ.	1991-92	1996-97
CIL	204.15	211.22	270.00	252.00	250.65	260.50	314.00	4.19	4.60
SCCL	20.58	22.51	33.00	30.20	28.73	31.00	36.00	6.90	4.61
TISCO/ IISCO/ DVC	4.56	4.38	5.00	6.45	6.45	6.50	7.60	6.60	3.89
Captive Blocks	-	-	-	-	-	-	13.00	-	-
TOTAL:	229.29	238.11	308.00	288.65	285.66	298.00	370.60	4.50	5.34

Pithead Stocks

6.154 In the year 1995-96, the MOC had reviewed the pithead stocks position of CIL and declared some of the stocks as non-vendible. As a result, stocks standing at 48.58 mt (CIL 47.8 mt, SCCL 0.70 & Others 0.08 mt) at the beginning of the Eighth Plan have come down to a level of 30.04 mt (CIL 27.88 mt, SCCL 1.91 mt & Others 0.25 mt) as on 1.4.1997. The envisaged draw down from the pithead stocks of CIL during the Plan has also not materialised. It was planned to draw 20 mt in 1992-93, 13.8 mt in 1993-94, 8.9 mt in 1994-95, 7.5 mt in 1995-96 and 2 mt in 1996-97 from the stocks of CIL. As against this, there was an accretion of 2.3 mt in 1992-93, a nominal reduction of 0.49 mt in 1993-94, a reduction of 4.45 mt in 1994-95 an accretion of 1.91 mt in 1995-96, and a nominal reduction of 0.10 mt in 1996-97.

Coal Quality

6.155 It was envisaged that the average ash content in the washed coking coal for steel plants at the desired level of 17% +/- 0.5% would be maintained by the coal industry by undertaking the necessary modifications and retrofitting etc. of existing washeries as per the recommendations of the Altekar Committee by 1994-95. However, the problem of higher ash content has not been overcome and the steel industry is increasingly depending on imports mainly due to inconsistencies in the quality of washed coking coal being supplied by CIL at about 21% ash. The washed coking coal production from CIL washeries has almost remained stagnant at around 9 mt in the Eighth Plan. The yield of the washeries has come down from 54% in 1992-93 to about 51% in 1996-97. The two new coking coal washeries namely Kedla and Madhuband which were scheduled to be commissioned during the Plan have not been commissioned.

6.156 Regarding beneficiation of non-coking coal for supply to the power plants situated at a distance of more than 1000 kms. from the coalfields, it was envisaged that beneficiation facilities would be set up in the Eighth Plan. However, excluding the facility at Piparwar project, no new non-coking coal washery has come up in the Eighth Plan.

Demand-Supply Management

6.157 The Eighth Plan envisaged matching of the field-wise production plan with the requirements of the consuming sectors keeping in view the evacuation facilities. It was also envisaged that the coal supply to Southern and Western region power stations would be based on a carefully drawn up action plan necessitating movement of coal by coastal shipping from the Eastern region. However, the originally envisaged targets of coal production and coal demand have fallen short by 7.3% and 4.8% respectively during the Plan. The constraints of rail evacuation facilities have resulted in increased pithead stocks in the initial years of the Plan. Though the rail movement of coal has increased significantly during the Eighth Plan, movement constraints were noticed particularly in areas like Korba, Talcher, Ib Valley, North Karanpura, Rajmahal etc. which have large unrealised production potential. The critical rail links have been identified and are to be taken up on priority by the Railways.

6.158 The annual imports of coking coal by the steel sector have reached a level of 9 mt due to lack of adequate availability and suitable quality of coking coal from indigenous sources. Delays in completion of the modification/retrofitting of existing washeries as per the Altekar Committee recommendations and delays in implementation of new washery projects have resulted in the shortfall of washed coking coal availability. Shortage of suitable raw coal feed to the washeries has also affected the washery performance. The proposed utilisation of Low Volatile Medium Coking coals (LVMC), to increase the availability of raw coal feed for coking coal washeries supplying coal to the steel sector, has not come up to the required extent.

6.159 Delays in implementation of projects and non-availability of resources for taking up new projects have adversely affected the coal production programme in the later part of the Plan.

6.160 The constraints of production from underground mines continue. Though there has been an increase in the overall coal production, it has been mainly the result of the increase in production from opencast mines.

Project Implementation

6.161 New coal projects for an annual production of 72 mt were to be sanctioned and started during the Eighth Plan. Against this, the total capacity sanctioned was only around 43 mt. The CIL and SCCL have not been able to take up a number of technically viable projects in view of the unsustainable low financial rate of return in the context of the administered prices. Implementation of the ongoing projects has also suffered due to problems of land availability and forest and environmental clearances.

6.162 Land acquisition and the related rehabilitation of the land oustees continued to remain one of the major constraints of project implementation. The Plan envisaged that a national level rehabilitation policy would be finalised for adoption by the new projects with a view to mitigate the hardships of land oustees. However, the national level rehabilitation policy has not come

through yet.

Environmental Measures

6.163 The approval and implementation of environmental management plans have become mandatory constituents of the projects as per the project clearance procedures of the Government. Coal companies have also started reclamation of mined-out areas particularly the opencast mines as per the approved environmental management plans. Similarly, strict measures for controlling the effluents of washeries, mines and workshops are also under implementation.

6.164 Measures for protecting the environment of coalfields have been continuing and special efforts have been made by creating a head under "Environmental Measures & Subsidence Control" to tackle fire and subsidence problems in Jharia and Raniganj coalfields respectively. An action plan is to be drawn up for effective implementation of the schemes. A High Powered Committee has been constituted by the Government of India for this purpose and its report is awaited.

Productivity

6.165 To arrest the low productivity in the underground mines and to improve the overall productivity of men and machinery, the coal companies have drawn certain action plans, like implementation of voluntary retirement scheme, de-commissioning of uneconomic mines, re-location of under-utilised manpower, re-orientation of investment programmes with preference for projects with relatively low gestation and higher outputs and maximisation of underground production. As a result of these measures, there has been a significant improvement in the overall Output per Manshift (OMS) levels of coal companies. However, the improvement in OMS has been mainly confined to opencast mines only and underground OMS needs to be further improved. Against the Plan target of OMS of 1.65 t (UG 0.66 t, OC 4.32 t) for CIL and 1.36 t (UG 0.86 t, OC 6.43 t) for SCCL, the OMS in 1996-97 (Actual) for CIL was 1.82 t (UG 0.59 t, OC 4.88 t) and for SCCL 1.19 t (UG 0.72 t, OC 6.25 t). In the case of machine productivity, though the targets of machine utilisation have been achieved when compared with the norms fixed by Central Mine Planning & Design Institute Ltd. (CMPDIL) for various Heavy Earth Moving Machinery (HEMM) particularly in CIL, there is a necessity to review these productivity norms with a view to improve the capacity utilisation.

Coal Transportation

6.166 About 66% of the coal offtake is by railways. Though the movement of coal by Merry Go Round (MGR) system for pit-head power stations is increasing, still the component of rail transportation continues to remain predominant in the overall coal movement. In order to reduce the dependence on road transport mainly in view of energy conservation, transportation of coal by rail needs to be further increased. Critical transportation bottlenecks like construction of rail links between Gevra and Pendra road, doubling of Champa Gevra line in Korba, new railway line linking Rajmahal coalfield with main line, construction of new line from Hindgir railway station to Gopalpur in Ib Valley, Tori-Dhonia link in North Karanpura field, increasing the capacity at Mugalsarai Junction etc. have already been identified and work needs to be undertaken on these projects by the Railways on priority.

6.167 Coking coal imports by the steel sector by the end of the Plan was about 9 mt. A gap of 20 - 25 mt existed between the estimated demand and domestic availability of coal for the power sector in the beginning of 1996-97, warranting high level of non coking coal imports by the power sector. However, the matching coal handling facilities at ports were not adequate. As

per the Ministry of Surface Transport, at the beginning of the Eighth Plan the dedicated capacity for coal handling in Indian ports was reckoned as 7 mt only. Out of this, 5 mt was available at Haldia and 2 mt at Tuticorin. The number of coal berths at Haldia are two and at Tuticorin one. In addition, coal is also being handled at cargo berths at Vishakhapatnam, Paradip and Madras on the East Coast. One coal jetty has been added at Tuticorin port during the Eighth Plan for an ultimate capacity of 2.5 mt. However, the interim capacity of this is only about 1 mt. Thus, the aggregate coal handling capacity at major ports by the end of the Plan was 8.5 mt only. Some minor ports under State Governments are also handling some coal imports for which no statistics is available. Thus, the option of large-scale imports does not appear to be available during the Ninth Plan due to capacity constraints in the ports.

Science & Technology

6.168 The thrust areas for R&D activities during the Eighth Plan continued to be Production, Productivity & Safety; Coal Beneficiation; Coal Utilisation; and Environment & Ecology. During the Eighth Plan, apart from the continuing projects, forty new S&T projects were sanctioned till 1995-96 at an estimated cost of Rs 14.96 crore. However, no major project has been undertaken during the Eighth Plan under the S&T grant. Even the IS-STAC projects under Department of Science & Technology did not come up in the desired way during the Plan. As a result, the total S&T expenditure in the Plan has been limited to Rs.19.78 crore (23%) against an approved outlay of Rs 87 crore.

Lignite

6.169 Development of lignite in the Eighth Plan has not been satisfactory in spite of the thrust given. The Barsinghsar Integrated Lignite Mine-cum-Power Project of NLC in Rajasthan has been deferred and this project is now to be taken up in the private sector. The Mine-I Expansion Project of NLC from 6.5 mtpa to 10.5 mtpa has got badly delayed due to the delay in the approval of the linked TPS-I Expansion Project and the funding arrangements. However, the lignite production by GMDC has increased from 3.2 mt at the beginning of the Plan to 5.19 mt at the end of the Plan. As against the NLC's targeted growth of 7.5% annually for lignite production, the actual growth was 6.7% only.

Private Sector Participation

6.170 In order to augment the coal availability, certain measures were initiated for facilitating private sector participation in the coal sector during the Eighth Plan. However, it was limited to captive consumption only. Following were the areas allowed for private sector participation:

- (i) Captive coal mining by consumers engaged in power generation, iron & steel and cement industry.
- (ii) Construction of washeries on Build-own-Operate (BOO) basis.

6.171 Forty seven mining blocks were identified for captive mining with an estimated reserve of about 14 bt and an annual production potential of 150 mt. Of these, 16 proposals were cleared for power generation and 3 for steel making in both private and public sector. Action was also initiated for construction of 7 washeries in private sector (3 coking coal and 4 non-coking coal). However, the pace of development has not been as desired.

6.172 Towards the end of the Eighth Plan, on 12th Feb., 1997, based on the recommendations of the Committee on Integrated Coal Policy, the Government has taken decision in principle

to permit commercial mining of coal by the private sector without the captive-use restriction. However, it is subject to legislative approval. Other decisions are enumerated in para 6.177.

Capital Restructuring

6.173 The Eighth Plan envisaged the coal industry to be made financially viable and capable of supporting itself through improvements in efficiency and productivity levels. Accordingly, the coal sector has initiated action for rationalisation of manpower and closure of uneconomic mines etc. As a result of these measures and decontrol of prices of all coking coals and superior grade non-coking coals (A, B, C & D), the internal resource generation has increased which has led to reduced reliance on budgetary support. The Government has approved capital restructuring packages for SCCL in 1994 and CIL in 1996 to facilitate their turn around. But, due to delays in timely revision of coal prices, prior to decontrol of certain grades of coal, the likely benefits of capital restructuring have got diluted.

Plan Outlays and Expenditure

6.174 The Eighth Plan approved a Central outlay of Rs.10507 crore (at 1991-92 prices) for coal & lignite sector excluding the contribution of the Government of Andhra Pradesh towards its share of equity in SCCL estimated at Rs.850 crore. In addition, the outlay approved for NLC (Power) was Rs.1000 crore. As against this, the cumulative expenditure in the Plan (1992-97) has been Rs.10,714.22 crore including the contribution of Rs.487 crore from Government of Andhra Pradesh for SCCL. The cumulative expenditure in the case of NLC (Power) has been Rs.429.48 crore. Thus, the overall expenditure of MOC has been Rs.11143.7 crore including the contribution of Govt. of Andhra Pradesh and NLC (Power) against the corresponding overall outlay of Rs.12357 crore. The overall expenditure forms about 90% of the total outlay at current prices and about 71% at constant prices (1991-92). The main reasons for the shortfall in the expenditure have been delay in the revision of coal prices and non realisation of outstanding coal sale dues affecting the generation of internal resources. Also, the envisaged market borrowings have not fully come through. All these have affected the Plan expenditure adversely.

6.175 Based on the progress of various major projects, the spillover to the Ninth Plan of both coal & lignite projects is of the order of Rs.5598.72 crore (CIL Rs.3019.42 crore, SCCL Rs.740.33 crore, NLC Mines Rs.1838.97 crore) and of NLC (Power) it is 1847.15 crore, totaling Rs.7445.87 crore.

Coal Policy

6.176 Considering the important position of coal and lignite in India's energy strategy and the urgent need for rapid development of these resources, the Planning Commission constituted a Committee on 'Integrated Coal Policy', which submitted its report in May, 1996. The Committee has made a number of recommendations for augmentation of coal and lignite production and private sector participation in the coal sector. The major recommendations include coal conservation through reduction in specific coal consumption levels for power generation and adoption of improved coal utilisation technologies for power generation and steel making, augmentation of domestic coal production by involvement of private sector, offering of coal blocks both for exploration as well as mining on competitive bidding basis, integrating the exploratory efforts for coal and lignite, creation of a Special Fund and an independent body for coal and lignite exploration, deregulation of coal prices, creation of a Regulatory body for looking into price disputes etc., setting up of more pithead coal/lignite-based thermal power stations,

augmentation of railways and port infrastructure facilities, amendments/modifications in various Acts viz. Coal Mines (Nationalisation) Act 1973, Colliery Control Order, 1945, Coal Bearing Areas (Acquisition & Development) Act, 1957, Mines and Minerals (Regulation & Development) Act, 1970, Forest Conservation Act, 1980 etc. for facilitating private sector participation and expediting project clearance procedures.

6.177 Following recommendations of the Committee have been accepted by the Government:

- (i) Deregulation of the prices and distribution of the D Grade of non-coking coal, hard coke and soft coke.
- (ii) Allowing CIL and SCCL to fix the prices of E, F & G Grades of non-coking coal till 1st January, 2000, once in every six months by updating the cost indices as per the escalation formula contained in the 1987 Report of the Bureau of Industrial Costs and Prices (BICP).
- (iii) Allowing CIL and SCCL to fix the prices of E, F and G Grades of non-coking coal in relation with the market prices and to distribute these grades of coal after 1st January, 2000.
- (iv) Setting up of an Independent Body to monitor the detailed and regional exploration of coal & lignite resources in the country.
- (v) Allocation of new blocks on the basis of a competitive bidding process in which Indian companies including National Coal Companies (NCCs) may participate.
- (vi) Establishment of a Regulatory Body which would perform an appellate function to resolve any price disputes between the producers and consumers.
- (vii) Subject to legislative approval, permission to any Indian company to mine coal without the restriction of captive consumption. Implementation of some of these recommendations would need amendments to various statutes governing coal mining in the country.

NINTH PLAN (1997-2002)

6.178 Following priority areas have been identified for the coal sector in the Ninth Plan:

- Long-term planning for coal & lignite development, with regard especially to power demand & keeping in view the long gestation period of coal projects.
- Measures for augmenting domestic coal production to reduce the huge gap between demand and supply since large-scale imports are not feasible due to port and foreign-exchange constraints
- Improve productivity of men and machines, maximise capacity utilisation, improvement in technology, improved project implementation etc.
- Improve coal quality as also share of UG mines in total coal production.
- Improve customer service, customer satisfaction and totally computerise the sales operations and make them totally transparent.

- Encouraging private sector participation to increase domestic coal production.
- Proper demand management & conservation of coal by the end users.
- Extension of infrastructure benefits to coal & lignite sector.
- National Coal Companies to enter into joint ventures.
- Beneficiation of non-coking coal supplied to consumers beyond 700 kms to be made mandatory with utilisation of rejects for power generation through FBC route at pitheads.
- Proper commercial mechanism for collection of outstanding coal & power sale dues.
- More and more power plants at pitheads to ease movement constraints.
- Streamlining of forestry & environmental clearance procedures.
- More autonomy and responsibility to Public Sector Coal Companies.
- Expediting coal and lignite exploration to match the reserves with the projected long-term production/demand.
- Implementation of policy decisions contained in the Integrated Coal Policy.
- Augmenting domestic coking coal availability with a view to contain the large imports by undertaking washing of Low Volatile Medium Coking Coals (LVMC).
- Development of clean coal technologies.
- Utilisation of Coal Bed Methane as a source of commercial energy.
- Improvement of environmental management in coal mining areas.
- Integrated approach for development of coal mining blocks with specific regard to environmental and forestry issues.
- Restructuring of coal industry.
- Proper coal pricing policy.
- Proper development of rail & port infrastructure facilities.
- Improved safety & welfare measures for coal mine workers.

Coal Demand

6.179 As against the actual coal consumption of 296 mt excluding 4.74 mt of washery middlings, in 1996-97 the demand for coal estimated by the Working Group on Coal & Lignite, in the terminal year of the Ninth Plan, 2001-02, is 405 mt, excluding 7.70 mt of washery middlings. However, the coal demand for power, as estimated by the Working Group at 254.8 mt, excluding 5.5 mt of washery middlings, was on the lower side and a review was made considering the new coal-based power plants yielding benefits in the Ninth Plan. Accordingly, the coal demand for the power sector utilities in 2001-02 is now estimated at 262 mt, excluding 5 mt of washery middlings. Thus, the overall coal demand in 2001-02, the terminal year of the Ninth Plan, is now estimated at 412.20 mt, excluding 7.70 mt of washery middlings, implying an average annual growth of 6.85% in the Ninth Plan against about 5.3% in the Eighth Plan. The power utilities are the largest consumers (64%) followed by steel (12%), cement (5.2%), etc. It is to be noted that the estimated demand for power utilities will, however, depend on the various clearances for the new private sector power projects by the end of 1997-98 and finalisation of fuel supply agreements with the coal companies. The broad sectoral coal demand is given in Table 6.20 and details are given in Annexure-6.3.

Coal Production

6.180 As against the actual coal production of 285.66 mt in 1996-97, the Working Group has estimated a coal production of 359.60 mt consisting of 303 mt from coalfields of CIL, 36 mt from those of SCCL, 7.6 mt from TISCO/IISCO/DVC and 13 mt from the Captive Blocks. in

2001-02. However, after reviewing the possibilities of incremental coal production from CIL it has been found feasible to increase the CIL's target by 11 mt totaling to 314 mt in 2001-02. Thus the overall coal production target in 2001-02 is fixed at 370.60 mt, implying an average annual compounded growth of 5.3% during the Ninth Plan against the actual growth of 4.5% in the Eighth Plan. The details of coal production are given in Table 6.21 and company-wise coal production is given in Annexure-6.4.

6.181 The incremental production in the Ninth Plan over the Eighth Plan is about 85 mt against 56 mt of incremental production in the Eighth Plan. The category-wise coal production is as given in Table-6.22.

Table 6.22
Categorywise Coal Production in 2001-02
(in million tonnes)

Category	CIL	SCCL	TISCO/ IISCO/DVC	Captive Blocks	TOTAL
Existing	31.64	4.15	7.60	-	43.39
Completed	118.57	19.15	-	-	137.72
Ongoing	108.08	8.37	-	-	116.45
New	55.71	4.33	-	13.00	73.04
Total	314.00	36.00	7.60	13.00	370.60

6.182 The coal production from the new schemes of CIL & SCCL is estimated at 60.04 mt which is about 17% of the total production and will be available only if these projects are taken up immediately with strict monitoring for their timely implementation and completion. Besides, the contribution from Captive Blocks at 13 mt (3.5% of the total) is subject to the action taken by the promoters.

6.183 From the additional coal production potential of 41 mt, from CIL sources (ECL- 2.5 mt; CCL-2.0 mt; WCL-3.4 mt; SECL-17.5 mt and MCL-15.9 mt) which has been identified by the Working Group, an increase of 11 mt (MCL-4 mt; SECL-3 mt & WCL-4 mt) has been considered to be feasible in 2001-02.

6.184 Of the total projected production, 75% is envisaged to come from opencast mines and 25% from underground mines. This trend is fast depleting the reserves amenable for opencast mining and neglecting the development of underground mines where large potential exists for meeting the future demand. Therefore, immediate action would need to be initiated for developing underground mines in view of their long gestation periods.

Demand Supply Management

6.185 When compared with the domestic availability there lies a large gap in meeting the projected demand of coal in the year 2001-02. Against the assessed demand of 412.20 mt, excluding 7.70 mt of washery middlings, the indigenous availability is 370.60 mt only leaving a gap of 41.60 mt. The steel sector has proposed to import 19 mt of coking coal and two thermal

power stations have proposed to import 2.3 mt of non-coking coal in 2001-02. This still leaves a gap of 20.3 mt in 2001-02.

6.186 In view of this large demand-supply mismatch there is a need for policy changes to augment coal production in the Ninth Plan and beyond by measures like facilitating private sector participation in a big way, including the commercial mining by rationalisation of coal prices. In addition to these measures, proper demand management for coal by adopting suitable coal utilisation technologies by the end-use sectors, locating more and more pithead power stations to overcome the rail movement constraints, necessary amendments to the various Acts/Regulations, competitive bidding of coal blocks, restructuring of coal industry etc. are some of the areas which need immediate attention, as brought out by the Committee on Integrated Coal Policy.

Rail Movement

6.187 Augmentation of rail movement capacity by implementing the already identified critical rail links in potential coalfields is essential in the Ninth Plan to avoid mismatches and help materialisation of coal demand. The MOC has listed the following rail network constraints:

- (i) For movement of coal to the Northern India power stations an additional 14 rakes will have to be moved per day in 2001-02, through Mughal-Sarai Junction over the current average movement of 24 rakes a day. In addition, there will be movement to non-power consumers at about 5 rakes a day in 2001-02. Thus, movement through Mughal-Sarai needs to cater to about 43 rakes a day in 2001-02.
- (ii) A new rail link between Korba and Korea-Rewa coalfields, which will enable coal companies to take up rapid expansion with least investment in Korba, to cater to the demand from Western India.
- (iii) The identified important rail links in MCL covering Talcher and Ib Valley as per the Master Plan need to be completed.
- (iv) In CCL, the Tori-Dhonia link is critical for tapping the vast potential of NKP area.
- (v) In ECL, the Pirpainti to Madhupur link in the Rajmahal coalfield is vital for expanding the production potential of this field.

6.188 While the trunk routes are looked after by the Ministry of Railways(MOR), the movement facilities from the coalfields to the trunk routes is lagging due to resource crunch being faced by the MOR. It is, therefore, felt necessary by the MOC that it would have to fund these new infrastructural rail links through collections from excise duty leviable under Coal Mines Conservation & Development Act (CCDA) 1974, which is also meant for improvement of transport infrastructure in the coalfields. Presently, approximately Rs 335 crore is lying unspent in the consolidated fund of the Government of India which were collected in the form of excise duty since the inception of CCDA in 1974. As per the estimates of the MOC, rail line for a distance of 490 kms in different coalfields of CIL is required to be covered with an estimated cost of Rs.1127 crore.

6.189 The coal contributes 48% of the total railway revenue earning freight and out of this 68% is from coal moved to power sector. The regular increase in the coal freight charges are adversely affecting the landed cost of coal at consumers' end. This may lead to competitive dis-advantage to the domestic coal. Therefore, the increase in the freight charges of coal should be so devised to encourage the consumers to resolve to rail transportation.

Pit-head Power Stations

6.190 In order to avoid coal transportation bottlenecks, it is essential to the extent feasible to opt for coal pit-head based power plants, with suitable arrangements for evacuation of power to the consuming States. The potential locations for such coal-based power plants at Talcher and Ib in Orissa, North Karanpura in Bihar, Singrauli in U.P., etc., and lignite-based power plants at Jayamkondam, Mannargudi etc. in Tamil Nadu have been identified.

Port Facilities

6.191 Development of port facilities is an important area for facilitating transport of coal both indigenous and imported. Substantial imports are contemplated in the Ninth Plan in view of the projected deficits between demand and domestic availability. It has also been suggested by the 'Committee on Integrated Coal Policy', that the coastal-based power stations may import power grade coals for the purpose in view of the contemplated shortfall in the domestic availability in the Ninth Plan and beyond. Proper policy for developing in-land water-ways for coal transportation needs consideration to supplement rail and road transport capacities and to conserve energy.

6.192 In the Ninth Plan, it is proposed to provide mechanised coal handling facilities at Ennore near Madras and at Paradip for handling thermal coal. The number of berths for coal handling, to be added, are four, two in each port. Once these facilities are completed, the expected additional coal handling capacity will be of the order of 28 mt by the end of the Ninth Plan, of which 20 mt will be at Paradip and 8 mt will be at Madras amounting to a total capacity of 37 mt in 2001-02 against a total capacity of 8.5 mt in 1996-97 at the end of the Eighth Plan.

Productivity

6.193 Productivity in terms of output per man shift for CIL is targeted at 2.24 tonne (UG-0.69 t, OC-6.53 t), in 2001-02, against the actual achievement of 1.86 t (UG-0.57 t, OC-5.12 t) in 1996-97. In the case of SCCL the overall target is 1.30 t (UG-0.79 t, OC-4.50 t) in 2001-02, against the actual achievement of 1.19 t (UG-0.72 t, OC-6.25 t) in 1996-97. Measures would need to be initiated for improving the productivity further.

6.194 Productivity for HEMM in terms of machine utilisation in CIL in 2001-02 is targeted at 72% for shovels, 60% for dumpers, 63% for dozers, 65% for drills and 93% for draglines against the CMPDIL norms of 58%, 50%, 45%, 40% and 73% for these machines respectively. In the case of SCCL the targets are 57%, 55%, 72%, - , 98% respectively. There is an urgent need to review the capacities, as well as norms for better utilisation of HEMM, fixed by the CMPDIL.

Economics of Coal Projects

6.195 The reforms in the coal sector leading to deregulation of prices would change the economics of coal projects. Earlier, coal projects used to be considered for approval by the Government for low financial IRRs (12% or even less) in larger economic interests of the country

However, in view of the mounting losses of coal companies, the MOC decided not to consider any coal project for approval with financial IRR of less than 16%. This resulted in the shelving of many coal projects and the number of new coal projects being planned and approved came down sharply. This trend may lead to an unwelcome supply-demand mismatch. It is to be noted that coal projects invariably have long gestation periods and cannot be planned and implemented hurriedly. The recent recommendation of the 'Committee on Integrated Coal Policy' regarding negotiated pricing for any coal produced from new mines is therefore welcome. Coal companies would now be able to take up new projects based on negotiated prices. The selling price of coal from these projects to yield the desired financial IRR may be worked out through commercial agreements between the producers and the consumers. Therefore, the criteria of financial IRR at 16% should not become a hurdle in taking up of new projects.

Washed Coking Coal

6.196 The projected washed coking coal availability in 2001-02 from the CIL sources is 10.90 mt only. The incremental production in the Ninth Plan over the Eighth Plan is 1.2 mt. However, the projected yield of the washeries is only 48.2%. This is a matter of serious concern. All possible measures need to be taken for improving the yield and the capacity utilisation of washeries and thereby improve the availability of washed coal. Also, no new washery project is proposed by CIL in the Ninth Plan. The proposed imports of coking coal by the steel sector in 2001-02 is 19 mt on qualitative and quantitative grounds. Any additional availability of suitable quality of washed coking coal from CIL would reduce these imports and help the steel industry.

6.197 Utilisation of LVMC coals after washing needs to be taken up on priority during the Ninth Plan.

Beneficiation of non-coking coal

6.198 The notification dated 19.9.1997 issued by the Ministry of Environment & Forests (MOEF) makes it mandatory for thermal power plants located 1000 kms from pithead and also those located in urban areas/sensitive areas/ critically polluted areas, irrespective of their distance from pithead, excepting any pithead thermal power plant, to use beneficiated coal with ash content not exceeding 34% from 1st June, 2001. As there is only one non-coking coal washery, namely Piparwar, there is an urgent need to create the required capacities for beneficiating non-coking coal to comply with the MOEF notification. Also, 37% of the total despatches to the power sector, currently, are over long distances. This implies that about 120 mt of washing/beneficiation capacity would need to be created by 2001-02, which would require a capital investment of about Rs.3000 crore at a specific investment of Rs.25 to 30 crore per million tonne. The power sector has to enter into agreements with the coal companies for bearing this extra beneficiation costs. Also, to make the beneficiation economical, the washery rejects need to be utilised in FBC route power generation. Therefore in view of CIL's policy of not commissioning any washery of its own other than on BOO or BOOT basis and the long gestation period of 36 to 48 months required for building washeries and also the enormous costs involved, there is an urgent need for finalisation of the agreements with the consumers so that these washing/beneficiation capacities can be created well in time. Though the private sector was permitted to wash coal by suitably amending the Coal Mines (Nationalisation) Act, 1973, the response has not been as desired due to issues involved in the settlement of commercial terms with the power producers. Therefore, the setting up of washeries by private parties as agents of power stations need to be promoted. This could be on the lines of the Bombay Suburban Electric Supply (BSES) which has entered into the activity of washing and despatch of its linked coal.

6.199 There is a need for beneficiation of non-coking coal and it would be necessary for the consumers to bear the additional cost of beneficiation. Also, MOC may persuade coal companies to supply beneficiated coal to consumers on cost plus basis. Alternatively, beneficiation plants/deshaling plants may be offered on BOOT.

Domestic Fuel

6.200 In spite of the efforts being made to encourage coal-based domestic fuels like Coal Briquettes, Soft Coke and Special Smokeless Fuel (SSF), the growth in their production/consumption has not been encouraging. Suitable measures need to be taken to encourage increased private sector participation in producing these fuels to improve their availability at affordable prices, particularly for the people in rural areas.

Exploration

6.201 In the Ninth Plan, regional/promotional/detailed exploration activities need to be intensified for upgradation of reserves to 'proved' and 'recoverable/mineable' categories to permit projectisation of suitable blocks for increased production to meet the rapidly increasing demand for coal and lignite. So far, regional/promotional exploration has been funded through budgetary support and carried out by Geological Survey of India (GSI) and Mineral Exploration Corporation Ltd. (MECL). Detailed exploration has been funded and implemented by the National Coal Companies (NCCs) themselves.

6.202 In the emerging deregulated environment in the coal sector, the NCCs may no longer be interested in investing on exploration as it is not always certain that the particular coal bearing area on which the company has incurred heavy expenditure on exploration will be allotted to the same company for mining.

6.203 To ensure that there is no let up in regional exploration efforts, greater intervention by the Central Government in this area becomes imperative. The manner in which such exploration activity should be funded and the institution that should be entrusted with this responsibility are issues that assume considerable importance during the Ninth Plan.

6.204 Exploration is a continuous activity. The mineable coal reserves are estimated to be around 20 billion tonnes out of the estimated coal reserves of around 204 billion tonnes. The Plan envisages increased efforts for coal exploration with the objective to bring the estimated coal reserves into mineable coal reserve category. A total of 5.55 lakh metres of regional and promotional drilling for coal and 4.45 lakh metres for lignite is to be carried out during the Ninth Plan. The Plan envisages upgradation of additional reserves of 10 bt of coal and 15 bt of lignite. Both regional/promotional and detailed exploration will be extended to deeper areas. Regional/promotional exploration will be carried out over the uncovered parts of the known coalfields, areas where coal reserves occur at depths beyond present day depth-cut offs and the virgin coalfield areas which are unexplored so far. Besides, areas underlying the volcanic traps will also be explored. Detailed exploration will be carried out for proving the reserves occurring in the uncovered parts of the known coalfields, as well as reserves occurring within the depth range of 300 - 600 metres. Exploratory efforts for coking coal will be intensified in the new areas of Damodar Valley, as well as outside Damodar Valley - particularly in parts of Rewa Gondwana Basin.

6.205 Regional/promotional exploration for lignite will be carried out to trace the lateral extensions of the existing seams and for locating more deposits in geological continuity in Ramnad basin and other coastal areas in Tamil Nadu - Pondicherry region; Barmer, Bikaner and Nagaur basins in Rajasthan and in Kutch, Bhavnagar, Surat and Bharuch districts of Gujarat. Besides, systematic exploratory work for lignite will be carried out in potential coastal areas of Kerala, Karnataka, Andhra Pradesh and Maharashtra.

6.206 Considering the urgent need for accelerating exploration for coal and lignite in view of the sharply growing demand for coal and the inability of the NCCs in funding detailed exploration of the coal blocks and also to establish matching reserves, it is proposed to set up an Independent Body for both regional/promotional and detailed exploration activities which will be carried out by private and public sector agencies and will be financed from a Special Fund created for this purpose by levying an appropriate surcharge on every tonne of coal and lignite produced in the country. Exploration is a risk venture. It would, therefore, be necessary that financial incentives and concessions as allowed for infrastructure industries, are provided to Coal Sector, with an objective to mobilise resources for coal exploration. In order to encourage private sector participation, there should be legal back-up for commercial exploration agencies to be given priority for exploitation as well. However, they should apply for exploitation within the time frame prescribed after exploration of the block is completed.

Science & Technology

6.207 Thrust on completion of ongoing S&T projects and identifying suitable schemes for industrial application under the four thrust areas, namely , production, productivity & safety, coal beneficiation, coal utilisation and environment and ecology will continue to get priority, in the Ninth Plan along with the development of in-house R&D in coal companies. A three-pronged approach for development of S&T in the coal sector has been proposed by the Working Group as mentioned below:

- (i) Coal SIT Programme
- (ii) In-house R&D Programme
- (iii) Inter-sectoral Research

6.208 The thrust areas for IS-STAC programme have been identified as under:

- (i) Coal extraction technologies including extraction of developed pillars
- (ii) Coal bed methane
- (iii) High ash coal combustion
- (iv) Clean coal technologies
- (v) Coal water slurry
- (vi) Synthesis of organic chemicals from coal
- (vii) Integrated gasification combined cycle process for power generation
- (viii) Alternatives modes of coal transport

6.209 Greater emphasis needs to be given to the area of Coal Bed Methane exploration in view of the large potential that has been estimated in the coal fields of the country and as a new resource of commercial energy which is environmentally-friendly

Environmental Measures

6.210 The thrust on improving the environmental management of coalfield areas will continue in the Ninth Plan. Strict implementation of the environmental management plans for mitigating the adverse effects of coal mining like land degradation, mine effluents, sound and air pollution etc., will be undertaken for sustainable development of coal resources.

6.211 The issue of ash disposal is very critical from the environmental point of view. Most of the Indian coals, being used for power generation, have 35% or more ash content. Currently, about 203 mt of coal is being fired for power generation alone in the country generating about 71 mt of ash per annum. Therefore, appropriate measures are required for handling this huge quantity of ash being produced annually from burning the power grade coals. Some of the measures like filling the mined-out areas, both opencast and underground mines, with the ash from power plants to be carried by the railway wagons in their return, preparation of bricks for construction activities, ballasting the railway tracks, etc. maybe taken up. The services of some NGOs may be useful in implementing and monitoring of such projects for ash disposal with due regard to the environmental aspects. Some schemes, by providing subsidies from Government, may deserve consideration. Use of clean coal technologies like FBCC, IGCC etc. should be promoted.

6.212 Efforts towards stabilisation of the mined-out subsidence-prone areas of Raniganj coalfield and control of fires in Jharia coalfield will be continued in the Ninth Plan. Forestry maps will be superimposed over, and correlated with, the coal bearing areas maps for balanced development of coalfields with minimal damage to environment. Shifting the inhabitants from the affected areas is of utmost importance and to be pursued with the help of the local administration.

6.213 Cleaning of non-coking coal for transportation over long distances with a view to bring down the ash content to acceptable limits (34%) needs to be vigorously pursued both for environmental and economic consideration.

Rehabilitation Policy

6.214 As a number of coal mining projects were being delayed due to land acquisition and related rehabilitation of the project displaced persons, it was felt necessary to have an uniform rehabilitation policy at least in coal sector. A draft rehabilitation package was accordingly formulated for project-displaced persons in coal and power sectors which was considered by the Government. Final decision is awaited. A quick decision on this issue could reduce the time and cost overruns of the projects.

Private Sector Participation

6.215 The Ninth Plan envisages participation of the private sector in a big way in the coal & lignite sector. This is all the more necessary to tap the large production potential of the blocks offered to the private sector in order to augment domestic coal production and to reduce the gap between the envisaged demand for coal and domestic availability in the Ninth Plan and beyond. While the public sector undertakings (PSUs) will continue to have lion's share, efforts of coal PSUs would be supplemented by private sector coal companies to avoid any slippage between coal

demand and coal production levels. Coal has been delicensed recently. It makes it, therefore, imperative to bring in necessary legislative changes to the existing legal framework to facilitate private sector participation in coal production and distribution. To achieve this objective, Government has already initiated certain actions, efforts would need to be made to further streamline administrative procedures to expedite the necessary clearances and required legislative changes.

6.216 During the Ninth Plan, the ongoing process of deregulation will need to be accelerated by expediting the required legislative changes. This implies deregulation of the pricing of the remaining grades of coal, greater freedom to consumers to choose coal sources and negotiate the quantity and the price of coal to be purchased by them and removal of port/railway bottlenecks to increase and improve movement of coal, including imported coal, to provide a wider range of choice for the consumer.

Coal Sector Reforms

- Expedite legislative amendments needed to allow private sector participation in commercial coal mining.
- Allocation of coal blocks on competitive bidding basis both for exploration and exploitation by framing separate rules under MMRD Act, for grant of prospective license/mining lease.
- Integrated efforts for coal exploration for upgrading the resources.
- Setting up of Regulatory Authority for resolving any price disputes etc.
- Streamlining the administrative procedures for project clearances.
- Restructuring the coal sector by giving full autonomy to each of the subsidiary coal companies and doing away with the concept of holding company (CIL).
- Use of beneficiated non coking coal is mandatory for power stations located 1000 kms. away from pit-heads from 1st June 2001. Encouraging private sector in setting up of washeries will augment washing capacities.
- Thrust on clean coal technologies.
- Augmentation of port and rail infrastructural facilities to help movement of coal.

6.217 In view of the long gestation periods in developing coal projects, the necessary policy changes for facilitating private participation will be taken up on priority. For this purpose, the coal blocks will be offered on competitive bidding basis. It is suggested to frame separate rules under MMRD Act for grant of prospective license /mining lease in this regard.

6.218 In order to encourage investments and accelerate development in the coal & lignite sector, it would be necessary to extend the benefits (both tax and fiscal) being extended to the infrastructure sectors like power, telecommunication, ports etc, to the coal & lignite sector as well.

6.219 During the Ninth Plan, a legislative framework and an institutional structure need to be set up for the promotion and regulation of private sector participation in coal and lignite development. The coal and lignite companies should be encouraged to set up joint ventures, wherever possible, for developing new mines to attract private investment on a large-scale.

Singareni Collieries Co. Ltd. (SCCL)

6.220 The SCCL is a joint venture of Andhra Pradesh Government and Government of India

with equity share holding in the ratio of 51:49 respectively. Because of its location, SCCL primarily meets the major coal requirements of the consumers in the Southern States. If SCCL is to continue to play this role, a substantial enlargement in its activities would be necessary, which in turn would call for SCCL making investments on new coal mines' development on a much larger scale than now. This would not be possible unless the Centre and the State Government of Andhra Pradesh contribute towards a significant expansion in SCCL's equity base. Though the State Government has been able to contribute its share fully after a comprehensive capital restructuring plan implemented in 1994, it is now finding it difficult to continue the desired level of contribution during the Ninth Plan. Even otherwise, SCCL has been relying more and more on borrowings over the years for its new projects, specially those taken up during the Eighth Plan. The company has accumulated a heavy debt burden and is now, once again, not in a position to produce enough coal to meet the rapidly increasing demand of the Southern States. It is, therefore, imperative that the State Government should continue to contribute its share of equity. This will allow SCCL to expand its operations with the State Government retaining 51% control over the company. SCCL should also make efforts to form joint ventures for developing new mining areas.

Lignite

6.221 Lignite deposits are available in Tamil Nadu, Gujarat and Rajasthan. All these States are far away from coalfields which are mostly located in eastern part of the country. It is, therefore, necessary to formulate and implement more number of lignite projects and lignite based power plants to avoid unnecessary coal transport costs and stress on railway infrastructure. Thus priority for the development of lignite resources continues in the Ninth Plan. The Working Group has assessed the demand for lignite in 2001-02 to be 54.44 mt. The region-wise and sector-wise lignite demand is as given in Table-6.23.

Region/ State	Sector			Total
	Power	Cement	Industry	
Tamil Nadu	25.15	1.85	1.99	28.99
Gujarat	3.60	1.40	4.50	9.50
Rajasthan	14.00	-	0.90	14.90
Others	-	1.05	-	1.05
Total:	42.75	4.30	7.39	54.44

6.222 The production of lignite from NLC is targeted at 22 mt in 2001-02. The present capacity of 17 mtpa of Mine-I and Mine-II is to reach 21 mtpa by way of expanding Mine-I project from 6.5 mtpa to 10.5 mtpa. However, in view of the contemplated additional lignite consumption by TPS-I operating at 80% PLF and operation of TPS-II at 75% PLF the consumption of lignite is expected to increase from the current level. Besides, the TPS-I expansion project is also to come up in the Ninth Plan for which lignite requirement is 2.94 mt. In addition to this, NLC has to supply 1.9 mt of lignite to a new power project, namely, ST-CMS Unit of 250

MW in the private sector. The overall lignite requirement in Neyveli thus comes to 24 mt taking into account around 1.2 mt of lignite supplies to nearby industries, particularly, cement and paper units. This has necessitated the opening up of a new mine, namely, Mine-1A project for a capacity of 3 mtpa in the Ninth Plan. In addition, NLC has proposed Mine-II expansion project for 3 mtpa capacity linked to TPS-II expansion project of 500 MW in the Ninth Plan.

6.223 It is also proposed to develop through the State Government the Jayamkondam Block for 9.5 mtpa to support a 1500 MW generation capacity and the South of Vellar Block for 3 mtpa capacity to support 500 MW generation capacity in the Neyveli region. These mines and power projects are proposed to be set up by the power sector.

6.224 Besides the lignite production by NLC, production of lignite in the State sector by GMDC is projected at 10 mt and by Rajasthan at 13.1 mt in the year 2001-02.

Implementation of coal projects

6.225 During the Ninth Plan, efforts would need to be continued to further streamline project implementation procedures to reduce the delay caused due to problems of land acquisition, rehabilitation, environmental and forestry clearances, inadequate infrastructure facilities etc., so as to avoid cost and time overruns. The responsibility of identification and implementation of compensatory afforestation should be on the part of the concerned State Governments and the coal companies both public and private should deposit money for this purpose with the State Government and should be allowed to operate without any further delay. However, in order to ensure strict implementation of environmental mitigation measures, reputed NGOs alongwith the Governmental bodies may be involved.

6.226 Coal projects are time consuming and have long gestation periods. Greater number of economically viable coal projects both for production and coal beneficiation are to be formulated to satisfy coal demand and meet production targets/projections.

Safety & Welfare

6.227 As in the Eighth Plan, safety and welfare of the coal miners will continue to receive the utmost attention of the Government during the Ninth Plan. Coal industry will continue to strive to enhance the levels of safety in coal mine operations by means of safe mining technologies with a proper layout of mines and haul roads, installation of mining electronics for communications and operational controls in both underground and opencast mines, lighting and degassification of mines, installation of telemonitoring systems in gassy mines, training of workers, audio visual alarms etc. Computer-aided total mine management systems will be introduced in more mines on selective basis to improve both safety and productivity of mine workers.

6.228 The following major thrust areas for safety of coal mine workers have been identified for the Ninth Plan:

- (i) Avoidance of disaster due to inundation, fire or explosion by improved ventilation in mines.
- (ii) Establishment of telecommunication between underground workings and surface.
- (iii) Training and retraining of miners in safety management.
- (iv) Ensuring necessary supervision and enforcement of discipline.

- (v) Enforcement of traffic rules for HEMMs in OC mines.
- (vi) Special audit of inundation-prone mines.
- (vii) Introduction of RMR-based support system in all underground mines.
- (viii) Development of suitable hydraulic drilling machines for hard roof and roof bolting.
- (ix) Improved rescue services, etc.

6.229 A proper action plan for disaster prevention and mitigation has to be formulated by the coal companies.

6.230 Housing satisfaction in the coalfield areas will be increased from the current level of 60% to about 77% by the end of Ninth Plan in CIL and from 38% to 44% in SCCL. Water supply facilities will be provided to cover an additional population of around 2 lakhs in CIL and around 0.6 lakh in SCCL. It is proposed to provide 7 hospitals with 5772 beds in the Ninth Plan in CIL and 6 hospitals with 680 beds in SCCL by 2001-02. Besides, measures for development of roads, community buildings and school buildings have also been proposed.

Occupational Diseases

6.231 The occupational diseases associated with coal mining like pneumoconiosis, anthracosis, silicosis, etc. are mainly due to air-borne dust in the mines and working places. The working environment needs to be improved by proper ventilation and dust suppression particularly in the underground mines. Deep underground mines need to be ventilated by conditioned air. Regular medical checkups for coal miners as per the Statute should be rigorously pursued. Regular monitoring of air-borne dust in the mines and corrective steps should be strictly undertaken. Improvements in the mining technology in this regard for preparation of coal, transportation etc. in underground mines are desirable.

Problems of PSUs

6.232 The national coal companies have been facing various constraints in making available the planned coal production. Some of the major problems are enlisted below:

- i) Realisation of outstanding coal & power sale dues from power sector utilities.
- ii) Delay in project implementation on account of land acquisition procedures, forest land clearances and environmental clearances.
- iii) Rail infrastructure bottlenecks in the potential coalfields.
- iv) Legislative constraints to off-load some of the activities on contract basis in the coal projects.
- v) Law and order problems particularly in the State of Andhra Pradesh affecting the operations of SCCL.
- vi) Inability to introduce Voluntary Retirement Schemes (VRS) to reduce excess manpower, particularly in CIL, due to financial crunch.

The recommendations of the "Committee on Integrated Coal Policy" have already addressed these issues, which need to be expeditiously implemented in the Ninth Plan.

Coal Companies & Competition

6.233 In the liberalised economy the competition is the guiding factor for reliable product and services. Currently, 98% of the coal produced in the country is from national coal companies. Of

this, 88% is produced by CIL and 10% by SCCL. As such there is no competition in the industry. In order to inculcate the spirit of competition in the changed economic scenario, it is preferable to do away with the concept of holding company like CIL. Each subsidiary of CIL should be made independent and restructuring needs to be done as recommended by the “Committee on Integrated Coal Policy”. At the same time, facilitating private sector participation in a big way is another critical area in the industry to bring in competition amongst the coal producers. Unless private sector is given free hand, competition will be theoretical in nature particularly for public sector coal companies and there is always a scope for formation of cartel for price control etc.

Joint Ventures

6.234 It may now become imperative for the domestic coal companies to chalk out fresh strategies both for coal production and marketing. This could be in the form of having joint venture projects with majority or minority stake for coal production and beneficiation, in order to infuse higher level of resource availability, improved technology and overall efficiency. Coal companies would have to adopt more consumer-friendly approach towards coal quality and price. Some of the independent power producers (IPPs) may have the resources to take up mining activity as well, but, they may not be having the experience of mining coal. In such cases, these IPPs may like to enter into equity participation with the existing NCCs. Similarly, public sector utilities like National Thermal Power Corporation (NTPC) may like to enter into equity participation with the coal producers like SCCL/CIL for their proposed pithead power stations. On the same lines, the Steel Authority of India Ltd. (SAIL)/ other steel producers in the private sector, may also like to enter into joint ventures with CIL for developing new coking coal mines instead of banking only on imports for their future requirements.

6.235 The demand-supply gap, resulting from the delays in taking up new coal projects due to shortage of funds, may get reduced by these joint ventures. Further, these joint ventures will bring in consumer satisfaction with regard to quality, quantity and assured coal supplies with feasible economics. The coal companies both in public and private sector may explore the possibility of joint ventures in coal projects with the concerned State Governments. This would help in resolution of some of the procedural difficulties usually being faced in project implementation particularly land acquisition and rehabilitation of land oustees and forestry clearances etc.

Problems of High Ash, High Price of Indian Coals

6.236 The percentage of high ash coals particularly E, F & G grades of coal which contain more than 35% ash is approximately 49% of the total coal reserves in the country (204 billion tonnes). Production-wise, around 42% of total national coal production is in the form of these lower grades only. As a major part of these coals is used in thermal power plants, it has its telling effect on the performance of the plants and disposal of ash at the plant heads. Price-wise too, the landed cost of such coals at thermal power plants become disadvantageous specially due to railway tariff over long distances. Of late, the consumers located in coastal States like Gujarat, Maharashtra, Andhra Pradesh and Tamil Nadu are finding it cheaper to import coal from abroad than to purchase coal domestically.

6.237 Since the inferior grades of coal have lower calorific value and higher inherent ash content, their quality can be improved through beneficiation at the mine head. Beneficiation also reduces cost of coal transport and makes it economic where coal has to be transported over long

distances. Beneficiation of coal to be transported beyond 1000 km has been made mandatory by the MOEF from the year 2001 A.D. In totality, the landed price of indigenous coal, including railway transport charges and high State levies, has become higher on thermal equivalence basis when compared to the price of imported coal, specially in areas which are farther from the coalfields.

Financial Outlays

6.238 The Ninth Plan (1997-2002) assessed outlays for coal & lignite sector are given in Annexure-6.5.

OIL & NATURAL GAS

6.239 The Petroleum and Natural Gas sector has played a crucial role in the economic development of the country since Independence. The share of petroleum products and natural gas in the total final energy consumption has been increasing over the years and was 54% in 1996-97. The country is heavily dependent on imports of crude oil and petroleum products and this dependence will increase in the years to come. This underscores the need for increasing indigenous production. The National Oil Companies (NOCs) have made continuous efforts for discovery of oil and gas in order to meet the ever-rising demand in the country. Natural gas will become the most favoured source of energy due to its nature as a clean and environment-friendly fuel. The available options for maximising the share of gas in energy through domestic as well as imported sources to meet the energy demand are being examined. The Petroleum and Natural Gas sector was opened up for private participation at the beginning of the Eighth Plan. As of now, exploration, production, refining and marketing are open for private participation. The Restructuring Group for the Oil sector (R-Group) has estimated an investment of about US \$ 100 billion in the Petroleum and Natural Gas sector up to 2010 for ensuring the security of oil and gas supplies to various sectors of economy. It was against this background that major incentives were announced by the Petroleum and Natural Gas sector to attract a larger degree of private participation. A new exploration licensing policy has been announced recently by the Government to boost investment in exploration for increasing the level of hydrocarbon reserve accretion to enhance the domestic oil and gas production.

Review of the Eighth Plan

6.240 The major objectives for Petroleum and Natural Gas sector during the Eighth Plan included maximisation of indigenous production of crude oil and natural gas, a reasonable level of accretion of new hydrocarbon reserves through intensification of exploration activities, augmentation of domestic refining capacity with emphasis on cost-effective debottlenecking or expansion of existing refining capacity, encouragement to private sector participation etc.

Demand for Petroleum Products

6.241 The actual consumption of petroleum products was 79.16 million tonnes as against the Eighth Plan projected demand of 81.19 million tonnes in 1996-97. The compound average annual growth rate during the Eighth Plan period was 6.8 % as against the projection of 6.9% envisaged at the time of the formulation of the Eighth Plan. The cumulative consumption of petroleum products during the Eighth Plan was however lower at 341.69 million tonnes than the projected demand of 346.78 million tonnes due to lower than anticipated increase during the first two years of the Plan. These consumption figures include product sales through parallel marketing system (PMS). The share of imports of petroleum products

by private sector was less than 3%. The consumption of petroleum products during the Eighth Plan is given in Table 6.24.

Table 6.24
Consumption of Petroleum Products
(Million Tonnes)

Product	1991-92		1996-97	
	Actual	Target	Target	Achievements
Light Distillates	10.12	18.52		14.54
Middle Distillates	34.40	48.83		49.06
Heavy Ends	12.45	13.84		15.56
Total:	56.97	81.19		79.16

6.242 While the indigenous production of crude oil has declined, the growth rate of demand for petroleum products is rising at a fast pace. This has led to higher volumes of imports of petroleum products during the Eighth Plan. The import dependence in respect of crude oil to meet the demand of petroleum products has gone up from about 50% in 1992-93 to 60% in the terminal year of the Eighth Plan.

Exploration & Development

6.243 *Seismic Surveys*: Against the revised 2D departmental survey target of 130370 Seismic Line Kilometre (SLK), the actual achievements was 145604 SLK during the Eighth Plan, i.e. an achievement of 127.9%. For contractual survey, the target was 22973 Ground Line Kilometre (GLK) and the achievement was 21286 GLK i.e. about 98% of the target. For 3D seismic surveys against the survey target of 4281 Seismic Square Kilometre (SSK), the achievement was 4788 SSK i.e. an achievement of 124.6% for onshore areas. For offshore areas against the 2D survey target of 126023 SLK, the actual achievement was 109682 SLK i.e. an achievement of 93% and for 3D surveys against the target of 77093 LK the achievement was 79846 SSK, giving an achievement of 104%.

6.244 *Exploratory Drilling*: As against the target of 3042 thousand metres for both the onshore and offshore regions during the Eighth Plan period, the achievement was 2883 thousand metres i.e. an achievement of 95percent. This was mainly due to the lower drilling achievements in Upper Assam Basin due to land acquisition and other environmental problems.

6.245 *Development Drilling*: The achievement of development drilling during the Eighth Plan was 2718 thousand metres against the target of 3809 thousand metres i.e. an achievement of 71 percent. The lower achievement in development drilling target was due to the fact that some of the fields which were proposed to be developed by ONGC at the time of formulation of the Eighth Plan were offered for development to joint venture companies (JVCs).

Domestic Crude Oil Production

6.246 The Eighth Plan had emphasised the need for maximisation of domestic crude oil production. However, against a total planned production of 197.3 million tonnes during 1992-97, the crude oil production was only 154.28 million tonnes. The terminal year production

was only 32.90 million tonnes as against the target of 47.08 million tonnes. The medium-sized oil fields to be developed under Joint Ventures were expected to produce about 11 million tonnes of crude oil during the Plan period. The full production from these fields is now expected to materialise only in the Ninth Plan period on account of delays in award of contracts. The details of crude oil production during the Eighth Plan are given in Table 6.25.

Organisation	1991-92		1996-97		Eighth Plan	
	Actual	Target	Achievement	Cum. Target	Achievement	
1) ONGC						
i) Onshore	8.86	14.13	8.50	61.77	43.75	
ii) Offshore	18.96	29.25	20.18	118.96	94.57	
Total ONGC	27.82	43.38	28.68	180.73	138.32	
2) OIL	2.53	3.70	2.87	16.59	13.97	
3) JVC/Pvt.	-	-	1.35	0.0	1.99	
Total:	30.35	47.08	32.90	197.32	154.28	

Gas Production and Utilisation

6.247 Consequent to the lower domestic production of crude oil, the gas production was also lower than the Plan targets. In addition, there was a shortfall in the production of free gas also on account of delays in the development of gas fields. Against the Eighth Plan target of 125.42 billion cubic metres (BCM), the actual gas production was 101.71 billion cubic metres. Accordingly, despatches to downstream users of gas fell short of the target. The overall management of the domestic gas sector has improved during the Eighth Plan with better utilisation of the produced gas and minimisation of flaring. The level of gas flaring was reduced from about 10.3 % of the total production at the beginning of

Organization	Eighth Plan	
	Cumulative Target	Actual Achievement
<u>ONGC</u>		
i. On land	28.64	19.32
ii. Offshore	87.34	74.08
Sub Total:	115.98	93.40
<u>OIL</u>		
On land	9.44	7.47
JVC	-	0.84
Total:	125.42	101.71

the Eighth Plan to about 4.9 % in the terminal year of the Eighth Plan. The production of natural gas during the Eighth Plan is given in Table 6.26.

Hydrocarbons Reserves Accretion

6.248 The accretion to recoverable hydrocarbon reserves has not been very encouraging during the Eighth Plan period. The Reserves Replacement Ratio, which is a measure of reserves discovered to reserves depleted has declined to less than unity value, thereby implying that oil reserves are being depleted faster than being replenished. Against a total accretion target of about 1325 million tonnes of hydrocarbons during the Eighth Plan period, the accretion to recoverable reserves of oil and gas was 700 million tonnes. Exploration results during the past four years have been characterised by discovery of predominantly smaller size fields, creating uncertainties about their commercial exploitation. In order to intensify exploration, two major programmes have been launched in addition to the exploration programmes being implemented by National Oil Companies (NOCs). Starting from September, 1991 blocks in on-land and offshore areas are being offered for exploration on a continuous basis. So far, about 5 rounds of bidding starting from 4th round to 8th round have been announced for the offer of about 126 blocks but the response has not been very encouraging. In view of the low reserve accretion during the first two years of the Eighth Plan, an Accelerated Exploration Program was taken up in 1994.

POL Import

6.249 The import of crude oil has increased from 24.0 million tonnes in 1991-92 to 33.90 million tonnes in 1996-97 and that of petroleum products from 6.51 million tonnes to 16.86 million tonnes in the corresponding period. The import bill for crude oil and petroleum products is given in Table 6.27.

Item	1991-92	1996-97		Cum. Eighth Plan
	Actual	Target	Actual	Value
Net Imports				
a) Crude Oil	7869	4408	18332	60573
b) POL Products	5261	12892	13338	40399
Grand Total:	13130	17300	31670	100972

6.250 At the time of the commencement of the Eighth Plan, the total POL import bill was estimated to be Rs. 74,660 crore. However, the actual total POL import bill during the Eighth Plan period was Rs. 100,972 crore.

Refining Sector

6.251 The refining capacity at the beginning of the Eighth Plan was 51.85 million tonnes. The Eighth Plan envisaged augmentation of the domestic refining capacity to 65 million tonnes by 1996-97. The actual refining capacity at the end of the Eighth Plan was 61.55 million tonnes. The shortfall in the refining capacity was mainly due to delay in the commissioning of Gujarat Refinery Expansion by 3 million tonnes per annum. The highest

priority has been accorded to low cost expansion of the refining capacities. The new grassroot refining capacities already commissioned during the Plan period are at Mangalore (3 million tonnes) and Panangudi (0.5 million tonnes). Although a number of private sector promoters were issued Letters Of Intent (LOIs) for setting up refining capacities, only 15 million tonnes per annum Reliance and 9 million tonnes per annum Essar refineries, are likely to come up by the year 2001. There is no firm indication of refineries being set up by other private sector promoters.

Privatisation

6.252 The Government of India has thrown open the major segments in exploration and production, refining and marketing sectors for private investment. These are as follows :

Exploration and Production

- i) Announcement of exploration bidding rounds, on a continuous basis, for onland and offshore areas
- ii) Announcement of speculative seismic survey rounds.
- iii) Offer discovered oil and gas fields for development by private sector either solely or as joint venture with upstream sector PSUs

Refining and Marketing

- i) The setting up of new grass-root refineries by private sector either on their own or as joint ventures with downstream sector PSUs.
- ii) Setting up of lube refineries by private sector
- iii) Parallel marketing of petroleum products by private sector.
- iv) The oil sector PSUs are also being permitted to form JVs among themselves and with Indian and foreign companies.

6.253 Parallel marketing of a number of petroleum products by private sector has been permitted and imports have been decanalised. Due to constraints at ports and inland transport facilities, parallel marketing has succeeded only to a limited extent so far.

Outlays

6.254 As against the approved outlay of Rs. 24,000 crore during the Eighth Plan period, the cumulative expenditure was Rs. 40452.94 crore. The gross budgetary support was only Rs. 513.84 crore and the balance of the outlay was met by internal and extra-budgetary resources.

NINTH FIVE YEAR PLAN

6.255 Taking into account the likely demand and the estimated indigenous crude oil production, the import dependence of oil in 2001-02 may go up to 70% as against about 60% now. The following areas would be given specific attention:

- i) Acceleration of exploration efforts especially in deep offshore areas as also in the frontier areas.

- ii) Pursuing the possibility of acquisition of acreage in other countries for equity oil and provision of incentives to domestic oil companies for this purpose.
- iii) Special attention on improving reservoir management and increasing recovery rates for all major fields by at least 5%.
- iv) Formulation of an overseas oil and gas supply policy with a view to assessing the appropriate mix of supply source to optimise the cost.
- v) Deregulation/ rationalisation of the administered price mechanism in order to curb wasteful consumption, generate internal resources and attract private capital.
- vi) Examining the possibility of importing natural gas at competitive rates, particularly in the form of liquefied natural gas (LNG) at coastal locations.
- vii) Creation of adequate refining capacity (80-90% of demand of petroleum products) and balance 10-20% requirement to be met from imports for optimum supply mix and to take advantages of international oil prices.
- viii) Augmentation and upgradation for marketing and distribution facilities to meet the demand of petroleum products.
- ix) Improvement of product quality.
- x) Removal of existing administrative bottlenecks by further streamlining the existing procedure for Government approval for various projects and their implementation.
- xi) Setting up of regulatory mechanism, both in upstream and downstream sectors.
- xii) Setting up of strategic tankages for ensuring supply of crude oil and petroleum products.

Thrust Areas in Oil and Natural Gas Sector

Exploration and Production

- Expeditious implementation of the New Exploration Licensing Policy (NELP).
- Acceleration of exploration efforts, especially in deep offshore areas and also in frontier areas.
- Improvement in reservoir management and enhancing oil recovery.
- Exploration and exploitation of Coal Bed Methane.

Refining and Marketing

- International refining margins are currently very low. Therefore, grassroots refineries in future should only be set up if they are economically viable, keeping in view likely movements in the international refining margin over time. As the sector is expected to be fully decontrolled by 2002, the structure of effective protection for refining needs to be kept at appropriate levels to ensure economic efficiency.
- Grassroot refineries should be set up in partnership with international oil companies having financial and technical strength.
- Emphasis on infrastructure development for distribution and marketing of petroleum products.
- Improvement of product quality.

Project Implementation

- Removal of existing administrative bottlenecks by further streamlining the existing procedure for Government approval for various projects and their implementation.

Private Sector Participation

- Exploration, production, refining and marketing areas have been opened up for private participation. It is necessary to identify and sort out operational bottlenecks which stand in the way of private participation. Looking ahead to the abolition of price control by 2002, the policy for the Petroleum sector needs to evolve in a manner which ensures a competitive environment at the marketing level.

Demand Projections for Petroleum Products

6.256 The demand of petroleum products is estimated to grow at a compound annual growth rate of 5.77% and is expected to be 104.80 million tonnes in the terminal year of the Ninth Plan. This does not include liquid fuel requirement for power generation. The projected growth in demand for petroleum products is given in Table 6.28.

Table 6.28
Demand Projections of Petroleum Products (Million Tonnes)

Products	97-98	98-99	99-00	00-01	01-02
i) Light Distillate	16.87	18.25	19.62	21.03	22.15
ii) Middle Distillate	50.45	53.43	56.62	60.24	64.38
iii) Heavy Ends	16.41	16.88	17.43	17.80	18.27
Total	83.73	88.56	93.67	99.07	104.80

Exploration and Development

6.257 The policy of upgradation of basin categories by progressive exploration did not yield desirable results. With evolving geological concepts and experience in other parts of the world, it is seen that the less- explored basins in India e.g. Gondwana basins could possibly be more prospective and need to be accorded priority for exploration. Exploration efforts should therefore be spread over all the basins, including unexplored/less explored ones having favourable geological formations. This warrants a change in exploration strategy. 3D technology has been identified as a major seismic input for the development of the field, as well as for monitoring EOR processes. The focus of 2D surveys in Assam and Arunachal Pradesh areas would be on the North Bank of Brahmaputra river, the belt of Schuppen and further detailing of Eocene prospects in this region. The 2D surveys would also be carried out in Ganga Valley, Rajasthan and Saurashtra offshore areas. In view of the rapidly increasing demand for oil in the coming years, there is an urgent need to step up the level of indigenous oil production which has remained more or less stagnant during the last 5-6 years. This will call for enlarging exploration coverage of the different sedimentary basins in the country. A new thrust needs to be given for exploration in deep waters, in the North bank of Brahmaputra as also in other frontier areas. A certain minimum level of exploration by the National Oil Companies may still be necessary for upgrading the hydrocarbon resources and attracting private investments in this area. The strategy to be adopted to achieve this would be addressed during the Ninth Plan.

Hydrocarbon Reserve Accretion

6.258 The ONGC & the OIL have together planned to add 865 million tonnes of oil equivalent in-place hydrocarbon reserves during Ninth Plan. These efforts will be supplemented by addition of some reserves in the exploration blocks awarded to the private parties. An accretion of up to 200 million tonnes of oil and oil equivalent of gas (O+OEG) is envisaged in deep water areas where a breakthrough is expected in the Ninth Plan. The estimated recoverable reserves will be in the range of 245.84 to 342.72 million tonnes of oil equivalent. The cumulative oil and gas production during the Ninth Plan is projected at 335.16 million tonnes of oil equivalent. It may be mentioned that considering the reserve accretion and the production of oil and gas during the Ninth Plan, the Reserve Replacement Ratio (RRR) will be in the range of 0.73 to 1.0. All efforts would be made to bring the RRR above the unity level. Although a New Exploration Licensing Policy (NELP) has already been formulated, certain fiscal and financial incentives would be required under this Policy to attract investment for exploration. Exploratory activity should be given infrastructure status to attract necessary investments from both public and private sector companies.

6.259 The average recovery factor in India is only about 28% of initial oil in-place reserve. This is low by international standard. Improvement in recovery factor would yield additional oil and gas without any corresponding additionality in the reserve accretion. Special steps are necessary in this regard.

Crude Oil and Natural Gas Production

6.260 The cumulative production during the Ninth Plan period would be 180.82 million tonnes of crude oil and 144.53 billion cubic metres of gas. The projection for oil and gas production during the Ninth Plan is given in Table-6.29.

Table 6.29
OIL AND GAS PRODUCTION

Organisations	97-98	98-99	99-00	00-01	01-02	TOTAL
1. OIL PRODUCTION (Million Tonnes)						
i) ONGC	27.73	28.09	29.18	29.87	30.02	144.89
ii) OIL	3.10	3.20	3.29	3.38	3.50	16.47
iii) JVC PRODN	3.59	4.40	4.08	3.93	3.46	19.46
TOTAL	34.42	35.69	36.55	37.18	36.98	180.82
2. GAS PRODUCTION (MMSCMD)						TOTAL (BCM)
i) ONGC	62.75	63.81	65.49	65.29	69.04	119.04
ii) OIL	5.60	6.33	7.19	7.81	8.28	12.86
iii) JVC PROD.	6.73	7.26	6.98	6.82	6.79	12.63
TOTAL	75.08	77.40	79.66	79.92	84.11	144.53
MMSCMD: Million Metric Standard Cubic Metre per Day						
BCM: Billion Cubic Metre						

Gas Availability and Utilisation

6.261 There are shortfalls in the availability of natural gas vis-a-vis the commitments already made in the different regions of the country, especially on the HBJ pipeline and in Gandhar. In addition, the demand for natural gas in core sectors like power generation and fertiliser production has been on the increase. Many States are planning to set up short-gestation power plants, based on naphtha, through private promoters. Against this background, a clear view on the issues of large-scale import of naphtha/ natural gas (LNG) for power generation has to be addressed urgently. The need for involving the PSUs in the petroleum sector to have a participating interest in overseas oil and gas development for sourcing the new infrastructure would also be emphasised. The import of natural gas from Myanmar and Bangladesh is being considered.

6.262 The gas utilisation, particularly the offshore gas, would improve with the commissioning of gas compression, evacuation, shore-based treatment facilities as well as the augmentation of the capacity of HBJ pipeline in the first year of the Ninth Plan. The gas flaring would be reduced to minimum level after the implementation of this project.

The long-term gas demand would critically depend on;

- i) Supplies of other primary energy resources from domestic sources ;
- ii) Availability of transportation infrastructure to reach fuels to the end-users ;
- iii) Mix of make versus buy options as in the case of fertiliser sector ;
- iv) Long-term power plan, including mode-mix of power generation capacity creation.
- v) Stipulation arising from environmental considerations and long-term competitiveness of gas /LNG under expected currencies exchange rate parties

Refining Capacity

6.263 The refining capacity in the country at the end of the Eighth Plan was 61.55 million tonnes. As per the present estimates, this capacity may go up to 113.95 million tonnes by the terminal year of the Ninth Plan, which includes 24 million tonnes capacity addition from the private sector and 28.40 million tonnes of capacity addition from PSUs and the joint venture projects respectively. The refinery-wise capacity addition during the Ninth Plan is given in Table 6.30.

Refineries	97-98	98-99	99-00	00-01	01-02
1. Capacity as on 1.4.97	61.55	61.55	61.55	61.55	61.55
2. Panipat, IOC	0.00	6.00	6.00	6.00	6.00
3. Visakh, HPC	--	--	3.00	3.00	3.00
4. Numaligarh, NRL	--	--	3.00	3.00	3.00
5. Barauni Expn, IOC	--	--	0.90	0.90	0.90
6. Mathura Expn, IOC	--	--	0.50	0.50	0.50
7. Bina, BPC	--	--	--	0.00	6.00
8. MRPL Expn	--	--	6.00	6.00	6.00
9. Gujarat Expn, IOC	--	--	--	3.00	3.00
10. ESSAR, Pvt.	--	--	9.00	9.00	9.00
11. Reliance, Pvt.	--	--	15.00	15.00	15.00
Sub-total: Cap Addition	0.00	6.00	43.40	46.40	52.40
Total	61.55	67.55	104.95	107.95	113.95

6.264 The above projected refining capacity will be sufficient to take care of the total demand of petroleum products of 104.80 million tonnes (Table 6.28). It is possible that there may be slippages in the planned capacity coming on stream but nevertheless it implies a very low degree of import dependence in products in net terms, though of course, import dependence on crude oil will increase. The growth of refining capacity in future must be seen in the context of the fact that the international refining margins are currently very low. Therefore, grassroot refineries in future

should only be set up if they are economically viable, keeping in view likely movements in the international refining margins overtime. As the sector is expected to be fully decontrolled by 2002, the structure of effective protection for refining needs to be kept at appropriate levels to ensure economic efficiency. Grassroot refineries should be set up in partnership with international oil companies having financial and technical strength.

Infrastructure/Marketing

6.265 The increase in the refining capacity as also the need to cater to the large demand for petroleum products will warrant corresponding additional infrastructure in the form of port handling facilities for crude oil and petroleum imports, crude oil and product pipelines, crude and product tankage etc. The facilities that are necessary in this regard have been identified. Any delay in setting up these facilities on time may create serious supply problems, particularly in the North-Western region. The lower port capacity, coupled with poor operational facilities, results in a lot of idle time for the tankers and also affects product availability. This problem is bound to increase on account of the anticipated increase in demand and consequential increased imports during the Ninth Plan period. Similarly, the existing railways infrastructure will also need strengthening to handle the projected distribution of products.

6.266 In view of the above, pipelines, port facilities and product tankages would need to be accorded infrastructure status for attracting investments from companies, both in the public and private sector.

6.267 A number of product pipelines are proposed to be laid/upgraded during the Ninth Plan for facilitating the movement of petroleum products to the demand locations. These include, Bina-Jhansi-Kanpur pipeline, Cochin-Karur pipeline, Mangalore-Bangalore pipeline, Madras-Madurai-Trichy pipeline and LPG pipeline of GAIL and upgradation of Kandla-Bhatinda pipeline to 11.5 million tonnes. Efforts will be made to complete these pipelines during the Ninth Plan. Besides, it is also proposed to install many small feeder pipelines. A joint venture company, PETRONET has been formed by IOC, HPCL, BPCL and IBP for the implementation of petroleum product pipeline projects.

6.268 There is a need to increase strategic tankages for crude oil and petroleum products to avoid disruption of supply in case of war or natural calamities. Appropriate ways and means may be evolved to raise funds for this purpose. These funds may be administered by Government or by a regulatory authority.

Import of Crude oil for Refineries

6.269 Considering the domestic production level during the Ninth Plan, about 78 million tonnes of crude oil would need to be imported in the terminal year of Ninth Plan. Adequate arrangements in terms of port facilities and other pipeline infrastructure would need to be synchronised for the receipt and the despatch of crude oil from the port to the refinery gate. Some of the facilities that need augmentation are:

- i) Vadinar port in Gujarat is presently handling about 11 million tonnes of imported crude oil a year. The requirement will go up to 47 million tonnes by 2001-02 for the refineries in the Western & Northern regions.
- ii) New Crude pipeline from Vadinar to Bina refinery in Madhya Pradesh and capacity expansion of Salaya-Viramgam, Viramgam-Koyali and Viramgam-Panipat Pipeline.
- iii) Similarly, augmentation of crude import facilities at Mangalore, Cochin & Chennai for the refineries in the Southern region
- iv) Augmentation of import facilities at Haldia, or in alternate location, to supply adequate crude to Barauni & Bongaigaon refineries.

Private Sector Participation

6.270 A number of steps have been taken by the Government for encouraging private participation in the petroleum sector. The economic reforms, initiated in 1991, seek to delicense the industry and encourage private sector initiatives for supplementing and speeding up economic growth. This liberalisation process has also opened up the petroleum industry, both upstream and downstream sector. Continuous yearly exploration bidding rounds are being conducted and offers of small and marginal fields are being made for private participation in upstream sector. In the current context, the participation of private Indian and multinational companies will not only provide the risk capital required for the upstream industry but also help in new technology input. In the downstream sector, in view of the low risk environment, the participative response of private/multinational companies in the last few years is quite encouraging. It is necessary to identify and sort out operational bottlenecks which stand in the way of private participation. Looking ahead to the abolition of price control by 2002, the policy for the Petroleum sector needs to evolve in a manner which encourages the development of a competitive environment at the marketing level. This will also create a competitive environment for the NOCs to re-engineer themselves for improved performance and productivity. In the long run, the private sector participation will help the Indian oil industry to play a global role.

Pricing

6.271 The continuance of the present administered pricing regime is coming in the way of large-scale private participation. This aspect will also be suitably addressed to make Indian petroleum sector globally competitive. Reforms in pricing of petroleum products would also help in containing the oil pool deficit. The import of kerosene, LPG has been deregulated during the Eighth Plan period. The price of diesel linked to import parity has been announced by the Government in September, 1997. The selling price of all grades of diesel would now be based on import parity to be fixed on a monthly basis.

Environmental Management

6.272 To reduce the environmental pollution caused by the increasing number of diesel vehicles, Government has issued orders to supply HSD with sulphur content of 0.5 wt % and below in the four metropolitan cities of Delhi, Mumbai, Calcutta and Chennai w.e.f. April 1, 1996. As the effects of the environmental pollution are not confined to the metropolitan cities, the Government has decided to extend the supply of low-sulphur content HSD throughout the country, by April 1999. In pursuance of the above decision of the Government, nine refineries plan to put up hydro-desulphurisation facilities. The other five refineries are processing low sulphur crude and the stipulated quality can be produced without any additional facilities. In addition, supply of low lead Motor Spirit (0.15 gms/ltr) has been introduced from January, 1997. Supply of unleaded Motor Spirit for cars fitted with catalytic converters has been introduced in four metropolitan cities and will be extended to the entire country from April 2000.

Energy Conservation

6.273 The Government of India attaches a very high priority to conservation of petroleum products to contain the demand and to reduce the ever-increasing gap between demand and indigenous supply of crude oil and petroleum products. The Government has initiated several measures to promote conservation of petroleum products in the transport, industrial, agricultural and domestic sectors. These include adoption of measures and practices which increase fuel efficiency, organisation of training programmes in the transport sector, modernisation of boilers, furnaces and other oil-operated equipments, standardisation of fuel-efficient irrigation pumpsets, rectification of existing pumpsets in agriculture sector to make them more energy efficient and development, as well as promotion, of the use of fuel-efficient equipment and appliances like kerosene and LPG stoves in the household sector. These activities are promoted and coordinated by the Petroleum Conservation Research Association (PCRA) as well as the Oil Companies.

6.274 The following strategies are suggested for the intensification of conservation efforts.

- i) Energy conservation should be viewed as a source of energy and should be used to bridge the gap between demand and supply.
- ii) Energy conservation should be made attractive by providing incentives, wherever feasible.
- iii) Energy efficiency standards should be prescribed in line with the international standards for equipment, appliances and processes and energy labelling of equipment, appliances, technologies and processes should be made mandatory.
- iv) Fuel consumption norms should be established for different industries.
- v) Small and medium-scale industries should be encouraged to take up technology upgradation and phase out inefficient equipment.
- vi) Price structure for petroleum products should be rationalised to reflect properly the scarcity values.
- vii) Energy-audit should be made mandatory in energy intensive units.

6.275 There has been a progressive reduction in the fuel & loss in Indian refineries over the last several years. But it is still quite high as compared to the fuel and loss in the refineries overseas with similar configuration. In order to reduce energy consumption in the refineries, heat recovery needs to be optimised, steam leaks need to be minimised, advanced control

techniques need to be encouraged and low efficiency equipment need to be upgraded. For further improvement in energy consumption levels, bench-marking can be used as a reference platform to compare and identify the gaps, so that action plans to bridge the gaps can be prepared and implemented to the extent economically feasible.

Research and Development

6.276 Research and Development (R&D) has played a key role in the development of the petroleum industry. This is more so in the upstream sector where the discovery rate and production technology have shown a marked improvement with each innovation. In the downstream, such efforts, though not spectacular, have helped in improving the quality and product mix and in reducing the cost. In the petroleum sector, the R&D efforts are highly capital-intensive. The NOCs have to play a major role in such R&D endeavours because of high investment required in R&D in the petroleum sector.

6.277 It is necessary to ensure that the R&D agenda is decided with a market driven approach and demand articulation. The main thrust of R&D in upstream sector would be directed towards improving the quality of prospect, enhancement of recovery from the existing fields, technological aspects of marginal field development, deep-water technology and cost control in petroleum operations. In view of the growing demand for gas as a clean fuel, R&D attention is required for finding and developing unconventional resources like coal bed methane (CBM), gas hydrates etc. In the refining sector, the R&D efforts towards technology upgradation for optimising product output and quality, including cost control, will be vital in satisfying the product demand, environmental imperatives and competitiveness.

Financial Outlays

6.278 The assessed Ninth Plan outlay for the Petroleum sector is given at Annexure 6.6. The outlays would be met through internal and extra-budgetary resources of PSUs. In addition, substantial investment is expected from the private sector during the Ninth Plan.

NEW AND RENEWABLE SOURCES OF ENERGY

6.279 The major portion of the country's energy requirement is met from conventional energy sources like coal & petroleum. However, the vast majority of our rural population still depend upon the locally available non-commercial sources of energy like animal dung, crop waste and fuelwood. In order to ensure the efficient use of these energy resources in an environmental friendly manner, it is important to promote the programmes of non-conventional energy sources. The new and renewable sources of energy were accordingly given adequate importance during the earlier Plans and it is proposed to continue this momentum in the Ninth Plan. The programmes are promoted under the Central Ministry of Non-Conventional Energy Sources (MNES) in coordination with the Governments of States/UTS. The major programmes include power generation through wind, small hydro, biomass and solar energy, the socially oriented programmes to meet the rural energy requirements such as National Project on Biogas Development (NPBD), National Programme on Improved Chulhas (NPIC), Integrated Rural Energy Programme (IREP), solar energy for lighting, solar water heaters, solar cookers and other rural applications and other programmes with demonstration components. The promotion of these programmes in

decentralised specific locations is justified when one compares the difficulties and costs involved in the transportation and supply of conventional energy like coal, petroleum products, electricity, gas etc., to such remote and inaccessible areas. In addition, the new and renewable sources of energy programmes are environment-friendly and sustainable in the long run in view of the abundant potential of such sources. However, exploitation of these energy sources in a cost effective manner poses a challenge to the scientists and the planners at present.

6.280 The programmes to develop non-conventional energy sources have so far relied heavily on Central subsidies provided to individuals either directly through Indian Renewable Energy Development Agency (IREDA) or to States through Central and Centrally Sponsored Schemes. The emphasis in this sector during the Ninth Plan may have to shift from capital subsidies to interest subsidy and gradually move towards private entrepreneurship and community participation, without undue reliance on subsidies. In addition, it is necessary for the State Govts. to have an increased role in these programmes so as to have a visible impact of these programmes, especially in changing the lifestyle of the rural people.

Assessment of NRSE Programmes

6.281 While the Ministry of Non-Conventional Energy Sources (MNES) in the Centre had taken initiatives in promoting the non-conventional energy programmes during the Eighth Plan, it is, however, noticed that the matching efforts from the State Governments were lacking mainly because of the constraints of financial resources as well as institutional arrangements. The programmes which were socially oriented like biogas, improved chulhas and Integrated Rural Energy Programme (IREP) could not make the expected impact in changing the lifestyle of the people mainly because of the weak institutional set-up, lack of suitable mechanism to maintain and put the non-functional systems back into operation, lack of locally available trained and skilled manpower where such systems were installed etc. In the case of the centralised power generation programmes like wind power, small hydro, biomass, energy from urban and industrial waste, solar power etc., it was seen that there were problems in buy-back of the power generated from these sources by the state utilities at an acceptable and economic price. In addition, lack of suitable infrastructure facilities like sub-stations, transformers etc. to evacuate the power generated from the decentralised energy sources was also acting as a major bottleneck. The absence of a regulatory body to settle the differences between the entrepreneurs generating energy from non-conventional energy sources and the Utilities buying this power is also a major constraint in the promotion of such programmes. In the case of small hydro programmes, the State Governments were finding it difficult to provide matching resources along with the Central funds provided for this purpose. In the case of solar power, the prevailing high capital, as well as operational cost of such power projects, act as a hindrance in promoting it. In order to overcome these difficulties, efforts will be initiated during 9th Plan to access long-term funds in the national and international markets. Necessary action would have to be taken to remove administrative bottlenecks, if any, and reverse the slow down in critical areas in promoting Non-Conventional Energy Sources. The programmes to generate energy from urban/municipal wastes were facing the problems of the involvement of too many agencies like Central Ministry, State Governments, local bodies like Municipal Corporations, Municipalities etc.

6.282 The absence of a suitable legislation and policy for promotion of new and renewable sources of energy had also acted as a deterrent in accelerating these programmes. Concerted efforts have to be made in the new and renewable energy sources programme, particularly in the area of increased role of State Governments, effective institutional mechanism, both at the State

and the Central level so as to ensure that maintenance and trouble-free operation of the systems installed. Framing of a policy including a legislation with necessary regulatory mechanism in order to buy back the power generated from new and renewable sources and deliver the energy to the users is also necessary. It is also necessary to bring down the cost of energy, especially from solar and other such renewable sources through suitable R&D and enhanced manufacturing facilities. The indigenous production of equipment should substitute imports and pave the way for viable technologies.

REVIEW OF THE EIGHTH PLAN:

6.283 The thrust areas for development of new and renewable sources of energy (NRSE) during the Eighth Plan period were as under:

- Operational programmes of biogas, improved chulhas, low grade solar thermal devices would be enlarged and intensified so as to meet a significant proportion of cooking and heating needs in the country especially in the rural areas. At least 750 to 1000 MW of power capacity would be installed on the basis of NRSE technologies of wind energy, micro hydel, urban/agricultural wastes, solar photovoltaics and also cogeneration programmes wherever feasible.

6.284 An amount of Rs. 857 crore was approved as outlay under the Central Sector programme to install 7.5 lakh biogas plants, 100 lakh improved chulhas, setting up power generation projects of 100 MW through wind farms, 300 MW through utilisation of urban /agricultural waste, 200 MW through micro hydel, 1720 KW through SPV systems and other programmes including SPV wind pumps, solar cookers, and other non-conventional energy programmes.

6.285 A brief review of the major programmes of the Ministry of Non-conventional Energy Sources (MNES) is given below.

The physical achievements during the Eighth Plan in the socially oriented programmes are given below.

	Target for 1992-97	Achievement 1992-97
Biogas Plants	7.5 lakh	9.60 lakh
Improved Chulhas	100.0 lakh	127.00 lakh
Solar cookers	3.0 lakh	1.98 lakh

Wind Power

6.286 In the wind power programme against the target of 100 MW including private sector, the achievement during the Eighth Plan was 860 MW. The implementation of demonstration projects by States has provided operating experience, development of sites, etc and have resulted in commercial development of wind power. These projects have also encouraged the State Governments to declare their policies for private sector participation. All the States with wind power potential have declared their promotional policies. The private sector projects have gained

momentum in Andhra Pradesh, Gujarat and Tamil Nadu. Wind power activities have also started in other potential States such as Karnataka, Maharashtra and Madhya Pradesh

Biomass Power and Co-generation

6.287 In the biomass-based co-generation /combustion programme, against the Eighth Plan target of 300 MW the achievement was only 115 MW. During 1993-94 MNES has launched a national programme for co-generation in sugar industries. The response from the sugar mills is not yet very encouraging. The major constraints are non-availability of capital with the industries for putting up co-generation plant in the existing sugar mills, lack of proper policies in the States facilitating wheeling of surplus power, banking and buy back of power generated by the co-generating industries and non-remunerative payment for power exported by the co-generators.

Small Hydro

6.288 The progress of small hydro programme has been very slow. Against the Eighth Plan target of 200 MW including the private sector, the achievement during the first two years was only 17.37 MW. The achievement at the end of the Eighth Plan was limited to 93 MW only. The implementation of subsidy-based projects by the States was not encouraging. The allotment/clearance of private sector projects was also slow. The problems and constraints were mainly institutional and operational in nature. Inadequate State Plan allocation, lack of coordination among the agencies, low priority by SEBs, lack of clear policy for private sector participation are some of the constraints.

Indian Renewable Energy Development Agency (IREDA)

6.289 The Indian Renewable Energy Development Agency (IREDA) came into existence on 11th March, 1987 with the main objective of operating a Revolving Fund for development, promotion and commercialisation of technologies relating to new and renewable sources of energy (NRSE) by providing soft term finances. IREDA has now assumed global dimensions with assistance received from the Government of Netherlands, Line of credit from World Bank and with assistance in the pipeline from DANIDA, ADB etc.

6.290 The review of the non-conventional energy programmes on completion of the Eighth Plan reveals that the progress in respect of the socially oriented programmes like biogas, improved chulhas, solar cookers, solar PV programmes for lighting in villages etc., has been satisfactory and the Eighth Plan targets have been achieved. However, the progress in the case of the programmes for power production has not been very good during the Eighth Plan except in the case of wind power programme. In the case of small hydro power, the achievement during the Eighth Plan was limited to only 100 MW against the target of 200 MW. In the case of power from biomass also there was shortfall in achievements. Against the Eighth Plan target of 300 MW the achievement was only 135 MW.

6.291 The economics of decentralised power generation needs to be evaluated with reference to the delivered cost of grid electricity vis-a-vis local generation cost. Cost of grid electricity would include not only the generation cost but also the actual transmission &

distribution cost including the T & D losses. Decentralised power generation cost, on the other hand, will include a higher capital cost but low or nil fuel cost and also low distribution cost. A proper comparison of the relative costs of electricity at the consumer end is necessary to evaluate different options for non-conventional energy programmes for power generation. The Ministry of Non-Conventional Energy Sources (MNES), after realising the constraint of funds to be provided through Government budgetary support and taking into account the vast potential of non-conventional energy sources available for large-scale power generation, had formulated a strategy and action plan with revised goals to achieve 2000 MW of power generating capacity in the Eighth Plan. This action plan was based on the new strategy for market development and commercialisation. However, during the Eighth Plan the commercialisation of these programmes through private sector participation was successful only in the case of wind power programme.

Integrated Rural Energy Programme

6.292 The Integrated Rural Energy Programme (IREP) which was started as a planning exercise during the Sixth Plan in the Planning Commission was taken up as a regular programme during the Seventh Plan. In the middle of the Eighth plan, this programme was transferred to the Ministry of Non-Conventional Energy Sources from 1.4.94 onwards. This programme aims at meeting the energy requirement in the selected blocks of all the States/UTs by providing a cost-effective and optimal mix of all the energy sources.

6.293 The Central Sector outlays provided for IREP are utilised in creating capabilities for setting up planning cells in the States in their selected blocks. These funds were utilised in meeting the expenditure on staff component of IREP as well as their training. The States are providing funds for actual implementation of the programme by providing the energy devices like biogas plants, improved chulhas, solar cookers etc.

6.294 For proper upkeep and maintenance of the energy devices, technical back-up units are set up both at the State level and district level. So far 19, state level and 171 district level technical back-up units have been set up. A National Training Centre has been set up in Delhi and a Regional Training-cum-R&D Centre has been set up in Lucknow (U.P.). The Regional Training-cum-R&D Centers are in the process of being set up in Bangalore (Karnataka), Kheda (Gujarat) and Shillong (Meghalaya).

6.295 An amount of Rs. 85 crore was approved under the Central Sector as the outlay for the Eighth Plan taking into account the resource constraint. A target to cover at least 100 blocks during each year of the Eighth Plan with At least one block in each district, was fixed. The approved State Sector outlay for IREP for the Eighth Plan was Rs. 82.03 crore.

6.296 The Eighth Plan review, however, indicates that an expenditure of Rs.41.58 crore had been incurred in the Central Sector and in terms of physical achievements only on an average 60 to 70 blocks had been covered per year against the target of 100 blocks per year. Thus, there was shortfall in achievements both in physical and financial terms in this programme during the Eighth Plan.

Endless Source ? Yes!

The current utilisation of renewable energy sources is much below their potential. This is mainly due to the dispersed nature of these sources, development stage of some of these sources and high initial cost for renewable energy sources. The situation may not change drastically even at the end of the Ninth Plan. Therefore, the major areas of focus for the future must be to:

- Change the structure of the existing programmes from subsidy-driven to gradual commercialisation of non-conventional energy sources.
- Gradual phasing out of subsidies in the socially oriented programmes like Bio-gas, Improved Chulhas, Biomass and Solar Photo Voltaics programmes.
- Strengthening of research, development and commercialisation of non-conventional energy sources.

Renewable Energy Potential & Achievement

Source/System	Approximate Potential	Achievements (Up to 31.3.98)	Ninth Plan targets
Biogas plants (No.)	12 million	2.67 million	1.26 million
Improved Chulhas (No.)	120 million	26.29 million	19.6 million
Biomass/Gasifier	17,000 MW	105 MW	22 MW
Solar Photovoltaic	20 MW/sq.m.	28 MW	2.5 MW
Solar Thermal Systems	35 MW/Sq.m.		
Solar Water Heating	30 million Sq.m.	4.36 lakh Sq.m.	2.50 lakhs Sq.m
Wind Power	20,000 MW	970 MW	1200 MW
Small Hydro Power	10,000 MW	151 MW	175 MW
Biomass Power	1700 MW	3.75 MW	300 MW
Power from Municipal Waste	1,700 MW	3.75 MW	50 MW

NINTH PLAN

6.297 The major thrust of the programme for new and renewable sources of energy in the Ninth Plan would be in the following two areas.

- I) The structure of the existing programmes for non-conventional energy is to be changed towards gradual commercialisation of non-conventional energy. Special efforts have to be made for exploiting the large cogeneration potential available in the country. Necessary legislation and other measures have to be undertaken to enable producers of non-conventional energy to sell electricity to the State Electricity Boards at a remunerative price. Necessary policy initiatives along with legislation for selling the Non-conventional energy power produced by the private entrepreneurs at a competitive price to the utilities will be taken up during the 9th Plan.

- ii) The socially oriented programmes have to be restructured such that the direct capital subsidy provided by Government to these programmes are brought to the minimum level and a definite time frame is fixed during which the subsidies have to be phased out. The continuation of these programmes during the Ninth Plan should take into account the various financial and fiscal incentives, interest subsidy in place of capital subsidy and the implementation of some of the socially oriented programmes as a part of the other rural development programmes. Some of the socially oriented programmes which were continued under the Central Sector for a longer period, i.e. more than 2-3 Five Year Plans should be gradually transferred to the States. In such cases, the readiness of the States to implement these programmes is to be ascertained.

6.298 There is a persistent demand from the States to transfer all the CSSs to the States. While this demand has considerable relevance for the development of decentralised non-conventional energy sources, all the States may not have the necessary institutional and technical capability to undertake this task. It will be necessary during the Ninth Plan to define the roles of the Centre vis-a-vis the States for the development of non-conventional energy sources.

6.299 At the field level, the IREP and the other programmes for development of non-conventional energy sources need to be integrated into the other developmental programmes of the Centre and the State Governments.

6.300 The power generation programmes through different sources like wind, small hydro, biogas and solar power would be given adequate attention during the Ninth Plan. It is necessary to optimise the benefits under these programmes by conducting necessary evaluation of the work done in the past in order to consolidate the gains through these programmes. The programmes need an effective commercialisation approach with private sector participation wherever possible.

6.301 There is no satisfactory arrangement at present for absorbing in the grid, the surplus electrical energy available from decentralised energy supply systems. The Ninth Plan should take cognisance of this and deal with the necessary policy initiatives.

6.302 The provision of soft loans through financial agencies including Indian Renewable Energy Development Agency (IREDA) and other concessions for provision of land, infrastructure for evacuating the power generated by the private entrepreneurs have to be ensured for implementing an effective power generation programme through non-conventional energy sources during the Ninth Plan.

6.303 A major programme would be initiated for the production of power through cogeneration in industries, especially in sugar mills using bagasse as the fuel. This programme would be promoted through the MNES as per the existing pattern of financing which includes demonstration programmes in cooperative/private sugar industries, interest subsidy programme to enable the financial institutions to give soft loans at reasonably low rate of interest to the private sugar mill owners, necessary financial and technical support for the preparation of detailed project reports for setting up cogeneration power plants in the existing sugar mills etc. Cogeneration programmes in industries will be given necessary thrust during the 9th Plan as these

programmes can be implemented in a shorter duration and would also help the industries to meet their power demand and enable them to sell the surplus power to the utilities.

6.304 There is a need to consider enacting a legislation during the Ninth plan to enforce energy conservation standards, installation of co-generation systems etc

6.305 In order to promote the Solar PV programme, it is necessary to strengthen the R&D set up presently available and also bring down the cost of production of solar cells through fiscal and financial measures.

Fuel Wood Consumption in India

6.306 A large section of the society particularly the poor people are not in a position to meet their energy needs from sources like kerosene, LPG, etc., at an affordable price. As a result the dependence on fuelwood consumption is on the increase. The major source of energy for domestic sector both in urban and rural areas continues to be fuelwood and total requirement of fuelwood per year is estimated at 200 million tons of which 102 million tons are expected to be obtained from forest areas and the balance 98 million tons are obtained from the farm forestry.

6.307 The availability of wood from forests in terms of fuelwood is increasing on an average by 21 million tons per year. However, on a sustainable basis an additional 18 million tons per year are available. As a result 84 million tons to be met by excess removal from forest areas. This in turn brings pressure on the conservation of our forest resources.

6.308 The proposed solution to the problem is to development of the degraded forest lands. Studies show that development of around 60 million hectares of the degraded forest land in a phased manner would help result in meeting the fuelwood needs in full.

6.309 For developing such degraded lands, an estimated Rs.25,000 per ha has to be invested. In order to take up a programme of development of 5 million ha of such degraded land during a Plan period an amount of Rs.2500 crore will have to be invested This would result in additional fuelwood availability of 2 tons per year.

6.310 In addition to the development of degraded forest land the other programmes like Integrated Rural Energy Programme may also help in meeting the fuelwood requirements especially in rural areas. These programmes aim at conservation/ promotion of energy efficient chulhas, biogas, biomass and other solar energy devices.

6.311 Out of the total rural energy consumption 65% is met from fuelwood. As per the estimates of the Planning Commission, the fuelwood requirement is likely to go up to 180 million tons in 2001. This is in comparison to the actual consumption of 162 million tons in 1996. In this context, expansion of the biomass energy programmes comprising biomass production, biogas, improved chulhas, gasifiers, solar energy, etc. assumes importance in the Ninth Plan.

National Project on Biogas Development (NPBD)

6.312 While there is a notable achievement in the National Project on Biogas Development by the setting up of more than 9.6 lakh family size biogas plants during the Eighth Plan, the component relating to community/institutional biogas plants has not picked up to the expected levels. A dedicated involvement of the States concerned alone would help in promoting community-based plants as the promotion of such plants will be possible only by the strong involvement of the local bodies like panchayats, rural cooperatives and other micro-level administrative set-up in the villages. With this in view, it is recommended that this component of the biogas project should be transferred to the States with adequate budget provision under the State Plans.

6.313 In order to expand the family-size biogas plants under the existing programme, the Ninth Plan programme must include the low cost designs, improved working of the plants through new R&D initiatives, an effective mechanism to deal with the maintenance of the plants etc. It is also necessary to quantify the benefits through this programme for fuelwood saving. In order to justify the biogas programme as the best decentralised energy source especially in rural areas, the economic cost is to be taken as the basis. In the case of centralised source of energy like electricity etc. the actual cost is very high. Thus, detailed surveys need to be made for these programmes to quantify the economic benefits on the ground and also to make these programmes more effective. The Ninth Plan should aim at achieving a target of at least 12 lakh family-size biogas plants.

National Programme on Improved Chulhas

6.314 This is an ongoing programme since Sixth Plan with the provision of sizeable investments in the form of subsidy, both by the Central and State Governments. While the physical achievements exceeded the targets fixed during the previous Plans, it is a matter of concern that a large number of chulhas installed are either not functioning or not in use. An evaluation study conducted by the National Council of Applied Economic Research (NCAER) for the period 1992-95 indicated that about a fourth of the chulhas installed went out of order within a year. It was also observed that there was a marked indifference shown by a large number of beneficiaries in the maintenance of the chulhas. The study also indicated that the number of self-employed workers and their competence in these programmes are short of the requirements. Therefore, unless some structural changes in the training of the self-employed workers and the beneficiaries are made, expansion of the programme, howsoever desirable, is likely to lead to a low degree of success. This programme is being considered for transfer to the States during the Ninth Plan.

Integrated Rural Energy Programme

6.315 This programme which is a Centrally Sponsored Scheme, provides for Central Government grants to the States for developing capabilities in the States and UT for preparing and implementing Integrated Rural Energy Programme and projects. It further provides for the expenditure on staff salaries and their training. The State Sector component is utilised for actual implementation of the programme. While the progress achieved so far indicates that the programme covers around 660 blocks in the entire country, the actual efficacy of this programme is yet to be assessed fully. Although some evaluation studies have been conducted, they have

taken a very limited sample of around 12 blocks. The role played by the State Governments in this programme during the past had been very marginal. There were both institutional and financial constraints on the part of the States. This programme being a Centrally Sponsored Scheme is under consideration for transfer to States. The size and the programme components during the Ninth Plan are thus to be decided keeping in view the above points.

Power Generation Programmes

Wind Power

6.316 The wind power programme has attained a commercial stage and thus this programme during the Ninth Plan needs support only in terms of fiscal incentives to encourage increased participation of the private entrepreneurs to set up wind farms. Also a suitable regulatory mechanism is required to decide on the buy-back of the power generated by wind farm operators at an attractive and economic price and also providing for wheeling, banking and third party sales facilities. New demonstration programmes could be limited, as the existing wind farms would provide the needed demonstration experience. However, as far as wind resource assessment and surveys are concerned, it is necessary to carry out a nationwide survey during the Ninth Plan in order to identify the potential sites for development of wind farms. This programme should aim at achieving a target of at least 2000 MW during the Ninth Plan and most of it under commercial projects with the participation of private sector. The demonstration programmes must be kept to the minimum.

6.317 For wind energy fiscal concessions like accelerated 100% depreciation etc. were not needed. Although this aspect has been overdone, one can now pull back. What is required is to select a suitable technology and methodology through which, these technologies can penetrate at the fastest possible manner.

Small Hydro Power

6.318 This programme could not pick up during the Eighth Plan due to various reasons such as the absence of identified sites well in advance for taking up the programmes, the reluctance on the part of the State Governments to actively involve, the long gestation combined with time and cost overruns of small hydro projects etc. During the Ninth Plan, the structure of the small hydro programme needs to be suitably modified. Therefore, the size of the programme and the pattern of financing of these programmes have to take into account the points discussed above. During the Ninth Plan a target should be to set up at least 175 MW capacity of small hydro projects.

Biomass Power

6.319 The biomass power programme comprises the biomass combustion programme, biomass gasifiers and cogeneration programmes. A beginning had been made during the Eighth Plan for experimental biomass production, utilisation and development of gasifiers for different mechanical and electrical applications. More than 20 MW equivalent capacity projects have been installed against the Eighth Plan target of 2 MW. However, the cogeneration programme, especially in sugar mills using bagasse as the fuel, is yet to pick up in a major way. The main constraint for this is the lack of suitable promotional incentives and the absence of demonstration programmes. The promotional incentives modified recently are likely to result during Ninth Plan in private owners of sugar mills coming forward to replace their existing low pressure steam boilers by high pressure

ones and also carrying out other modifications so as to make them suitable for power generation. In addition, a regulatory mechanism is needed in respect of buy-back of the cogenerated power by State Utilities (SEBs) at an economic price and provide for facilities like wheeling, banking and third party sales etc. The programmes for power generation through biomass should aim at achieving a minimum target of 500 MW during the Ninth Plan and this programme will include the contribution from the private sector especially in the areas of cogeneration of power in sugar mills and power generation through biomass combustion.

Solar Power

6.320 The generation of electricity from solar energy, although technically feasible, is yet to reach the stage of commercial viability. At the prevailing cost of solar cells, the cost of installations as well as the cost of production of electricity from solar energy is very high compared to the cost of electricity produced from other conventional sources. Thus, an increased thrust is to be provided for R&D so as to upgrade the existing technology and to reduce the cost of production of solar cells. As such, there are no large solar power plants operating in the country. As of now, solar energy is useful for decentralised applications like lighting, water pumping, passive heating of buildings, water heating, cooking and other such applications. In order to promote solar power plants during the Ninth Plan, a preliminary survey has to be undertaken and a viable technology has to be found before going in for installing large size power plants both through solar thermal and solar photovoltaic technologies. It is desirable to try such plants on pilot scale so as to ascertain their trouble-free operation as well as the cost at which such power plants could be run. The activities during the Ninth Plan are required to focus on these aspects instead of merely proposing large size plants.

Energy from Urban and Industrial Wastes

6.321 The achievements during the previous Plans in this area were not significant. As such, there are no successful large-scale operation of plants to utilise urban waste for production of energy in the country. Several technological options are available to produce electricity from different sources like waste from industrial effluents, municipal/urban waste, tannery waste, vegetable/market yard waste, sewage, pulp and paper industry waste etc. The Ministry of Non-Conventional Energy Sources is at present implementing a programme assisted by UNDP/GEF consisting of 16 sub-projects on the above mentioned technologies. The feedback of these sub-projects would be available by the end of 1999. It is seen that a high degree of coordination between the agencies involved like the Central and State Governments, the municipal corporations and the municipalities in towns and other local bodies is required to successfully implement the programme of energy from urban/industrial waste. In view of the reasons mentioned above, the Ninth Plan programme must be limited to the setting up of demonstration projects, creation of conducive environment for the private sector to enter into this area by providing suitable incentives, provision of necessary arrangement for State Utilities (SEBs) to buy back the power generated. Necessary legislation, wherever required, to dispose of the waste and to generate energy from such waste etc. should be undertaken. Major capacity for electricity production from this source may not be possible during the Ninth Plan. However, a target oriented approach can give necessary push to this programme. A modest target of about 50 MW capacity addition under this programme can be achieved during the Ninth Plan.

Solar Energy Programme

6.322 Under Solar Energy Programme, stand-alone systems are installed for applications like the solar thermal water heaters, solar cookers, solar dryers, solar desalination systems and solar photovoltaic street lights, solar photovoltaic domestic lights, solar lanterns etc. In addition, hybrid systems using small aero generators, water pumping wind mills are also installed. The Solar Energy Centre presently functioning under the administrative control of the Ministry of Non-Conventional Energy Sources, is carrying out the activities of testing the solar thermal and photovoltaic devices. The Centre is engaged in R&D activities to develop indigenous components for solar power generation, development of materials suited to the requirement of solar thermal and PV applications etc. The ongoing activities under the solar energy programme are proposed to be continued during the Ninth Plan with enhanced target especially for rural applications like solar cookers, solar water heaters, solar lanterns, solar PV domestic lighting systems etc. While the use of solar energy for decentralised and stand alone applications is picking up, there were problems during Eighth Plan in respect of maintaining these systems. A mechanism has to be evolved during the Ninth Plan to ensure maintenance and upkeep of these systems with the involvement of the local people at the village level. Improved versions of solar cookers should be introduced. One should take note of the good technology available for solar cookers in Asia and other places.

6.323 But, for large applications like power generation, photovoltaic cells are highly expensive. SPV cells find applications in places like off-shore plants of ONGC. Similarly, for applications like communication equipments used by Armed Forces in remote places such as Ladakh regions, etc. and for Mount Everest and other Himalayan expeditions SPV technology is found suitable. In remote areas, in any case, alternative ways of making available electricity are very difficult. Under such circumstances solar energy devices become justifiable even at their higher initial cost. The efficiency level of solar PV cells has increased from 9% to 13-14% at present and this may go up further. Therefore, more focus has to be given to R&D.

6.324 The capital subsidies provided for solar thermal systems for water heaters and solar cookers were abolished w.e.f July 1993 and April 1994 respectively. In place of capital subsidy, interest subsidy is being provided at present through MNES Budget so as to bring down the effective rate of interest on loans by commercial banks to around 5 per cent. The solar water heating systems have attained a stage of commercialisation. The application of solar water heaters for domestic, industrial and other commercial purposes has created an increased demand. In this context, emphasis is to be given to the programmes of MNES for installation of solar water heaters during the Ninth Plan for which the targets are indicted in the following paragraphs. In the case of solar photovoltaic systems, the capital subsidy is still being continued. During the Ninth Plan it is necessary to phase out the subsidy in the major programmes of solar photovoltaics also.

6.325 During the Ninth Plan a target of 5000 KW (peak) capacity of solar power packs, 5 lakh domestic solar PV lighting systems, 10 lakh solar lanterns, 10,000 solar PV water pumping systems, 13 lakh square metre collector area of solar thermal water heating systems, 5 lakh solar cookers should be achieved. A programme of this size will justify the capital and interest subsidy provided for these programmes and a large spread of these devices could create a visible impact leading to increased manufacturing of the devices. Wherever possible the programmes have to be given a commercial and market oriented approach.

Indian Renewable Energy Development Agency (IREDA)

6.326 The Indian Renewable Energy Development Agency (IREDA) a public sector financial corporation, is functioning under the administrative control of MNES. IREDA provides soft loans to the entrepreneurs to set up different types of non-conventional energy projects which include wind power, biomass, small hydro, solar thermal, solar PV etc. In order to maintain an acceptable debt equity ratio, IREDA is provided equity support by the Government of India through the budget of MNES. During the Eighth Plan, an amount of Rs. 20 crore per year on an average was provided as equity support to IREDA.

New Technologies

6.327 The Ministry of Non-Conventional Energy Sources is promoting the R&D activities in new technologies in different areas like use of alternate fuels for surface transport in order to replace hydrocarbons. The programmes cover fuel cell technology, hydrogen energy, ocean energy etc. However, all these activities are still at research level and a planned programme may not be taken up during the Ninth Plan except in the case of the alternate fuel for surface transport. In the case of alternate fuel for surface transport, battery- operated vehicles have been tried in some urban areas. While the technology for promotion of such vehicles is available, some initial support to introduce such vehicles in congested metropolitan areas is required.

6.328 The Ninth Plan (1997-2002) assessed outlays for the Non-conventional Energy Sources in public sector are given at Annexure 6.7.

COMMON MINIMUM NATIONAL ACTION PLAN FOR POWER

A national consensus evolved for improving the performance of the power sector in a time bound manner and the following was adopted.

I. National Energy Policy

- * The Government would soon finalise a National Energy Policy.

II. State Electricity Regulatory Commission

- * Each State /Union Territory shall set up an independent State Electricity Regulatory Commission (SERC)
- * To set up SERCs, Central Government will amend Indian Electricity Act, 1910 and Electricity (Supply) Act, 1948.
- * To start with such SERCs will undertake only tariff fixation.
- * Licencing, planning and other related functions could also be delegated to SERCs as and when each State Government notifies it.
- * Appeals against orders of SERCs will be to respective High Courts unless any State Government specifically prefers such appeals being made to the Central Electricity Regulatory Commission.

III. Central Electricity Regulatory Commission

- * Union Government will set up a Central Electricity Regulatory Commission (CERC).
- * CERC will set the bulk tariffs for all Central generating and transmission utilities.
- * Licencing, planning and other related functions could also be delegated to CERC as and when the Central Government notifies it.
- * All issues concerning inter-State flow and exchange of power shall also be decided by the CERC.
- * To enable setting up of CERC, Central Government will amend Indian Electricity Act, 1910 and Electricity (Supply) Act, 1948.
- * To enable setting up of CERC, Central Government will amend Indian Electricity Act 1910 and Electricity (Supply) Act, 1948.

IV. Rationalisation of Retail Tariffs

- * Determination of retail tariffs, including wheeling charges etc., will be decided by SERCs which will ensure a minimum overall 3% rate of return to each utility with immediate effect.

* Cross-subsidization between categories of consumers may be allowed by SERCs. No sector shall however, pay less than 50% of the average cost of supply (cost of generation plus transmission and distribution). Tariffs for agricultural sector will not be less than fifty paise per Kwh to be brought to 50% of the average cost in not more than three years.

* Recommendations of SERCs are mandatory. If any deviations from tariffs recommended by it are made by a State/UT Government, it will have to provide for the financial implications of such deviations explicitly in the State budget.

* Fuel Adjustment Charges(FCA) would be automatically incorporated in the tariff.

* There shall be a package of incentives and disincentives to encourage and facilitate the implementation of tariff rationalisation by the States.

V. Private Sector Participation in Distribution

* State Governments agree to a gradual programme of private sector participation in distribution of electricity. The process of private participation shall be initially in one or two viable geographical areas covering both urban and rural areas in a State and the State may extend this to other parts of the State gradually.

VI. Role of Central Agencies

* The Central Government would make a comprehensive review of the role of Central Electricity Authority(CEA). Techno-economic approval of competitively bid power projects will be simplified and CEA shall not be concerned with capital cost, tariff and other commercial aspects of the project. Powers regarding approval of projects shall stand delegated to the States in respect of thermal power stations upto 250 MW. However, in respect of thermal projects beyond 250 MW capacity and other schemes, CEA's appraisal will continue in respect of planning and other related matters, such as to promote best optimal development of the river and its tributaries for power generation including proper hydro-thermal coordination; the suitability of location and size of thermal power stations; fuel linkages; adequacy of power evacuation facilities covering inter-state and intra-state and the transmission schemes form an integral part of the National Power Grid for maximization of benefits for the country as a whole. Subject to such technical clearances which shall be accorded within two months State Governments will have powers to accord approval for power projects.

* The role of FIPB will be minimised by putting as many projects on the automatic clearance route as feasible.

* Government of India will issue transparent guidelines and delegate more powers for environmental clearance to State agencies. State agencies should equip themselves with requisite physical and technical expertise.

* Government of India will delegate more powers to the States for issue of forest clearances. Statutory amendments will be made in the relevant Central statutes.

* Ministry of Environment & Forests have proposed the following delegation to the States for environment clearance:-

(I) All co-generation plants and captive power plants upto 250 MW

(ii) Coal based plants upto 500 MW using fluidized bed technology subject to sensitive areas restrictions

(iii) Power stations upto 250 MW on conventional technology

(iv) Gas/Naphtha based station upto 500 MW

VII. Autonomy to the State Electricity Boards

* States will allow maximum possible autonomy to the State Electricity Boards. The State Electricity Boards will be restructured and corporatised and run on commercial basis.

VIII. Improvements in the Management Practices of State Electricity Boards

* State Electricity Boards will professionalise their technical inventory manpower and project management practices.

IX. Improvement of Physical Parameters

* Government of India will carry out necessary amendments in the relevant Acts/Rules to allow private participation in transmission.

* State Governments will provide higher allocation for early completion of public sector projects.

* Renovation and modernisation of existing power plants shall be done in a time bound manner, PFC and other financial institutions will give higher priority for funding of R&M schemes. Clearance to R&M projects will fully be delegated to the States and no clearance will be required from CEA.

* PLF of those thermal power stations having less than 40% PLF at present would be increased by 3% annually, by 2% in case of those plants with PLF between 40 and 60% and by 1% for those plants with PLF over 60%. The overall PLF in the State sector in the country must come up to a minimum of 65% and the national average to 70% by 2002 A.D.

* Compulsory metering at substations and on all major feeders would be introduced. Compulsory metering of all new electricity connections as also of connections to agriculture sector exceeding 10 HP will be undertaken and completed in two years. All electric supplies would be metered by 2002 A.D.

* Compulsory annual energy audit of large consumers, i.e., 100 KVA and above would be undertaken.

* Time of the day metering would be introduced for big power consumers for better load management.

X. Co-generation/Captive power plants

* State Governments will encourage co-generation/captive power plants. To facilitate evacuation of power from these plants to the grids, States shall formulate clear and transparent policies for purchase of power and wheeling charges which provide fair returns to the Co-generation/Captive power plant owners. Captive power plants could also sell power to a group of industries as well as other categories of consumers in the said industrial zone or area. Wheeling of power from captive power plants to consumers located at a distance or through displacement basis shall be encouraged and the States will issue clear and transparent long term policies in this regard.

XI. Advance Action and High Priority for Hydro Projects

* A national policy on hydro power development will be evolved by the Central Government which, inter-alia, would include development of mega hydro projects, both in the public sector and the private sector, at locations with substantial hydro potential, along with concomitant transmission facilities for evacuation of power to other Regions/States. States shall prepare a shelf of fully cleared hydro projects for implementation on high priority. Special efforts will be made to promote hydro-electric projects in Himachal Pradesh and Jammu & Kashmir.

XII. Due Emphasis for Investment in North Eastern Region.

* Since there are geographical constraints in the North-Eastern Region, the Government shall constantly review the public and private investments being made in that region so that these States get equitable shares in the investments in the power sector.

XIII. Allocation of liquid fuels

* Government shall finalise the linkages of allocation of liquid fuels for power plants in consultation with State Governments soon.

XIV. Mega power projects at pitheads

* Development of mega power projects at mine pitheads, both in the public sector and the private sector, with transmission facilities for evacuation of power to other Regions/States would be encouraged.

XV Setting up of washeries

* Coal India Limited and its subsidiaries shall put up washeries at pitheads, wherever necessary. In case CIL cannot set up the washery, private sector would be permitted to set up such washeries at pitheads. In either case, supply, washing and transportation of coal shall be on the basis of legally enforceable commercial contracts.

Annexure - 6.2

FINANCIAL OUTLAYS IN RESPECT OF POWER SECTOR

(Rs. crore)

Sl. No.	SECTOR	OUTLAYS
1.	CENTRAL	
	(I) Ministry of Power	45591.05
	(ii) NLC - Power	1866.36
	(iii) DAE - Power	5842.00
	TOTAL (CENTRAL)	53299.41
2.	STATE	71227.00
	ALL INDIA	124526.41

Annexure-6.3

Sectoral Coal Demand

(in million tonnes)

Sector	EIGHTH PLAN					1996-97			NINTH PLAN		GROWTH RATE%	
	1991	1992	1993	1994	1995	Orig.	Rev.	Prov.	1997	2001	1996-97	2001-02
	-92 Act- ual	-93 Act- ual	-94 Act- ual	-95 Act- ual	-96 Act- ual	Targ.	Targ.		-98 Targ	-02 Proj.	1991-92	1996-97
COKING												
Steel	31.66	32.43	32.39	34.56	35.08	42.00	40.50	34.71	41.40	49.60	1.86	7.43
Coke Ovens										2.00		
Sub-Total: Coking	31.66	32.43	32.39	34.56	35.08	42.00	40.50	34.71	41.40	51.60	1.86	8.25
NON COKING												
Power	134.60	147.04	162.50	166.45	184.52	185.30	210.00	199.26	205.90	262.00	8.16	5.63
(Utilities)	(2.30)	(2.49)	(2.73)	(2.67)	(2.33)	(4.70)	(5.00)	(2.58)	(4.10)	(5.00)		
Railways	4.42	3.19	1.93	0.66	0.27	3.00	0.40	0.12	0.13	-	-51.38	-
Cement	9.97	10.89	10.36	11.12	11.00	17.50	17.50	11.25	18.20	21.40	2.45	13.72
Fertilizer	4.23	4.55	4.96	4.28	4.33	4.00	4.40	4.36	4.40	3.80	0.60	-2.71
BRK& Others	38.50	38.88	36.24	39.46		23.15	27.60	27.36	30.00	33.50	2.07	6.80
Power (Captive)					15.71	15.00	14.40	15.30	16.10	25.80		
Soft Coke/ LTC	0.99	0.63	0.57	0.33	0.32	4.00	2.50	0.01	0.15	3.00	-60.00	213.00
Export Sponge Iron	0.11	0.13	0.09	0.09	0.09	1.00	0.50	0.13	0.30	1.00	3.40	500
	0.40	*	*	*	1.86	2.00	3.20	-	3.40	6.10		
Colliery Consumption	4.06	3.95	3.83	3.69	3.40	4.00	4.00	3.48	3.40	4.00	-3.04	2.82
Sub-Total: Non-Coking	197.28	209.26	220.48	226.08	244.65	269.00	284.50	261.27	281.98	360.60	5.78	6.66
	(2.30)	(2.49)	(2.73)	(2.67)	(4.36)	(7.00)	(7.70)	(4.74)	(6.80)	(7.70)		
TOTAL:	228.94	241.69	252.87	260.64	279.73	311.00	325.00	295.98	323.38	412.20	5.27	6.85
	(2.30)	(2.49)	(2.73)	(2.67)	(4.36)	(7.00)	(7.70)	(4.74)	(6.80)	(7.70)		

Not: Figures in brackets are washery middling, and are not included in the totals.

* included in others.

Sectoral Targets Provl.	1996-97	1997-98	2001-02
Hot Metal Production (mt)	19.89	25.25	36.75
Cement Production (mt)	76.00	83.00	113.00
Coal Based Generation (BU)	265.50	286.00	360.00

Annexure-6.4

Companywise Coal Production

(in million tonnes)

<u>Company</u>	EIGHTH PLAN					NINTH PLAN			GROWTH RATE			
	1991	1992	1993	1994	1995	1996-97		1997	2001	(%)		
	-92	-93	-94	-95	-96	Orig.	Rev.	Prov.	-98	-02	1996-97	2001-02
	Act-	Act-	Act-	Act-	Act-	Targ.	Targ.	Targ.	Proj.	-----	-----	
	ual	ual	ual	ual	ual					1991-92	1996-97	
Coal India Ltd.												
ECL	24.52	24.06	22.60	24.85	27.80	38.50	31.50	29.65	32.50	37.00	3.87	4.53
BCCL	27.00	28.06	29.04	28.75	27.81	32.00	29.50	27.13	30.70	34.00	0.09	4.62
CCL	31.21	32.37	33.52	31.21	30.76	45.50	35.20	32.21	34.00	41.30	0.63	5.10
NCL	30.88	30.70	31.41	32.50	35.20	39.00	37.00	37.01	37.00	45.85	3.68	4.38
WCL	24.73	25.75	26.50	27.24	29.01	30.00	29.50	31.23	30.50	34.70	4.78	2.13
SECL	44.17	46.04	47.54	50.00	53.17	45.50	52.50	55.30	55.50	68.90	4.59	4.50
MCL	20.69	23.14	24.29	27.33	32.71	38.50	36.00	37.37	39.50	51.25	12.60	6.52
NEC	0.95	1.10	1.20	1.19	0.82	1.00	0.80	0.75	0.80	1.00	-4.62	5.92
Total CIL :	204.15	211.22	216.10	223.07	237.28	270.00	252.00	250.65	260.50	314.00	4.19	4.60
SCCL	20.58	22.51	25.21	25.65	26.77	33.00	30.20	28.73	31.00	36.00	6.90	4.61
TISCO/ HISCO/ DVC	4.56	4.38	4.73	5.01	6.08	5.00	6.45	6.28	6.50	7.60	6.60	3.89
Captive Blocks	-	-	-	-	-	-	-	-	-	13.00	-	-
TOTAL:	229.29	238.11	246.04	253.73	270.13	308.00	288.65	285.66	298.00	370.60	4.50	5.34

Annexure-6.5

**Ninth Plan (1997-2002) Financial Outlays - Coal & Lignite Sector
(at 1996-97 price level)**

(in Rs.Crore)

Outlay	
COAL & LIGNITE	17575.23

(Note: The Outlay for Neyveli Lignite Corporation- Power, at Rs.1866.36 crore, is reflected under Power Sector.
The total outlay for Ministry of Coal including NLC - Power is Rs.19441.59 crore).

Annexure-6.6

Financial Outlay -Petroleum & Natural Gas Sector

(Rs. Crore)

Sl.No.	Item	Outlay
1.	Exploration & Production	27603.00
2.	Refining & Marketing	46411.18
	Total	74014.18

**FINANCIAL OUTLAYS IN RESPECT OF NON-CONVENTIONAL
SOURCES OF ENERGY**

	(Rs. crore)
MNES	3800.14

CHAPTER 7

TRANSPORT

Overview

The Problem

7.1.1 Inadequacies and imbalances in transport threaten to constrain economic growth and the quality of life in both urban and rural India.

7.1.2 The country's transport system, which comprises rail, roads, sea port and airports, is facing capacity saturation, which means lost economic opportunities and deterioration of assets and services. The modal mix of transport has been continuously shifting against the railways with the result that bulk of the freight (over 60%) and passenger traffic (over 80%) is carried by road, which is undesirable from economic as well as environment angles. A burgeoning energy import bill is one of the direct consequences of this.

7.1.3 In the urban areas, lack of adequate mass transport, complete absence of demand management and policy distortions in the area of fuel pricing and bank finance have resulted in an explosion of personalised transport comprising mainly of scooters and cars. This has contributed to high levels of pollution and alarming rates of accidents. On the other side, a large number of villages lack a reliable all-weather connection with nearby markets and towns. Some areas like North-East and J&K have remained physically and emotionally isolated because the transport system has not linked them with the rest of the country. Certain environment friendly and socially cost-effective means of transport like coastal shipping, inland water transport and non-mechanised transport, human or animal powered have remained undeveloped.

Inadequacies and Imbalances

7.1.4 Annexure 7.1.1 indicating the growth of traffic and network underline the capacity constraints facing all the modes of transport. The Indian Railways have extended their route length from 53,596 kms. in 1950-51 to 62,725 kms as on 31.3.97 registering an increase of 17% only. On the other hand, freight in tonne kms carried has risen six-fold, while passenger kms. have grown by five times during the same period. On an average, only about 2000 kms have been added to the system in each decade, while the Eighth Plan contribution was even lower at 267 kms. Further, the Indian railway system is a multi-gauge one and the Broad Gauge part is 41,971 kms, of which only about 15,000 kms. are double/multi-track, despite the heavy congestion in the high density corridors.

7.1.5 The aggregate length of roads, which was 0.4 million kms in 1950-51, has increased eight-fold to 3.32 million kms in 1995-96 but the number of passenger buses has gone up 13-fold from 0.34 lakh to 4.5 lakh and goods vehicle fleet 22-fold from 0.82 lakh to 17.85 lakh in the corresponding period. Out of the total road length constructed during the Eighth Plan, 66% were constructed under Jawahar Rozgar Yojana (JRY) These roads are of limited value from the point of view of movement of heavy traffic. Further, only 20% of the surfaced roads are estimated to be in good condition, which compares unfavourably

with other countries*. The national highway network, which carries about 40% of the road traffic, is just a little over 1% of the road network and just over 20% of the national highway network is single lane.

7.1.6 In the port sector also there has been an 11-fold increase in sea traffic from 19.38 million tonnes to 227.26 million tonnes from 1950-51 to 1996-97 with inadequate addition to the port capacity during the period. Much of the equipment at the ports is overaged and technologically obsolete. The major ports are operating at more than 100% capacity, as against the international utilisation norm of 55 to 65 per cent. This has resulted in congestion and increase in turn-around-time from 6.7 days in 1960-61 to 8 days in 1997-98.

7.1.7 Expansion of air traffic, of Indian Airlines from 83 million Revenue Tonne Kms (RTKMs) in 1960-61 to 698 million RTKMs in 1996-97, has also taken place without commensurate increase in the ground handling capacity or upgradation of navigational equipment at the airports.

7.1.8 Not only is the network to be further developed and strengthened, there is also a need to redress the imbalances in the spread of the transport infrastructure and facilities. Annexure 7.1.2 presents the position regarding the availability of rail and road network State-wise. In most of the North-East and J&K, road length per 100 sq. km of area is quite low as compared to the other States in the country. In J&K and Arunachal Pradesh the average is as low as 5.9 and 12.2 per 100 sq. km. respectively, compared to all-India average of 73 per 100 sq.km. The railways have very little presence both in J&K and in most parts of the North Eastern region. A high level Commission, which enquired into the backlog of the basic minimum services and the infrastructure needs in the North Eastern region, has characterised the lack of adequate connectivity both intra-regionally, as well as with the rest of the country, as the most important problem of the region.

7.1.9 Another imbalance is the rural-urban dichotomy. Much of the network of rail, roads, ports and airports is geared to the needs of the urban economy, while the vast rural hinterland is very poorly served by communications. Of the nearly 6 lakh villages, only about three-fifths are known to be connected by all-weather roads at the end of the Eighth Plan. Even in respect of the larger habitations i.e. villages of more than 1000 persons, connectivity is estimated to be of the order of 85 per cent at the end of the Eighth Plan and here also, most hilly areas and the States of Orissa, Bihar and Madhya Pradesh present a particularly patchy picture.

7.1.10 The economic costs of the gaps in the transport infrastructure are easy to surmise. The congestion on the roads leads to low speeds, resulting in high energy consumption and increased pollution. It is estimated that lack of proper maintenance has increased the fuel consumption by 10-15 per cent per annum. In monetary terms, the loss to the economy is estimated to be Rs.3,000 to 4,000 crore per year. The delay on the roads and ports also results in high inventory costs for the industry, thus affecting its competitiveness vis-a-vis international industry operating on JIT(just-in-time) inventory principles. The congestion at the ports and the insufficiently developed air services also affect foreign investment decisions, which often place a great premium on the infrastructure.

7.1.11 The extreme overcrowding in almost all modes of passenger travel restricts personal mobility and the crush loading of suburban services, e.g. in the Mumbai suburban system, is injurious both to working efficiency and human dignity. The weaknesses of the transport infrastructure in the rural areas and in the remote regions deny them meaningful participation in the national economy. Environmental pollution of land, air and noise also affects the quality of life both in the cities as well as in the country side.

* Indonesia and Brazil 30%, Korea 70%, Japan and USA more than 85%

Distortions in the Inter-modal Mix

7.1.12 The railways and the roadways are the two main modes of transport carrying the bulk of freight and passenger traffic. Successive policy statements, including the National Transport Policy Committee Report (1980) as well as the subsequent Plan documents have recommended that the railways should be given the lead role in the transport sector because of their greater energy efficiency, eco-friendliness and relative safety. However, the railways have continued to yield their dominant position to the road transport. While in the freight traffic, the share of the road transport has been estimated to have increased from 11% in 1951 to 60% in 1996, in passenger traffic, the share has gone up from 32% to 80% during the same period.

7.1.13 The main reason for this continual slide in the railways' share has been the inability of the system to grow in proportion with the increase in the traffic requirements of the growing economy. Since the railways are owned and managed entirely by the Government, resource constraints have all along led to under-funding of the system, which has meant under supply, both quantitatively and qualitatively. Faced with capacity constraints, the railway system chose to concentrate on the movement of bulk materials for the core sector, namely power, steel, cement etc., thus losing its clientele in the high value non-bulk sectors which often recorded higher growth rates. The skewed tariff policy, implying cross subsidisation of passenger traffic, has meant a continual increase in freight rates which, in turn, are driving away even some of the long distance bulk traffic from the railways to the roadways. On the other hand, road traffic being largely in the private sector has moved aggressively to occupy the space vacated by the railways and in this it has been aided by a liberal permit and regulatory system for national trucking, cheap finance made available by the banking sector and an energy pricing policy which has subsidised diesel, while the railways pay an exceptionally high tariff for their electricity consumption.

7.1.14 International trends indicate that with the growth of the highway and aviation technologies the traffic tends to shift away from the railways. However, in the continental economies like USA, China and erstwhile Russia, the railways have maintained their dominance. India's size, geography and resource endowments also mandate a dominant role for the railways, not to mention the environmental considerations, which in recent years are causing a rethinking even in the developed world.

7.1.15 In the inter-modal context, the coastal shipping and inland water transport also have not been able to realise their full potential of growth though they are more energy efficient, environmentally cleaner and economical. In the case of coastal shipping, the development has been stymied by the constraints of port capacity and customs and procedural problems. Inland water transport has its spatial limitations and most of the waterways suffer from navigational hazards like shallow water and narrow width of channel during dry weather, siltation, bank erosion, absence of infrastructure facilities like terminals and inadequacy of navigational aids. At present, the share of these modes of transport is estimated to be less than 2%, though they have undeniable potential for relieving the pressure on surface modes of transport.

7.1.16 Non-motorised transport modes, powered by human and animal energy, could also play a bigger role in the developing transport scenario of the country. Bicycles, rickshaws and similar vehicles, and even hand carts, have a considerable role in urban areas for catering to short trips in congested areas and on narrow streets and lanes and for providing access to formal mechanised modes of transport. Animal carts are an essential part of the rural agricultural economy. But the elitist approach has not focussed on the development of these modes of transport as much as on the formal motorised modes, despite their manifold benefits like relatively lesser cost, simple technology, large employment potential, non-polluting operations etc. The provision of simple technological inputs of improved designs, standardisation of spare parts and ensuring safe and smooth movement could go a long way in achieving greater complementarity of various modes of transport catering to the varied needs of the different sectors of the economy.

7.1.17 In the urban, particularly the metropolitan areas there has been an explosion of personalised transport largely due to the failure of the Government to make available mass public transport in adequate measure. This trend has been abetted by the flooding of the consumer market with cars, light commercial vehicles and two & three wheelers, motorbikes of alluring varieties, financed by cheap credit and powered by subsidised fuel. This, combined with an almost total absence of demand management and rational road-use policies, has led to a phenomenal growth in the number of personal vehicles in recent years in the metro cities, most prominently in Delhi. The result has been a worsening grid-lock of traffic, causing fatal and other serious accidents on an increasing scale. The high levels of pollution have earned for Delhi even an international ranking.

Transport & Energy

7.1.18 In the transport sector, energy planning has a special significance not only because transport is the second largest consumer of energy next to industry, but also because different modes of transport use energy with varying intensity and efficiency. The transport sector consumed 18.80 million tonnes of oil equivalent (MTOE) of energy in 1984-85, which increased to 27.80 MTOE in 1993-94, registering an increase of about 48 per cent. In the case of liquid fuel, the consumption has gone up by 89% in the corresponding period. This points to the need for modifying the inter-modal mix in favour of energy efficient modes on the one hand and promoting energy efficiency in all modes by encouraging better design of vehicles through fiscal incentives, if necessary, better geometry and surfaces of roads and promoting greater awareness in the driving community as a whole, on the other.

Safety

7.1.19 The continuous increase in the growth of traffic in various modes of transport has raised serious issues concerning public safety. Table-7.1.1 gives the details of the accidents in different modes over a period.

Table -7.1.1
Accidents in Rail & Road Sectors

Year	Rail		Road	
	Total accidents (Nos)	Accidents Per lakh Train Kms.	Total Accidents ('000)	Accidents Per lakh Vehicles
1.	2.	3.	4.	5
1971	840	18	120.2	6.4
1981	1013	20	161.2	3.0
1991	532	9	294.0	1.4
1995	501	8	328.1	1.1

Safety of operation is an area of concern in all modes of transport. Though the accident rate is coming down, the number of fatalities is still high. In road transport the number of fatalities increased from 15,000 in 1971 to 59,900 in 1995 which is truly unconscionable. Road safety has been a casualty both in the urban areas and the highways. In railways, the human failure and lack of proper man-machine interaction has affected safety. Another area of concern is the large number of unmanned level crossings, which are the scenes of frequent accidents. The provision of infrastructural facilities, particularly in the shape of modern commercial navigational equipment has lagged behind the growth of air traffic which has jeopardised the objective of providing safe and reliable air services. Country boats carrying men and materials in Bihar, West Bengal, Orissa and other parts of the country are often involved in accidents caused by overcrowding, coupled with the use of unserviceable crafts, inadequate traffic regulation and total absence of safety equipment on board.

Environment & Transport

7.1.20 Both the construction of transport infrastructure and the provision of transport services have an adverse impact on environment. The demand for infrastructure is increasing at a rapid pace and this is likely to go up leading to further use of the scarce land resources and the attendant problems of pollution of various kinds. The different modes of transport cause environmental degradation of various degrees and in diverse manner. The rail track and the roads use up scarce land and their construction has an adverse effect on the physical or the natural features of the areas, including a reduction in the vegetation cover. The road transport causes air and noise pollution, while the water transport poses the risk of marine pollution of the coastal waters. While there is a need to contain pollution and environmental degradation caused by all modes of transport, what is more urgently required is the containment of pollution caused by the operation of road transport, particularly in the mega cities. Table-7.1.2 presents the vehicular pollution load in some important cities.

Table-7.1.2
Vehicular Pollution Load (tonnes per day)

City	1987	1994
Delhi	871.92	1046.30
Mumbai	548.80	659.57
Bangalore	253.72	304.47
Calcutta	244.77	293.71
Chennai	188.54	226.25

It is necessary to encourage such modes of transport which are not heavily dependent on scarce land resources and to adopt construction procedures and practices which do not disfigure the land and do not create ecological problems. Strict enforcement of the anti-pollution laws, applicable to the transport sector, is also necessary.

Technology Upgradation

7.1.21 Transport technology has a great influence on the productivity and safety of the transport sector. Thus, the modernisation of the transport system and the incorporation of the emerging technologies are essential elements of transport planning, which must, at the same time, be based on the local needs, instead of being imitative of the technology used in entirely different circumstances in some developed countries.

7.1.22 Technology upgradation has been a thrust area in the successive Five Year Plans, but, despite this, the progress has been slow, particularly in respect of bus chassis, engine design, multi-axle vehicles, construction of roads, cargo handling equipment at the ports, navigational and communication facilities at the airports, modernisation of rolling stock and signalling system in the railways. The position is much worse in regard to non-motorised transport. It is necessary to upgrade the technology in all these areas with a view to improving the productivity of operation and the quality of service, besides making the transport system more safe and reliable.

Strategy for the Ninth Plan

7.1.23 A comprehensive policy package is necessary to address the diverse issues facing the transport sector. It is imperative to strengthen the Indian railway system in its reach and capacity so that it effectively links the distant parts of the country, helps to develop the economic potential of the backward areas and carries the bulk of the nation's long or medium haul traffic. Similarly, the road network needs to be expanded and strengthened to improve accessibility of the hinterland, especially the rural areas and to facilitate the integration of the isolated parts of the country. The length and breadth and the quality of the highways must be improved greatly as part of a national grid to provide for speedy, efficient and economical carriage of goods and people. Road transport needs to be regulated for better energy efficiency and pollution control, while the mass transport network needs to be made viable through a rational tariff policy and a refurbishment of the fleet. The capacity of the ports in terms of their berths and cargo handling equipment needs to be vastly improved to cater to the growing requirements of the overseas trade. The

shipping industry needs to be enabled to carry higher shares of the sea borne trade in indigenous bottoms. The civil aviation sector needs to expand its carrying capacity for passengers and cargo, improve the ground handling facilities and provide connectivity to areas like the North-East. Conditions need to be created to ensure full utilisation of the capacities created in the public sector with large investments made in the past.

7.1.24 In the metropolitan areas, on the one hand, the provision of mass public transport has to be increased through a mix of environment - friendly modes - specially designed buses, light rail and metro and on the other, demand management has to be ensured through price-based as well as non-price-based measures so as to minimise the dependence on personalised transport. Similarly, non-mechanised transport should be accorded its rightful niche in a well conceived transport network.

7.1.25 To bring about this sea change in the transport scene, many policy initiatives will be needed, each backed by adequate investment and complemented by suitable policy changes in other sectors. A Task Force on Infrastructure has been constituted with the aim of attracting investments to specific projects.

▪ **TASK FORCE ON INFRASTRUCTURE**

- A Task Force on Infrastructure was constituted under the Chairmanship of Dy. Chairman, Planning Commission comprising both Government and industry representatives with the aim of attracting investment to specific projects of national and regional importance, and ensuring their timely completion.

Initially, the Task Force will deal with the following projects focussing on innovative methods for financing them.

- Six lane expressway of 7,000 km. length, having North-South and East-West corridors.
- Four-laning of National Highways, and
- Five world-class international airports

The terms of reference of the Task Force include.

- determining the routes for the expressways and National Highway, and establishing technical parameters thereof;
- identifying and recommending locations for the airports;
- establishing benchmarks and criteria for the airports;
- recommending financing options for expressway, highways and airports;
- recommending criteria for competitive bidding and selection of (EPC) contractors;
- recommending measures as are necessary for timely completion of projects including governmental clearances; and
- overseeing and monitoring timely implementation of the projects.

The Task Force will also formulate an Integrated National Transport Policy to strengthen the transport infrastructure in the country. It would also recommend steps that can significantly improve and foster reforms in those key segments of the economy.

Increased Share of Transport Sector in Plan Outlays

7.1.26 The resource requirements of this agenda for transport development are very substantial. The requirement of the highway sector alone in the Ninth Plan is estimated at about Rs.40,000 crore and this is exclusive of the requirements of district and village roads. The total requirements of the transport sector add up to over Rs.200,000 crore, most of which will have to be found locally. The India Infrastructure Report rightly points out that no more than 15% of the funds required for infrastructure can be expected to come from external sources. External aid and borrowings have funded important transport projects in the past, particularly in the roads, ports and shipping sectors.

Efforts will be made to increase the flow of such external resources but, at the same time, the pool of local resources will be expanded so that want of counterpart funds for the external aided projects does not create undue regional and sectoral imbalances.

7.1.27 The domestic funding of the transport sector can be either public or private. Historically, the investments in the transport sector, particularly in the rail, road, ports and airports infrastructure, have been made by the State mainly because of the large volume of resources required, long gestation periods, uncertain returns and various externalities, both positive and negative, associated with this infrastructure. However, the galloping resource requirements and the concern for managerial efficiency and consumer responsiveness have led to the active involvement of the private sector in infrastructure services in recent times. In India too, considerable private investment exists in trucking, inter-city bus travel, shipping and lately in airline services. By and large mobile transport units like trucks, buses, wagons, ships and aircrafts lend themselves easily to private investment while the large fixed infrastructure has remained in the domain of public investment. However, statutory and administrative initiatives have been taken in recent years to involve private capital in the expansion and strengthening of infrastructure in the railways, road, shipping and the airports. The private participation can take many forms like full or joint ownership management contract, leasing, concessions like BOT etc. However, looking at the state of Indian capital markets, particularly for long-term debt, it may not be realistic to expect any large-scale contribution from the private sector in the transport area through evolution of a well developed policy and regulatory framework can result in gradual inflows from the private sector.

7.1.28 This underscores the need for adequate public sector outlays for transport. The share of transport in the public sector outlays has, however, been declining over several Plan periods. From 23% in the Third Plan, it dropped to 13% in the Eighth Plan and this has been partly responsible for the acute deficiencies being experienced in the transport sector in recent years, when the tempo of economic growth has accelerated (Annexure 7.1.3). It may be noted that when, in the Seventh Plan, the percentage of investment in railways to the total Plan investment was raised to 7.6% from 6% in the Sixth Plan, it resulted in a significant increase in output and productivity, with the railways carrying an unprecedented 70 million tonnes of incremental freight. There is, therefore, a strong case for increased allocations for the transport sector to relieve the constraints on further economic growth.

Internal Resources

7.1.29 There is a general recognition that the transport sector has to improve the internal generation of resources for funding the Plan. In this context, tariff reform assumes crucial significance. Pricing for many of the transport services has hitherto been influenced by public utility considerations, giving rise to subsidies and concessions, many of which are unmerited. The result has been a depletion of resources and consequent contraction of investment. This has meant undersupply of services on the one hand and the appropriation of "rent" by intermediaries on the other. Therefore, the pricing policy will, in future, be based on full recovery of costs. Wherever subsidies or concessions are regarded as essential on public policy considerations, attempts will be made to provide these directly through the general budget or sectoral budgets so that their costs become apparent and the health of the transport enterprise is not impaired. Rigorous collection

of service charges will also be emphasised and leakages plugged through suitable enforcement mechanisms. Such reforms will also make the transport sector more attractive for private investment. The managerial efficiency and the initiative of private enterprise will be utilised for collection of charges through franchise or contractual arrangements, wherever feasible.

7.1.30 In sectors traditionally funded entirely by the State, such as roads, attempts will be made to mobilise resources through user charges in various ways. Road users already contribute substantial revenues by way of taxes on fuels and vehicles, which go to the general exchequer. Currently a small amount equivalent to 3.5 paise per litre, out of the proceeds of excise and customs duties levied on motorspirit, is available for the development and maintenance of roads. It may be necessary to make use of the principle of user charges in the form of dedicated levies on fuels and other inputs used in the transport sector for raising substantial revenues meant for construction and maintenance of highways. An additional tax at the rate of one rupee/litre of petrol as announced in the Union Budget 1998-99 is a step in this direction. Similarly, major improvements in the existing highways are proposed to be taken up by the National Highway Authority of India through the public toll method. This, of course, will be in addition to the tolls to be charged by the private investors on road concessions under BOT arrangements.

7.1.31 Non-tariff measures will also be taken for resource generation, for example through commercial exploitation of land and air space on properties belonging to the railways and other government agencies, particularly in the metropolitan areas. This, however, will have to be handled through a transparent mechanism involving the concerned State Governments and local authorities.

7.1.32 Along with revenue mobilisation through tariff and non-tariff measures, stress will be laid on productivity of human and material assets and cost cutting will be pursued vigorously in the public sector transport enterprises. The staffing policy, as well as the compensation systems, will be reviewed to link them with productivity to the extent possible.

Budgetary Support

7.1.33 The budgetary support for the transport sector has been declining consistently over the years. For example, in the railway sector, the budgetary assistance declined from as high as 75% in the Fifth Plan to a mere 23% in the Eighth Plan. This combined with the policy of keeping the passenger fare low, forced the railways to resort to market borrowing, whose heavy servicing burden further eroded the internal surpluses of the system. There is a strong case for a higher budgetary support on both theoretical and practical considerations. The transport infrastructure has important externalities in view of its catalytic role in economic growth. Many of our transport enterprises cannot take tariff and investment related decisions on purely commercial lines. When projects are taken up on strategic considerations or uneconomic routes have to be served on social policy grounds or essential commodities are to be carried at concessional freight, it is only proper that budgetary compensation is provided in order that the financial health of the transport entity is not affected. In view of these considerations, the budgetary support to the transport sub-sectors will have to be enhanced. For development projects, which are

commercially not viable, financial support will also be tapped from the beneficiary States which should share in the operational costs of such suboptimal investments.

Related Issues

7.1.34 As stated earlier, transport reform and development are not matters confined to financial investment in that sector only. Policy reforms or corrections will be needed in other related sectors. Energy pricing is one such area. For rectifying the modal imbalance in the transport economy, it is necessary to follow a fuel pricing policy in line with social costs. The abnormally high tariff on power used by the railways needs to be reviewed and revised.

7.1.35 In the road development programme, there is a need for a clear appreciation of the priorities. Removal of policy distortions in related sectors, a degree of demand management on the road sub-sector and supply improvement on the railways and other modes of transport will go a long way in serving the objectives of energy and environment conservation. There is a strong case for using the tax and subsidy mechanism to correct the imbalance. A steep increase in the user charges for roads is called for in the metropolitan cities so that the social costs of pollution and accident relief are passed on to the road users and the proceeds of the tax are used for promoting more benign modes.

7.1.36 In the preceding paragraphs, the overall scenario and various issues concerning transport sector as a whole have been discussed. In what follows, the status in respect of each of the sub-sectors in the transport sector in terms of the Eighth Plan review besides the emerging issues and strategies visualised for development, are elaborated

RAILWAYS

Introduction

7.1.37 The Indian Railways are one of the largest railway systems in the world with 63,000 route kms., approximately 7,000 locomotives, 34,000 passenger coaches, nearly 300,000 wagons and employing nearly 1.6 million staff. The system carries 11 million passengers and 1.20 million tonnes of freight per day. As a principal mode of transportation for long haul freight movement in bulk and long distance passenger traffic and for mass rapid transit in suburban areas, it occupies a unique position in the socio-economic map of the country and is considered as a vehicle and a barometer of growth.

Review of the Eighth Plan

7.1.38 The main thrust in the Eighth Plan for the Railways was on capacity generation, besides rehabilitation and modernisation, manpower planning and human resource development, energy conservation, safety, financial viability and customer satisfaction through reliable and better quality of services.

7.1.39 An outlay of Rs.27,202 crore, comprising Rs.5,375 crore (20%) of budgetary support, Rs.3,000 crore (11%) of market borrowings and Rs.18,827 crore (69%) of internal resources was provided to the Railways for the Eighth Plan. The financing of the approved outlay during each year of the Eighth Plan and the actual expenditure incurred are presented at Annexure 7.1.4. The investment during the Eighth Plan was financed through budgetary support of Rs.7311 crore (23%), extra budgetary resources to the tune of

Rs.6161 crore (19%) and internal resources of Rs.18,830 crore (58%), totalling Rs.32,302 crore. The Plan head-wise details are given at Annexure 7.1.5.

7.1.40 Since the main stress was on capacity building, the targets and achievements in respect of various assets created during the Eighth Plan, which are given in Table-7.1.3 deserve attention.

Table 7.1.3
Target and Achievement during Eighth Plan-Railway Sector

Sub-sector	Target		% of total outlay	Achievement		% of actual expend.
	-----			-----		
	Physical	Financial		Physical	Financial	
	(Rs. crore)			(Rs. crore)		
New Lines (Kms)	-	900	3.31	669	1,292	4.00
Gauge Conversion(Kms.)	6,000	3,600	13.23	6915	4948	15.32
Electrification (RKM)	2,700	1,350	4.96	2708	1431	4.43
Doubling (RKM)	-	600	2.21	1089	1113	3.45
Track Renewals(RKM)	12,500	4500	16.54	13972	5409	16.75
Signalling & Safety	-	675	2.48	-	914	2.83
Rolling Stock:						
i) Wagons(FWS)	1,20,000	10,630	39.08	96488	13375	41.42
ii)Locos:						
Electric		750		815		
Diesel		749		702		
iii) Coaches	9,100			9496		
iv) EMUs	1,265			1116		

7.1.41 It will thus be seen that most of the investment has gone into replacement of the overaged assets mainly in the area of track and rolling stock. Here also, the achievement was far short of the targets in respect of procurement of wagons. Though the gauge conversion programme recorded significant achievement, the network expansion in terms of new lines was quite marginal. Multi-plexing of track in busy corridors has also been quite modest while electrification of important sections has received adequate attention.

Productivity

7.1.42 During the period from 1950-51 to 1996-97 the freight transport output measured in terms of net tonne kilometre has increased by 6.3 times and the passenger output of non-suburban passenger kilometres by 5.4 times, while the network has grown by only 1.17 times in terms of route kilometres and 1.36 times in terms of track kilometres. Other inputs, such as number of passenger coaches, wagons and tractive efforts of locomotives, have grown by 2.0 to 2.6 times only. The increase in transport output has been brought about by more intensive utilisation of the available assets, improvement in productivity and technological upgradation. Table-7.1.4 gives a detailed picture of railway productivity during the last five years.

Table -7.1.4

Productivity Indicators in Railway sector

Item	1990-91	1991-92	1995-96	1996-97
1. Net Tonne Km. per wagon per day (BG)	1407	1439	1792	1840
2. Wagon Km. Per wagon per day (BG)	110.5	113.2	151.2	157.8
3. Wagon Turn-round (in days) (BG)	11.5	11.1	9.1	8.5
4 Track Utilisation (BG)				
I) Net Tonne Km. Per Route Km (Million)	6.30	6.63	6.45	6.45
II) Passenger Km. Per route Km. (Million)	7.12	7.58	7.55	7.73
5 Engine Km. Per day per engine in use for goods(BG)				
I) Diesel	445	436	415	403
I) Electrical	398	395	422	401
6.Engine Km. Per day per engine in use for passenger(BG)				
I) Diesel	673	633	580	569
II) Electrical	482	488	531	533
7 Manpower Productivity				
I) Net Tonne Km. Per employee (Million)	0.15	0.16	0.17	0.18
II) Passenger Km. Per employee (Million)	0.18	0.19	0.22	0.23

Wagon utilisation (BG) in terms of freight loading and movement expressed in net tonne kilometres (per wagon per day) has been moving up steadily and has reached 1840 NTKM in 1996-97, registering an increase of more than 28% over the Plan period. Other indices of asset utilisation also show some improvement.

Traffic Output

7.1.43 The output performance of the railway system is set out in Table-7.1.5

Table-7.1.5
Traffic output in Railways during Eighth Plan

	8 th Plan Target	Achievement	
		1995-96	1996-97
A. Revenue Earning Freight Traffic :			
I) Originating (Million Tonnes)	418.4	390.69	409.02
II) Transport Output (Billion Tonne Kms)	313.8	270.49	277.57
B. Passenger Traffic :			
I) Originating (No Million)	4472	4018	4153
II) Transport Output (Billion Passenger Kms)	377.74	342.00	357.01

7.1.44 In terms of total standard traffic units (tonne Kms + passenger kms) the output increased from 564.8 billion at the beginning of the Eighth Plan to 634.58 billion at the end of the Plan, representing an increase of 12.3% over the five year period i.e. a compound annual growth rate of 2.4 per cent. There is considerable shortfall compared to the targets set for the Eighth Plan both in respect of freight movement and passenger traffic. This was partly accounted for by the sluggish growth in the first two years of the Plan in the core sectors of the economy which are the mainstay of the railways' bulk freight movement. The transport output was also affected by the drop in leads on account of reduction in spatial gap between the centres of production and consumption and changes in the pattern of development of industry. The later years recorded a considerably higher tempo of activity with the spurt in the economy and industrial growth of over 8%, which resulted in a record incremental loading in the later years of the Plan. Similar swings were also noticed in the passenger section of railways output.

7.1.45 Another promising development in the Eighth Plan was the performance of the Container Corporation of India Limited (CONCOR) which handled 96,000 Twenty feet Equivalent Units (TEUs) of international container traffic at the beginning of the Eighth Plan and reached a level of 400,000 TEUs in 1996-97, registering a compound annual growth rate of 33 per cent. The domestic container traffic, which was 12,000 TEUs in 1991-92, is expected to increase to 300,000 TEUs by 1996-97, registering an annual growth rate of 90 per cent. However, CONCOR's share in total output is just over 2% and there is, therefore, enormous scope for growth in this area.

7.1.46 The Eighth Plan also saw the 760 km long broad gauge Konkan Railway Project nearing completion. The full length has been commissioned in January, 1998. This project, unique in technical complexity and financing arrangements involving four beneficiary States, will accelerate the socio-economic development of the Konkan region on the west coast.

Ninth Five Year Plan

Objectives

7.1.47 The main thrust of the Ninth Plan would be on strengthening the capacity of the Indian railway system as the prime carrier of long distance bulk freight and passenger traffic. To this end, the railways will concentrate on multi-plexing and electrification of dense corridors, improvement in reliability of operations, containerisation of smalls and optimisation of total system operations.

Policy Framework

7.1.48 The railways' share in total traffic in the economy has been declining over the years. This has come down from 89% in 1951 to 40% in 1995 in respect of freight traffic and from 68% to 20% over the same period in respect of passenger traffic. If this decline is to be arrested, there is a need for a quantum jump in the rate of growth of railways traffic output. With the economy growing at about 6-7% per annum the railways will continue to lose their share if their output grows at a lesser rate. However, any immediate improvement in the growth rate cannot be expected, since a long gestation is involved in the augmentation of capacity as well as shifts in modal preferences. Therefore, it is proposed to take decisive steps in the Ninth Plan, which would on the one hand influence the modal choice through relative pricing based on social costs and on the other hand augment the capacity and improve the productivity of the railway system. This would provide the basis for first decelerating the decline of the share of the railways and then reversing the present trend in the subsequent five year Plans.

7.1.49 The railways have generally concentrated on the bulk movement of the materials of the core sector in the economy over long distances. This makes the railways vulnerable to cyclical fluctuations in these sectors and to geographical shifts in their operations. Business from these sectors has also tended to shift to roads because of the greater convenience and flexibility of that mode. The railways have also been priced out of certain sectors because of frequent increases in the freight schedule. The railways will have to gear up for providing reliable service at competitive freight rates to win back the bulk traffic which has traditionally been dependent on rail. At the same time, they have to reorient their business to diversify their freight base. Special value-added services on the basis of fixed schedules need to be provided to capture a fair share of the high value non-core traffic. A flexible freight policy is necessary to deal with sectoral shifts in the economy. The low volume piecemeal goods traffic over long distances is best suited for carriage by containers. This requires the railways and the roads to combine together and provide an integrated transport service. So much on the demand side. A greater reason for the decline in railways' share in goods and passenger traffic has been their inability to generate adequate capacity to meet the growth of traffic. This is evidenced by the extreme congestion on the high density corridors i.e. "golden quadrilateral" connecting the metros of Delhi, Mumbai, Chennai and Calcutta. Also, the reach of the network has to be extended

to integrate the more remote areas with the national economy. A substantial increase in the capacity of the railway system will call for a considerable step up in the level of investments, apart from improvements in productivity. Along with the rest of the transport sector, the railways have been seriously under-funded in recent Plan periods and the budgetary support has been woefully short of their needs. The market borrowings particularly of short and medium tenor are not suitable for financing an infrastructure sector like railways beyond a point, especially when socially-oriented projects are to be undertaken. Budgetary support is necessary for a public utility like the railways which has to take up developmental projects for social and strategic reasons. Even when the commercial character of railways is recognised there can only be a gradual downsizing of budgetary support because the tariff policies evolved over a long period take time to get adjusted.

7.1.50 However, there is no denying the fact that the expansion and the strengthening of the railway system will have to be financed mostly by the railways through generation of internal resources. This calls for a substantial improvement in the Indian railways' operating ratio from the present high level of 90 per cent. This will require better operational and commercial management with emphasis on aggressive revenue generation on the one hand and rigorous cost control on the other.

7.1.51 In order to find the areas of strength and weakness, the Railways needs to rationalise its management and accounting system so that the cost of its various activities may be assessed and rationalised on commercial lines.

Tariff Policy

7.1.52 The tariff policy of the railways has traditionally been one of restraint with regard to increase in passenger fares and periodical increases in case of freight rates. This has been necessitated by the dual role of the railways as a public utility acting as a catalyst of development and as a commercial organisation running on business principles. Therefore, over the years, the railways have resorted to cross subsidisation in order to offset the losses incurred in passenger and other coaching services through additional revenues from freight movement. The policy has, however, resulted in several distortions. While the bulk of the rail output is consumed by the passenger segment, its contribution to revenue is relatively small. In 1994-95, passenger transport accounted for 60% of the total output, while its share in the revenues was only 28%.

SUBSIDY OF PASSENGER TRAFFIC

- In spite of the recommendations of successive fare and freight rate committees that price of each of the services offered by the railways should be cost based, the tariff policy followed by the Railways continues to involve heavy cross – subsidisation of the passenger business. Passenger fares in India are one of the lowest in the world. In 1991, the average revenue per passenger km in India was half the level of China. Within the freight category also, there is underpricing of freight for items of mass consumption such as foodgrains and sugar.
- The subsidy in passenger fares has been increasing over the years and the fare/freight ratio has fallen from 0.5 in 1951-52 to 0.32 in 1996-97. This ratio is one of the lowest in the world. The policy of cross subsidisation has resulted in the freight rates on several commodity groups reaching unreasonably high levels, resulting in diversion of traffic to other modes, especially road transport with attendant social costs in terms of higher energy consumption and environmental damage. The continually increasing level of subsidisation in passenger fares is also generating excessive demand leading to extreme congestion and deterioration of services. Excessive demand for passenger traffic displaces freight and reduces the speed at which freight can be transported by the railways. The benefit of the subsidised services also does not always accrue to genuine passenger but is appropriated as “rent” by intermediaries.
- The system of cross subsidisation has clearly gone too far. The overall fare structure does not generate sufficient resources to generate the surplus necessary for capacity expansion. Additional resources cannot be raised by increasing freight rates at the upper end where they are already too high. It is necessary to adjust passenger fares and fares on items of mass consumption to levels closer to the real cost of providing these services. A phased adjustment over a three year period is essential.

7.1.53 It has, therefore, become imperative to rationalise the tariff policy. While on the one hand, there is a need for sufficient flexibility in the freight rates to deal with the market fluctuations, there is a clear need for recovery of the full distributed cost from all categories of freight. This will lead to greater allocative efficiency. If certain essential goods have to be carried below cost, the same will be subsidised directly through the budget so that the benefit is clearly targetted and the cost becomes transparent.

7.1.54 More importantly, the passenger fares also need to be aligned more with cost and regular periodic increases of fares to absorb cost-escalation based on pre-determined productivity norms will generate resources, which can then be ploughed into the system for extending the services as well as improving their quality. A certain measure of flexibility in the fare schedule will also help in managing the demand in the peak season on the congested corridors and will reduce the incidence of rent-collection and other anti-social practices. Substantial fare revisions are called for in the suburban services where the subsidies are most pronounced, both in relation to costs of operation and the prices for alternative services. But the increased revenue must be used primarily for relieving the congestion and improving the services in these areas.

7.1.55 With the reduction of implicit subsidies on passenger travel, the bias against passenger transport should also go and the railways must plan for meeting the transport requirement of both passengers and freight on the basis of commercial principles. The increase in short distance passenger traffic particularly on high density corridors is, however, a matter of concern. Apart from the heavy losses suffered by the railways in their operations, the situation has become critical because of the saturation in these corridors. It may not be possible to introduce additional long distance passenger and freight services unless restraint is exercised in the growth of such short distance services.

7.1.56 In order to generate resources for the development plan, the railways may also have to explore other innovative non-tariff avenues like exploitation of railway land and air space, particularly in metro cities for the development of the system in the concerned areas. This, however, will have to be done in a transparent manner with the concurrence of all the concerned authorities including the local bodies, who have a stake in the development of the area, the region and the railway system.

7.1.57 The budget for the year 1998-99 reflects the direction Indian Railways intends to take to reduce the extent of cross-subsidisation and making passenger traffic self-sustaining except in cases of targetted subsidies. Steps have been taken to provide scheduled deliveries to customers on contractual terms with a premium/penalty clause. This is likely to be the scenario for future also.

7.1.58 Simultaneously, attempts have been made to grant freight concessions to attract investments by customers in terminals - an area of heavy detention of rolling stock. The current year's budget has provided for a reduction in the classification of steel, limestone, dolomite and gypsum. Similarly, the taper of rates for coal, cement and iron and steel has also been made more attractive over middle and long distances. Railways are also examining the scheme of discounts on substantial offer of assured additional traffic.

Investment Strategy

7.1.59 Considering the availability of resources and a large number of ongoing projects, it is essential to prioritise the existing portfolio in the Ninth Plan for better project management.

PRIORITISATION OF RAIL PROJECTS

The tendency to spread resources thinly over a large number of projects has been a major problem in the railway sector for quite some time. There is at present a large shelf of ongoing projects which require a total expenditure of about Rs.34,000 crore to complete. The position relating to construction of new railway lines and gauge conversion projects is especially alarming. The financial requirement for completing all new line projects currently taken up by the railways is estimated to be above Rs.19,000 crore whereas for gauge conversion the total requirement is over Rs.9,000 crore. At the present rate of allocation, it will take about 40 years to clear the backlog for new lines and 11 years to complete gauge conversion projects.

The tendency to take on a large number of projects leads inevitably to a very long completion period during which funds invested in the project earn no return and there are repeated cost over-runs. The investment strategy of the railways must therefore be re-oriented to ensure speedy completion of the ongoing projects. Railway projects must be re-prioritised to ensure that resources are allocated more rationally to bring about quicker completion of projects at a relatively advanced stage. New projects must also be deferred until resources justify expansion of projects.

7.1.60 For taking up new projects, generally, the highest priority must be given to projects which augment the capacity of the railway system in the high density corridors, apart from investments needed for ensuring safety and reliability of the services. In this regard, the first priority needs to be accorded to multi-plexing and electrification of the system around the “golden quadrilateral”, where it is under maximum strain. The gauge conversion policy must also be geared to the operational requirements of the system at this juncture. Broadly speaking, gauge conversion may be accorded lower priority vis-a-vis new lines which either directly add to capacity or open up new areas

7.1.61 The new line projects do pose a difficult choice. The bulk of the network was laid prior to Independence and its configuration was largely determined by the strategic and commercial interests of the colonial power. After Independence, attempts were made to remove the weaknesses of the system. But only about 9500 route kms could be added due to the meagre funds available for expanding the network. Many areas have still not seen a railway line. Strategic considerations also demand the extension of the network in several areas, as do the infrastructural considerations in respect of the North-East, J&K and similar areas. Since very few new lines bring in adequate returns over the time horizon relevant to commercial decision making, the railways can take up only such of the new line projects which have either demonstrated the operational need or appear viable in a reasonable time frame. Other projects should be taken up only with financial support provided from the public exchequer or from the concerned State Governments and others who are to be regarded as common stake holders in the development of the concerned regions. The same consideration should also apply to the operational losses which too must be shared by the beneficiary States or sectors until the railway line gains viability.

7.1.62 These considerations apply particularly to metropolitan transport projects. Because of the exponential growth of the metropolitan areas there is an increasing reliance on personalised transport leading to high social costs viz. congestion, pollution, high accident rates and conspicuously inequitable sharing of public utility of the road system. There is an urgent need for introducing/improving mass rapid transit systems in the major metro cities. The railways have a major role in providing such safe and clean system for these areas. The concerned State Governments and local bodies need to be involved in providing resources and associating themselves in the operations in order to ensure proper coordination between different modes in the matter of route planning and fare structures. The Maharashtra Urban Transport Project (MUTP-II), which takes an integrated view of both rail and non-rail components of the city's transport needs and envisages Centre-State collaboration in addressing the complex metropolitan problem, is a case in point. Since the transport projects in the metropolitan cities require very large investment, external assistance could also be mobilised for completing the work in a reasonable period.

7.1.63 Since the railway construction projects - new lines or gauge conversion - involve considerable manual labour, it may be possible to improve the viability of some of the projects if the labour component of these projects is linked with the rural employment programme of either the Central or the State Governments. Necessary modalities will have to be worked out for integrating the demand-based approach of employment programmes with the need for quality work on a steady basis which has to characterise the major railway projects.

Productivity

7.1.64 Capacity building in the railways is as much a matter of investment in new assets as of making the best use of existing assets. The railways have recorded a gradual improvement in assets utilisation but there is ample scope for improvements in productivity when comparisons are made with the achievements of some of the other broadly comparable railway systems elsewhere. The wagon utilisation, in terms of NTKms per wagon per day, has recorded considerable improvement but even higher levels of performance are possible if the average running speed and the efficiency of terminal handling are improved. The speed of the freight trains is still very low, leading to long turn around time. This needs to be tackled by a proper utilisation of the latest technology and by operational improvements, besides the provision of dedicated corridors for through movement in busy sections.

7.1.65 The utilisation of the rolling stock depends upon the reliability of the rolling stock as well as fixed assets. The success of the operational strategies to meet the traffic demand is considerably affected by the incidence of engine failures, hot box detachments, spring breakages, rail fracture and other track failures, failures of signalling and telecommunication equipment etc. Although some steps have been taken to improve the reliability of the rolling stock, there is a long way to go in controlling the adverse impact of the various types of failures. Therefore, in the Ninth Plan improvement in the reliability of assets would be closely monitored. Measures will be taken to reduce the operational costs by a change in the practices and systems which would result in improving the overall mobility of the rolling stock, less detention at terminals and better output in the workshops.

7.1.66 A whole range of cost control measures ranging from employment restraint to proper inventory management is also necessary to improve the operating results. These will be rigorously pursued.

Safety

7.1.67 Safety of rail operations will be a prime objective during the Ninth Plan. In both operational and investment programmes safety will be accorded high priority. The need for upgrading the safety infrastructure through induction of technical aids to support the human element, enhancing the asset reliability and improving the work culture and ethos cannot be over-emphasised. Strengthening the technical and human based safety systems would be given priority in the Ninth Plan. In order to improve the safety and the security of the railway property and the passengers, efforts will be made to modernise the railway protection force by providing them modern equipment and weaponry as also through better training facilities and upgrading the information system. The major train accidents are mostly due to human failure and the impacts of such accidents are more severe in the superfast trains. The probability of human failure should be reduced considerably by enhancing the accountability of the operational staff. This alongwith adequate safety measures would reduce their occurrence. Another area of concern is the unmanned level crossings. It is necessary to generate awareness especially in rural areas on the precautionary measures in using such unmanned level crossings.

Private Sector Participation

7.1.68 The scope for private sector participation in providing rail infrastructure and services is limited. Attempts have, however, been made to involve the private sector in augmenting the capacity of the railway system in a number of ways. The "Own Your Wagon Scheme (OYWS)" was launched in the Eighth Plan in order to tap the private sector resources for augmenting the supply of wagons. The private sector firms would procure the wagons, own them and lease them to the railways with or without preferential claim on allotment of capacity for the firms' own use. With the revision made in the scheme in February, 1994, the response has been encouraging during the period 1994-95 to 1996-97. The actual procurement under the scheme has been of the order of 9000 i.e. about 77% of the target. It has also been decided to undertake some of the projects through investment by the private sector under "Build-Own-Lease-Transfer (BOLT)" scheme whereby the private entrepreneurs and the financial institutions would build/manufacture/finance the assets for lease to the railways. It is proposed to offer projects like gauge conversion, supply of rolling stock, electrification, doubling of existing single lines, telecom projects etc. under this scheme.

7.1.69 However, the experience during the Eighth Plan has underlined the difficulty of enlisting private participation in such infrastructural areas on affordable terms. In order to attract increasing amount of private sector investment in the Railways and maximise the efficiency and gain arising out of the synergistic effect of the private and public sector investment, restructuring of Indian Railways becomes inevitable.

RESTRUCTURING OF INDIAN RAILWAYS

- Indian Railways currently operate as a vertically integrated monolithic organisation, responsible for all aspects of railway operation including development and maintenance of the track network, operation of freight and passenger trains and operation of several railway production units. The large size of Indian Railways is a source of strength in some respects but the rationale of continuing with the present structure into the 21st century needs to be re-examined.
- The trend across the world is to “unbundle” single entity infrastructure organisations and create separate organisations responsible for each distinct unbundled component. This enables appropriate costing and pricing of the individual components of the bundled service, making it possible to measure efficiency in the production of each component, and also to introduce competition at each stage as appropriate. Unbundling integrated monopolies is particularly helpful in introducing private investment into infrastructure since the private sector can be allowed relatively easy entry into those segments which are potentially competitive.
- Applying these principles to the structure of Indian Railways suggest a number of possibilities which need to be explored. An obvious possibility is to spin off the manufacturing units of the Railways into separate companies and start determining their costing and pricing on commercial principles. This would in the long run help to create pressures for efficiency and would also encourage the Railways to develop a more competitive procurement policy.
- In principle one can go further and distinguish between the provision of track services, which is a “natural monopoly” because of economies of scale, and the use of these services by individual freight or passenger rail operating companies which need not be a monopoly. Operation of the track network would have to remain in the public sector for the foreseeable future. Railway services on the other hand could be provided by separate corporations which may specialise in freight or passenger traffic. A public sector presence would be essential in this area also but the area could be opened to private companies on a competitive basis. Private operators could be allowed to operate in different segments of the network depending upon demand conditions. The presence of suppliers would introduce competition and improve service availability and quality to users.
- The restructuring proposed above will raise a number of problems relating to valuation of assets, staff and personnel status, incidence of excise duties and taxation and corporatised enterprises etc. However, these problems can be suitably resolved and must be viewed in the context of the potential advantages from the proposed restructuring.

7.1.70 Efficiency of terminal operations constitutes one of the most important parameters of asset utilisation of railways. It has been estimated that the terminal detention constitute nearly 1/3rd of the total detention of rolling stock. Productivity of terminals is likely to become more and more critical as the volume of traffic carried by the railways increases. In order to increase efficiency, reduce manpower costs and improve services to the customers, franchising the terminal operations to the private sector particularly at new project sites would be considered during the Ninth Plan.

7.1.71 Other areas of rail operation where the private sector would be involved include running of tourist trains, operation of cloak rooms and marketing of special freight trains which will have guaranteed transit time and shall run on time table paths etc. Railways have already made a beginning in private sector investment in rolling stock, awarding contracts of tourist trains and cloak room operations.

Export of Expertise

7.1.72 The Indian Railways and other organisations working under its umbrella have expertise in the field of rail services and manufacture of rail equipment. The Indian Railways and its organisations particularly RITES and IRCON have been providing expert services to various countries particularly in Africa. They are gearing up for bigger strides in the construction of infrastructure projects in the field of railways as well as other areas, besides exporting rolling stock.

Traffic Projections

Freight

7.1.73 The freight projections of the Ninth Plan have been made on the basis of the analysis of the past performance of the users, the present status of their expansion programme as also the estimation of the likely time frame of new plans coming on stream, the railways' capacity to augment its fixed infrastructure and production capacity of its units engaged in the manufacture of locomotives/coaches etc. Particular note has been taken of the higher tempo of growth in the economy and the need for building a base for a higher share for the railways in the economy's transport mix in the years to come. Accordingly, a growth rate of 5% is being assumed for the Ninth Plan period and even higher growth rates will have to be achieved in the Tenth and Eleventh Plan in order to reverse the trends in modal split. The projections are given in Table-7.1.6

Table-7.1.6
Projected Freight Traffic at the end of Ninth Plan

	Actual 1996-97	Projected 2001-02
Originating Revenue earning traffic (million tonnes)	409	525
Traffic Output (billion tonne kms)	278	353

7.1.74 The task of lifting additional freight traffic and meeting the requirements of different user sectors requires both short-term and long-term strategies. In the short-term, the capacity would be augmented through acquisition of additional rolling stock, improvement in terminal operations and speed of goods trains, encouraging private sector participation in the acquisition of rolling stock etc. In the long run, the capacity would be augmented through improvement in the handling systems at terminals in close coordination with the users, improvement in wagon designs, development of high horse power locomotives and introduction of heavier trains, construction and operation of heavy haul freight routes etc. Sharing of cost between the Railways and the user sectors for introducing mechanical handling devices to reduce wagon detention time will also be considered.

Passenger Traffic

7.1.75 Non-suburban and suburban traffic are estimated to grow to 313 and 87 million PKMs respectively at the terminal year of 9th Plan as indicated in Table-7.1.7.

Table-7.1.7
Projected Passenger Traffic at the end of Ninth Plan

	Actual 1996-97		Projected 2001-02	
	Passenger (million)	PKMs (billion)	Passenger (million)	PKMs (billion)
Non-Suburban	1575	280.50	1793	313.00
Suburban	2578	76.50	2989	87.00

7.1.76 To deal with the requirement of the growth and changing pattern of passenger traffic, high capacity mail and express trains, on traditional high density corridors and modern design of coaches, lighter in weight and longer in length, would be introduced.

OPERATIONAL STRATEGY FOR NINTH PLAN

Physical Targets

7.1.77 The main thrust of the Indian Railways at this juncture is to operationalise its strategy to launch the railway network into a higher trajectory especially in respect of higher growth rate in the freight traffic. For that besides productivity improvement, investment in capacity enhancement and technological upgradation of Indian Railways would be a necessary pre-condition.

7.1.78 It is proposed that the Railways may set a target of 525 million tonnes of freight traffic and 353 billion tonne kms. to be achieved during the period 1997-2002. The following targets are proposed to be achieved by the year 2002 in respect of various programmes.

Track Renewals

7.1.79 It is proposed to go for track renewal of current arising on the A,B & C routes to the extent of 13,922 kilometres during the period 1997-98 to 2002.

Electrification

7.1.80 A total of 2,334 route kilometres of electrification is planned during the period 1997-2002. This will complete the ongoing works and start electrification of the remaining part of the unelectrified sections of the 'golden quadrilateral'

New Lines

7.1.81 Construction of about 819 kms of new lines is planned during the period 1997-2002, Udhampur-Srinagar-Baramulla is being taken up as a national project at a cost of Rs.2500 crores.

Doubling

7.1.82 In all about 2,500 kms. of doubling are planned to be commissioned during the period 1997-2002, as against over 1,100 kms. during the VIII Plan period.

Acquisition of Rolling Stock

7.1.83 The acquisition of rolling stock depends on the quantum of traffic to be moved, the mix of traction and norms of asset utilisation. Following are the targets for the rolling stock acquisition during the period 1997-2002:

a). **Wagons** : It is proposed to acquire 1,36,000 wagons during Ninth Five Year Plan period. It may be mentioned that the indigenous wagon manufacturing capacity is about 36,000 wagons per annum, the industry has not been able to supply more than 26,000 wagons in a year. The industry has to gear up their production to the rated capacity. Besides, it is also required that railways should phase out its 4-wheeler stock and replace them with higher capacity, roller bearing 8-wheeler stock. Increase in pay-load-to-tare-ratio of wagons by increasing axle loads is also needed.

b). **Locomotives** : The requirement of locomotives for the period 1997-2002 has been assessed as 785 diesels and 851 electric. This takes into account the requirement of locomotives by Konkan Railway. Indigenous manufacturing capacity of Diesel Locomotive Works (DLW) and Chittaranjan Locomotive Works (CLW) will have to be extended by providing marginal inputs. It is required that railways should go for technology upgradation by induction of high horse power ABB and GM locos. Introduction of high capacity light weight LHB coaches is also needed.

c). **EMUs/DMUs/MEMUs**: It is proposed to acquire 1973 EMUs/DMUs/MEMUs coaches during 1997-2002. Besides, the target for conventional coaches during the Ninth Plan is 10,909.

7.1.84 The proposed physical targets to be achieved by the Railways during the period 1997-2002 in respect of major developmental activities are summarised as under:

Table 7.1.8
Physical targets -- Ninth Plan – Railways

Plan head	Target for 1997-2002
Track renewal	13922 kms.
Railway Electrification	2334 kms.
New lines	819 kms.
Doubling	2500 kms.
Gauge Conversion	3710 kms.
Rolling Stock Acquisition	
Locomotive (No.)	
Electric	851
Diesel	785
Wagon procurement (No.)	136000
EMUs/MEMUs/DMUs (No.)	1973
Other Conventional Coaches (No.)	10909

The year-wise break up of the above mentioned physical targets are given at Annexure 7.1.6.

Container Traffic

7.1.85 The traffic carried by CONCOR has registered a very impressive growth. Presently, the entire container traffic moved on the Railways is handled by CONCOR, which caters to both the international and domestic containers. The international container traffic is expected to increase from 4 lakh TEUs in 1996-97 to 10.5 lakh in 2001-02 and the domestic container traffic is expected to grow from 3.0 lakh TEUs to 4.0 lakh TEUs.

7.1.86 While bulk long distance freight will continue to be the mainstay, thrust has been given to winning back non-bulk, less than train load traffic back to rail from road by the multi-modal route. Container Corporation of India (CONCOR) has been strengthened with a new Domestic Division in this effort to reverse the trend of declining market share of freight traffic.

Railway Research & Development

7.1.87 Some of the important research projects completed by the Research Design and Standard Organisation during the Eighth Plan include the design and manufacture of 2300 HP and 3100 HP diesel locomotives, design of BG rail bus, development of AC-3 tier coach etc. In the Ninth Plan, the emphasis of the research efforts would be on increasing the productivity of assets, reducing energy consumption, enhancing the safety of rail transport and increasing quality consciousness. The important research projects proposed in the Ninth Plan are introduction of disk brake on coaches, design of EMU with air suspension, design and development of continuous train control for increasing throughput, developing technology for high speed operation, development of fuel efficient Diesel Engine, etc.

Manpower

7.1.88 During the Eighth Plan, for improving manpower productivity of the railway employees a number of initiatives were taken to upgrade the quality of training programmes offered to railway personnel. The training needs are periodically analysed and the training modules revised/updated. Simulators for training of drivers and other modern training aids have been provided.

7.1.89 New initiatives, like granting incentives for acquiring higher qualification by the staff have been taken. All these, clubbed with the overall improvements in infrastructure contributed towards increasing manpower productivity. During the first three years of the Eighth Plan period, the staff productivity increased by 5.5 per cent.

7.1.90 The Indian Railways have a regular work force of over 16 lakh employees. It is the single largest employer in the country. In the recent years there has been an increase in the expenditure on staff. The staff cost which was about 50% of the working expenditure at the end of the Eighth Plan has now gone upto 56%. In order to ensure that the trend of high wage cost does not make Railways a losing entity, focussed measures would be required.

7.1.91 During the Ninth Plan, in order to make the Indian Railways a dynamic growth oriented and successful enterprise in the fast changing environment, the human resource development strategy would aim at further improving the work culture of the organisation. A customer oriented approach must be adopted by all departments and at all levels of this huge organisation. At the same time, the entire human resource development effort would

aim at instilling in the railwayman a pride in the grand enterprise, that is Indian Railways. Suitable programmes to boost the morale, enhance the productivity and promote the welfare of railwaymen will be devised to imbue them with a sense of commitment to the vision of the Indian Railways regaining their position as the prime-mover of national economy and as one of the leading railway systems in the world, and, in the process, improving their own rewards and prospects.

ROADS

7.1.92 Roads have traditionally been the principal mode of connectivity between places and in hilly areas they are often the only mode available for the transportation of men and material. Apart from carrying traffic independently from point to point our road system is the main feeder to the railway system, ports and harbours and thus forms a part of an integrated transport network. India's road network measured 3,319,644 kms. at the end of 1995-96, comprising National Highways (NH) (34,508 kms.), State Highways (SH) (135,187 kms.) and other roads including Major District Roads (MDR), Other District Roads (ODR), Village Roads (VR), Urban Roads and Project Roads having a length of 3,144,949 kms. This includes 916,010 kms. of road length constructed under the Central Government employment programmes like Jawahar Rozgar Yojana (JRY) and Employment Assurance Scheme (EAS). The development and maintenance of the National Highways is the responsibility of the Central Government, which is normally carried out through the agency of the State Governments. The rest of the network i.e. State Highways, Major District Roads, Other District Roads and Village Roads is with the State Governments and Panchayat Raj Institutions. The Border Road Development Organisation is entrusted with the construction and maintenance of strategic roads in the hilly and difficult terrain areas.

7.1.93 The National Highways are the major arterial roads which run through the length and breadth of the country connecting State capitals, industrial and business centres, ports, tourist centres and provide links with neighbouring countries. The State Highways are the secondary road system for inter-district movement in the State. They connect State capitals with district headquarters, important towns and cities within the State and link up with the National Highways and the adjacent State Highways. The Major District Roads and Other District Roads serve as a road system both for inter and intra-district movement. They traverse throughout the district linking areas of production and marketing in the district and connect with the nearest State Highways. The Village Roads serve as the feeder roads to this network for movement of agricultural and horticultural produce to the nearest urban consumer centres.

Issues

7.1.94 India's road network is seemingly very large, at a little over 3 million kms. The figure has swelled recently because of the inclusion, for the first time, of village roads constructed under various employment programmes. But even this network cannot meet the requirements of accessibility and mobility for a country of India's size and population. The table in Annexure 7.1.2 gives road availability State-wise in relation to area and population. The all-India figure of 73.0 kms per 100 sq. km of area comes out as fairly large in international comparisons. But the picture varies widely across the country. Many areas like North-East and J&K are inadequately served by the road network. Similarly, around three fifths of India's 6 lakh villages are connected, by all-weather roads with

nearby market towns, while many habitations remain to be connected although successive Plans have focussed on the problem of rural connectivity.

7.1.95 The total road kilometerage has not been growing adequately to meet the demand for speedy and efficient transportation of human and material traffic. The vehicle population in the country has grown from 0.3 million in 1951 to 33.56 million in 1996 thus registering a growth rate of over 11% per annum. Table-7.1.9 shows the growth of traffic carried by roads since 1951:

**Table-7.1.9
Growth of Traffic**

Category	1951	1995
Freight (BTK)	6	398
Passenger (BPK) *	23	1314

* **Estimated**

Road freight and passenger traffic have thus expanded at the rate of about 10% per annum.

7.1.96 In comparison with the growth of vehicular population as well as freight and passenger traffic, the road network has registered an annual growth rate of over 4% i.e. from 0.4 million kms in 1951 to over 3 million kms in 1995. Further, the network has a large proportion of village roads which are generally of limited value from the point of view of heavy vehicular traffic. The main arterial network comprising the National Highways and the State Highways is just over 5.0% of the total road system, while it carries more than 75% of the road based traffic. This trunk route system has grown even more sluggishly than the road system as a whole. Table-7.1.10 indicates that most of the growth has occurred in the rural road sector, while the National and State Highways have expanded at the rate of 1.24 and 1.82 per cent per annum respectively.

**Table-7.1.10
Growth of Road Network**

(000 Kms.)

Category	1951	1996	% age change p.a.
National Highways	19.8 (5%)	34.5 (1.04%)	1.24
State Highways	60.0 (15%)	135.1 (4.07%)	1.82
Other Roads	318.0 (80%)	3150.0 (94.89%)	5.23
Total	400.0 (100%)	3319.6 (100%)	4.81

Note: Figures in parentheses are in percentages of total road network.

7.1.97 The capacity of the highway system in terms of carpet width is also not adequate. In spite of heavy congestion on most of the National Highways and State Highways only 3.41% of the National Highways and 0.57% of the State Highways are standard multi-lane, as is evident from Table-7.1.11.

Table –7.1.11
Capacity of Highway system in terms of number of lanes

(length in Kms.) (1996)

Category of road (Surfaced)	National Highways	%age	State Highway	%age
1. Below standard single lane	3,458	10.08	47,635	35.85
2. Single Standard Lane	4,268	12.45	56,214	42.31
3. Standard double lane	25,395	74.06	28,265	21.27
4. Standard Multi-lane	1,170	3.41	748	0.57
Total	34,291	100.0	132,862	100.0

7.1.98 In the case of National Highways about 74% of the network is double lane, while about 78% of State Highways is either single standard lane or below in spite of the fact that the volume of traffic on some of the State Highways is comparable to that plying on the National Highways.

7.1.99 The differential growth rates in capacity augmentation on the arterial network and traffic demand has led to the present situation in which large sections of the National Highways and some sections of the State Highways are used well over 100% of their intended economic capacity. The result of this mis-match between traffic growth and capacity is slow speeds, high vehicle operating costs, environmental pollution and high incidence of accidents. Further the road assets deteriorate fast because of increased traffic and heavier loads. Poor maintenance of assets also results in a much larger proportion of the network becoming unserviceable. It has been estimated that only 20% of the paved roads are in good condition in India compared to 70% in South Korea and 50% in Thailand.

Review of the Eighth Plan

7.1.100 During the Eighth Plan the thrust of the road development programme remained on a phased removal of existing deficiencies in NH network. Construction of missing links, 4-laning and 2-laning of single lane stretches and construction of bridges and bypasses received greater attention. A statement showing the targets /achievements of central sector road programmes during the Seventh and Eighth Plan is at Annexure-7.1.7

7.1.101 The general approach of the Eighth Plan was to speed up the completion of the ongoing works with a special emphasis on externally aided projects in order to contain the cost and time over runs and their spillover to the next Plan. The overall limitation of funds consequently meant insufficient provision for other highway works. Only about 600 kms were added to the National Highway network during the Eighth Plan. Similar constraints affected most of the State level programmes as well. The rural roads programme also fell short of the target of 100% connectivity for villages with population of more than one thousand.

7.1.102 The details of the Central sector outlay and the expenditure in the Eighth Plan are shown at Annexure-7.1.8.

National Highway Authority of India (NHAI)

7.1.103 The National Highway Authority of India (NHAI), which was set up under the NHAI Act, 1988, was operationalised in February, 1995. The Authority, set up for a gradual assumption of direct responsibility for the development and maintenance of National Highways, has taken up the execution of selected externally aided highway projects and the implementation of privately assisted road projects under Built-Operate-Transfer (BOT) scheme and similar arrangements, as well as the development of passenger oriented wayside amenities along the highways. The Authority has been allowed to raise funds through the issue of non-taxable bonds.

7.1.104 The NH Act, 1956 was amended in June 1995 to encourage private participation in the development and maintenance of National Highway network. Under the amended Act it is now possible for private entrepreneurs to develop and operate road projects, collect and retain the user fee (toll) and regulate the traffic on those roads. NHAI Act would have to be reviewed and suitably amended to provide for strengthening and rationalising the organisational structure, powers and functions of NHAI. The Act would also need to incorporate adequate provision for BOT frame-work as well as creation of an independent regulatory authority in respect of private investments.

7.1.105 Modern road construction technology was adopted to provide longer life to roads. Technically sound specifications like, dense bituminous macadam, asphaltic concrete, cement concrete pavements along weak national highway stretches, soil improvement by stabilisation and use of polymers in road construction were adopted. Environmental effects like slope protection and soil erosion control, drainage and dust control, plantations and landscaping were encouraged. New construction equipments and the system of prequalification of contractors were introduced for large sized road packages.

Objectives and Policy Framework for the Ninth Plan

7.1.106 The focus of the road development programme in the Ninth Plan would be on:

- a. Strengthening and improving the crucial sections of the highway network through phased removal of deficiencies and multi-laning of high density corridors;

- b. Improving the road communications in remote areas such as the North-East;
- c. Providing all- weather connectivity to remaining villages; and promoting energy conservation, safety and environment protection.

7.1.107 A well defined plan taking a perspective of 15-20 years would help to address the important issue of capacity constraint being experienced in this sector. An integrated policy for the transport sector would inform the road development programme with accent on gradual modification of the modal mix through a suitable inter-modal coordination mechanism. The road network will be expanded and strengthened keeping in view the traffic density and the need to realise optimal inter-modal mix. While the road network will be expanded and strengthened where traffic density warrants it, the decision on sectoral solution like provision of expressways need to be taken, keeping in view the cost and condition prevailing in our country. In view of budgetary constraints, although private enterprise will be encouraged in funding the construction and maintenance of roads and bridges, the role of budgetary support will remain predominant in view of the crucial role that basic infrastructure like roads play in catalysing development. In mobilising resources for the road sector, the instrumentalities of user charges and dedicated levies will be used to the extent possible for carrying out expansion and improvement works.

EXPRESSWAYS – NOW OR LATER

- An expressway is very high quality, high speed, access controlled road which segregates local and cross traffic. The high speed of travel made possible by expressways improves the efficiency of transport services, reduces vehicle operating cost and helps in reducing inventory costs for the industry, thus improving its competitiveness vis-à-vis international industry operating on JIT (Just-in-Time) inventory principles. As the economy develops the provision of expressways becomes an essential requirement.
- Heavy investment is required not only for building multi-lane divided roads but also for associated facilities including provision of modern communication and information system. At an estimated cost of Rs. 11 crore per kilometre including land acquisition, a 1000 kms. expressway will require Rs. 11000 crore. An expressway is, therefore, highly capital intensive facility.
- In most developed countries the construction and maintenance of expressways are financed largely from user charges and tolls. The economics of expressway requires not only a very large volume of high speed traffic but also substantial movement of high value commodities so that the traffic can bear the high cost of construction and maintenance of the expensive facility.
- Expressways have to be fully fenced to prevent any unauthorised entry including cross traffic. Unless this is done, high speed traffic would be very dangerous. Crossing from one side of the expressway to the other is, therefore, possible only through overpasses and underpasses. In developed countries this arrangement works well because farms are large and movement is motorised. In our situation, where there is need for people and animals to cross from one side to the other to access farm lands and villages and when much of this traffic is pedestrian, it is difficult to envisage people resorting to bridges or underpasses built at intervals of several kilometres. On the other hand, increasing the number of cross over points would be very expensive.
- Large scale introduction of expressways is, therefore, not feasible in our circumstances. However, there may be some scope, albeit limited, of constructing expressways on some selected stretches where traffic density is exceptionally high, there are alternative routes for slow moving local traffic and the need for cross traffic is low.

7.1.108 Despite its importance, the National Highway network suffers from a large number of deficiencies which are required to be removed gradually. Geometrics and the riding quality will be improved for all the National Highways in general. The thrust areas include 4-laning of high density traffic corridors, which would ease the mobility issue. strengthening of existing roads, construction of bypasses and ROB's, road development in the North Eastern

Region and development of strategic and border area roads which will receive top priority in the action plan. Packages of projects rather than isolated stretches, will be identified for development in order to ensure that highway users reap full benefits of the improvements carried out.

Four- laning

7.1.109 The high density traffic corridors of National Highways network is shown in Annexure 7.1.9. One of the major thrust of the Ninth Plan would be on four laning of National Highways.

MODERNISATION/UPGRADATION OF HIGH DENSITY CORRIDORS

- The Indian National Highway system is excessively congested and physically deficient by international standards. To upgrade and modernise the National highway system, it is necessary that the already identified high density corridors, where the traffic exceeds 35000 passenger car units, are taken up for four laning using mechanical methods and improved technology. Top priority in road sector development is to be accorded to upgradation of National Highways on the Golden Quadrangle, linking Delhi, Mumbai Chennai and Calcutta.
- The total requirement of funds to complete work on the Golden Quadrangle is estimated at around Rs.20000 crore. Development of North-South and East-West corridors will be incorporated in the existing alignment of the Golden Quadrangle supplemented by additional work to extend the alignment along North-South and East-West extremities. Keeping in view the large requirement of funds on the one hand and the severe constraint of resources, the strengthening of the Golden Qudrangle and of North South – East West extension now have to concentrate on four laning in the first instance extending to six laning where necessary.

7.1.110 A special National Highway Development Project (NHDP) will be undertaken during the Ninth Five Year Plan. The total length of this project is 11860 kms. which include the major highway linking Delhi, Calcutta, Chennai and Mumbai constituting the golden quadrangle and North-South and East-West corridors. The components of NHDP are to be implemented in three phases over a period of 10 years as detailed under:-

Components of NHDP

Components	Length (Km)	Time Frame (in years)
A. Golden Quadrangle	5000 [@] (Balance)	5
B. Spurs North (Delhi-Jammu) South (Krishnagiri-Kanyakumari) East (Kanpur-Silchar) West (Udaipur Porbandar)	4000	7
C. Spines North (Jhansi-Delhi) South (Jhansi-Bangalore) East (Jhansi-Kanpur) West (Jhansi-Udaipur)	2860	10
Total	11,860	

[@] The total length of the five corridors forming the golden quadrangle is around 6000 kms. of which about 1000 kms. is already four laned or taken up for implementation.

7.1.111 The programme for the Roads Wing of the Ministry of Surface Transport is indicated at Annexure 7.1.10.

Widening to two lanes

7.1.112 The corridors where the density of traffic is less than 20,000 passenger car units per day, widening to two lanes will receive priority. During the Ninth Plan period the widening of 1194 Kms is proposed to be undertaken.

Strengthening and Improvement of Existing Roads

7.1.113 The riding quality of the pavements of National Highways is poor leading to increased vehicle operating costs. The inherent structural weaknesses of the pavements results in their premature failure. Due to the expected deterioration on account of increased volume of traffic and axle load, about 15000 Kms where traffic is 20,000-35,000 PCUS/day have been identified to be in need of strengthening alongwith the provision of paved shoulders. Out of this the Ministry of Surface Transport will take up about 2900 Kms. for strengthening and improvement, during the Ninth Plan period

Construction of By-passes/ROBs and Improvement of Congested Sections

7.1.114 The National Highway links through towns are known to cause delays to traffic as well as inconvenience to the city population. This problem of congestion in and around cities/towns needs to be tackled on an urgent basis. At least 100 by-passes are required as per a recent estimate but during the Ninth Plan, 40 bypass works can be undertaken out of which 20 will be carried by the Ministry of Surface Transport through budgetary funding. There are about 600 level crossings along the National Highways requiring road over bridges. There are also several bridges on NHs whose load carrying capacity is limited. Such weak and distressed bridges would need to be reconstructed. During the Ninth Plan, 266 major bridges/ROBs/Minor bridges will be taken up for construction out of which 234 will be during the remaining four years of the Plan.

Development of Roads in North Eastern Region

7.1.115 As per the decisions taken in the Chief Ministers' Conference on North Eastern States, 10% of the central budget for the road sector should be allotted for road development in the N.E. Region. About 2700 Kms of the NH length has been entrusted to BRDB for development. Works on newly declared National Highways will also be undertaken during the Ninth Plan period.

State Highways and Major District Roads

7.1.116 The growth of State Highways and Major District Roads (MDR) has remained relatively stagnant both in respect of length as well as traffic carrying capacity. The priority during the Ninth Plan would be to consolidate the existing network rather than to expand its length. A network approach will be preferred while identifying the high density corridors for development. The State Highways and the District Roads would be developed in such a way that the entire State road network would provide a feeder system to the rail network thereby avoiding development of a parallel road network. It is of paramount importance that an integrated strategy to achieve simultaneous development of the three major categories of roads is formulated so as to eliminate existing bottlenecks in the movement of passenger and goods traffic.

7.1.117 During the Ninth Plan Period the following will receive high priority in respect of State Highways and MDRs:

- i) Black-topping the entire length of State Highways and all MDRs with traffic of more than hundred commercial vehicles per day.
- ii) Replacement of Railway level crossings with overbridges wherever train vehicle units exceeded 50,000.
- iii) Construction of Bypasses with service roads for all district headquarters.
- iv) 50% of weak and narrow bridges with heavy traffic will be rehabilitated.
- v) 20% of the State Highways will be widened and strengthened as per traffic requirements
- vi) Construction of all missing links in the State Highway network.

7.1.118 The implementation of the above will be the primary responsibility of the State Governments. They will therefore be requested to prioritise their road development programme in line with the above mentioned six imperatives and workout detailed proposals.

Urban Roads

7.1.119 Urban Roads (UR) cater to the traffic requirements within municipal limits, military cantonment areas, ports and railway areas. The urban road length in recent years has registered significant growth. This length has increased from 1.23 lakh kms. in 1980-81 to 2.11 lakh kms. in 1995-96. The existing road capacity is, however, not able to meet the requirements of the ever-growing motor vehicle population. As a result, there are frequent traffic jams, congestion and road accidents. Due to non-availability of adequate funds the needed number of flyovers, underbridges and bypasses could not be constructed. The absence of mass transport system in the metropolitan cities and the unprecedented increase in the number of personal vehicles has resulted in rapid deterioration of the urban road system. The problem of congestion in urban areas can only be solved with rigorous demand management, on one hand, and provision of mass transport system on the other. The construction of flyovers, underbridges and railway over bridges will be taken up wherever necessary but this offers no lasting solution to the problem.

Prevention of Encroachment and Ribbon Development

7.1.120 The concentration of population in cities and towns has been increasing over the last several decades. Rapid urbanisation has resulted in encroachments and ribbon development along NHs and particularly around newly constructed bypasses and bridges. Automobile repair shops, petrol pumps, residential buildings and commercial establishments have also sprung up in an uncontrolled manner. Such establishments have proved to be a hindrance to the smooth flow of traffic, consequently resulting in accidents. These will have to be removed through suitable legislative measures. Their re-emergence will be prevented by suitable institutional coordination between the highway authorities and town planning bodies.

Road Network in Remote and Strategic Areas

7.1.121 The existing road network in these regions is deficient due to inadequate capacity, poor riding quality, weak and distressed bridges/culverts. Many of the semi-permanent timber (SPT) bridges require to be replaced by RCC bridges. Some of the areas in these regions remain isolated or blocked for long periods and need special attention. The development of an efficient road network is an important pre-condition for the overall development of remote, inaccessible and strategic areas like North East and Jammu & Kashmir regions.

7.1.122 The special needs of the North East have been recently examined by a high level Commission which assessed the backlog in basic minimum services, including gaps in rural connectivity and the infrastructural needs of the region. Resources, both financial and organisational, will be mobilised at the Central and State levels to address the problem.

Rural Roads

7.1.123 At the time of independence, the connectivity of villages with roads was rather poor. The development planning process laid special emphasis on rural development of which construction of rural roads has been a special component. The construction of rural roads received a boost with launching of the minimum needs programme in the Fifth Five Year Plan. Under the Minimum Needs Programme (MNP) it was mandated that the villages with a population of 1000 and above (1981 census) would be connected with all-weather roads during the Eighth Plan. A review of the MNP (Rural Roads) has revealed that the connectivity level for this category of villages has reached 85% of the target. The MNP has now been replaced by the Basic Minimum Services (BMS) programme which envisage provision of connectivity to all villages and habitations by the end of 2002 A.D.

7.1.124 According to recent study by Planning Commission more than 40% of Indian villages are yet to be linked by all weather roads. Efficient delivery of social services (health, education and nutrition) and marketing of rural produce is difficult in areas not connected by good roads. This goes on to establish a strong positive correlation between rural connectivity and poverty and therefore, good and bad roads lead to wide disparity in the living conditions of our rural population. While the total cost of providing connectivity to all villages has been estimated at around Rs.50,000 crore, about one tenth would be required to achieve full connectivity for villages with a population of over 1000.

7.1.125 Since resources of this magnitude may not be available in the State Plans, efforts would be made to pool the resources under different rural road programmes like JRY, EAS etc. to supplement the efforts under BMS. One could explore the possibility of taxing agriculture products, market centres and replicating the experience of good rural connectivity States like Haryana, Punjab and Tamil Nadu.

7.1.126 The priority in the Ninth Plan will be to provide connectivity for the villages which have spilled over from the Eighth Plan. Efforts would continue to fulfil the targets of provision of road connectivity to all villages by the end of 2002 A.D. The States which have attained sufficient level of connectivity for villages with a population of 1000 and above will take up connectivity of villages and habitations with a population below 1000. The needs of difficult and remote villages and SC/ST concentrated areas will also be addressed on a priority basis. The State Governments will be encouraged and assisted to prepare and follow comprehensive Master Plan for development of State Highways and other roads in the States.

New sources of funding

7.1.127 The funds for the development and maintenance of National Highways are provided by the Central Government on a yearly allocation basis. Similarly, the funds for development of State Highways, Major District Roads and Village Roads are provided by the respective State Governments. The budgetary allocations for the development of roads, however, have fallen far short of the requirements and there is a need to augment these resources. The road sector generates substantial revenues primarily through motor vehicle tax and taxes on fuel and spares. But the expenditure on the development of roads has remained comparatively low because these revenues go to the Consolidated Fund which is used for financing all developmental and other expenditures. Currently, a small amount

equivalent to 3.5 paise per litre out of the proceeds of excise and customs duties levied on motor spirit, is available for development and maintenance of roads. Since very substantial resources are required for expanding and upgrading the road network, various mechanisms for raising resources from road users have been under consideration. Internationally, the commonly used method for raising resources for road development is the levy of user charges in the shape of dedicated surcharges on fuel.

7.1.128 Another source of revenue for road development is tolls which can be collected at fairly low and affordable levels from the users of specific high density traffic sections of

AUGMENTING RESOURCES FOR ROAD DEVELOPMENT

- The investment strategy for the road sector has traditionally focussed on expansion of the network with inadequate attention to the quality of the network especially on the National Highways which carry the bulk of the traffic. For example less than 5% of the National Highways are four laned and the quality of the road surface is very poor. The net result is that the National Highways are highly congested. Vehicle operating costs are very high and there are too many accidents.
- The removal of the deficiencies in the case of the National Highways alone would require an investment of the order of Rs.75000 crore at 1996 prices, against an annual provision of Rs.1500 crore for development of National Highways during 1997-98. An even bigger investment would be required to upgrade highways in the State sector.
- Given the huge fund requirements and the massive backlog of previous years, private sector financing is highly desirable to supplement the Governmental efforts in this area. However, experience all over the world and the limited experience at home, shows that private sector participation can at best make a limited contribution in this sector, and the bulk of the effort will have to come from the public sector. This calls for special efforts to raise resources for road sector investment.
- The most rational approach would be to create an earmarked fund for road development by levy of a cess on fuel. The additional tax at the rate of rupee one per litre of petrol, as announced in the Union Budget 1998-99 is expected to yield Rs.790 crore. A similar cess of one rupee per litre should be imposed on diesel. This would raise revenue of about Rs.4800 crore annually. A mechanism should be devised whereby the money collected out of these cesses on petrol and diesel goes to the Highway Development Fund, the road development agencies. The transfer of money from the Fund to the implementing agencies may be based on objective criterion and made in a transparent manner.

roads and bridges. Accruals from such charges would enable viable BOT concessions as well as projects undertaken directly by NHAI or its subsidiaries (SPVs, joint ventures etc.) through market borrowings. The amended National Highway Act, 1956 has empowered the Government to levy toll on selected sections of the National Highways. The toll revenue can reduce the burden on the Government. Some of the existing 4-lane developed roads, newly constructed roads and bypasses will be taken up as toll roads.

External Aid for Road Projects

7.1.129 Despite higher allocation for Central/ State Road Projects during the Ninth Plan, external assistance will continue to receive priority. Similarly, some State Highway projects including the State road development packages in North Eastern Region and some rural road development networks packages are expected to be posed for foreign funding. The larger external assistance would, however, need to be balanced by higher domestic resources so that counterpart fund requirements of the externally aided projects do not affect local road development programme adversely.

Private Sector Participation

7.1.130 Road sector was declared an 'industry' to facilitate commercial borrowings. The National Highway Act 1956 was amended in June, 1995 to provide for a legal framework for private sector participation in road development.

7.1.131 Various fiscal and tax concessions have been offered for undertaking road projects on BOT basis. The Government has also assured help in land acquisition, environmental clearances and simplification of procedures. Some State Governments have also taken significant steps like the setting up of dedicated organisations on the pattern of NHAI to promote road development, financed through user charges on BOT or State toll basis. Some small stretches of roads and bypasses have already been commissioned under these arrangements. The role of this device may become more significant once the policy framework including an independent regulatory system is put in operation and investors are able to overcome their apprehensions with regard to uncertainties of these long-term investments in such infrastructure. The policy framework is sought to be kept flexible to permit allocation of risks on an acceptable basis and sharing of risks between the Government and the private sector through grants or equity sharing.

7.1.132 Projects relating to bypasses, bridges and 4 laning of existing sections of National Highways which on the basis of traffic density are financially viable and bankable would be taken up through private sector participation. 11 projects involving an investment of about Rs. 580 crore have already been initiated under the BOT Schemes. As stated already, viable sections of the four major corridors are also proposed to be taken up under BOT scheme for four laning. NHAI has been given considerable flexibility to financially collaborate with the private or the public sectors and projects which are not viable on the basis of traffic density will be provided equity/loan support from NHAI. Several other ROB/Bypass projects have been proposed under the BOT scheme through State Governments. In addition to the projects taken up through private sector participation under the programme of NHAI, some investment would be available under privatisation programme for non-NHAI roads. Thus, given the risk profile of toll road projects and the relative under development of Indian long-term debt market, private investment in roads is expected to be rather modest. Therefore, the budgetary support will continue to have a large and crucial role to play in road development during the Ninth Plan period.

Maintenance

7.1.133 The road network built at huge cost needs to be maintained properly to prevent disintegration and deterioration. Timely upkeep and maintenance prolongs the life of road assets. Properly maintained roads reduce vehicle operation cost (VOC) by providing good riding quality and add to safety of road users. To keep roads in good condition huge funds are required and these keep increasing in volume as the network to be maintained continues to grow in size.

7.1.134 Over the years, the maintenance of roads had received inadequate attention primarily due to lack of funds.

MAINTENANCE OF ROADS

- Studies on maintenance of roads have shown that under normal axle load, roads deteriorate rapidly beyond eight years of use. Unfortunately maintenance is a Non-Plan activity and tends to be accorded a low priority. This is evident from our experience where the road network, built at a huge cost, is showing signs of deterioration all round. A rupee spent on maintenance saves two to three rupees in vehicle operating cost besides providing a very cost effective option. And yet, availability of funds for maintenance is only around 40% to 60% of the normal requirement. In case of roads other than National Highways, State Highways and Major District Roads, the position is much worse.
- Optimum utilisation of scarce resources underlines the need not only for adequate data base with regard to various maintenance activities but also a proper Road Maintenance Management System in order to assess the maintenance requirement scientifically. It is also necessary to find additional resources for maintenance of roads. Using the dedicated funds financed through levy on fuel and collection through motor vehicles taxes would go a long way in giving this vital activity its due priority.

7.1.135 The Tenth Finance Commission had considered the maintenance issue and evolved a formula based on the norms devised by the Ministry of Surface Transport. The norms were applied to the total road length in each State/UT to assess the requirements during the forecast period. Since the amount worked out was very large, the Commission limited the provision to double the level provided by the Ninth Finance Commission. The State-wise provision for maintenance as estimated by the Commission is shown at Annexure 7.1.11.

7.1.136 It is imperative that these provisions are substantially increased. It is necessary to regard maintenance of roads, at least of highways - National and State - as a committed liability which must be provided for in full on the basis of technical norms before provision is made for meeting the other non-Plan needs. It is also necessary for the maintenance budgets to be allocated on a need-based programme. The establishment budgets under maintenance have tended to grow beyond the prescribed norms. This needs to be restrained because otherwise an ever-increasing proportion of maintenance budget tends to be appropriated by the establishment leaving very little for procurement of material and equipment. Selectively, the maintenance work should be tried out on a contract basis in order to secure the benefits of competitive price and quality.

Highway Safety

7.1.137 The number and severity of road accidents has registered a steady increase in the country. The past record has demonstrated the poor state of safety on our roads. The sharp increase in the volume of road traffic, the growth of vehicle population particularly the operation of heavy and over-loaded commercial vehicles, the spurt in two-wheelers and over-crowded buses have aggravated the problem. To tackle the problem of road safety, it is necessary to adopt measures for the education of road users and the strengthening of enforcement. In the arena of road construction, proper engineering measures can contribute towards promotion of road safety. Apart from proper planning of road transport corridors, provision of medians, railings, lane marking and replacement of level crossing by road over bridges and properly designed grade separators would check occurrence of fatal road accidents. Provision of separate bicycle lanes would not only improve the safety of road transport operations, but would also encourage use of environmental friendly non-motorised modes.

Environment Conservation

7.1.138 Road construction causes environmental pollution in diverse ways. It disturbs the natural drainage of land, flow of rivers and streams in its vicinity and adversely affects the physical and natural features of the area. The unplanned dumping of the waste material of construction activities also causes adverse environmental impact.

7.1.139 The environmental impacts of road construction vary from region to region. They are, particularly severe in hilly areas as it causes geological disturbances, loss of forest and vegetation cover and soil erosion, besides triggering flash floods. In order to minimise the adverse impact on environment caused by road construction, it is necessary to adopt newer road construction and maintenance practices. In hilly areas, it is necessary that adequate attention is paid to route alignment to ensure that landslides or erosion-prone areas are avoided. Deforestation during road construction will have to be kept to the minimum, in consultation with the forest authorities. Any cutting of the trees must be replaced by plants of equivalent number.

Research and Development

7.1.140 Expansion, modernisation, upgradation and maintenance of highway network requires research and development(R&D) inputs. These inputs ensure optimum utilisation of resources and help in finding cost-effective solutions for various road engineering problems.

7.1.141 The huge cost of developing road network and the near technological freeze of several decades experienced by the sector on the one hand, and the extension of R&D capability in the country on the other, offer a vast scope for the introduction of improved planning methodology, designs and technologies as also new materials in the road development. The R&D activity will, therefore, be taken up in all areas of road development. The objective will be the development of road planning and the construction technology which result in reduction in construction cost, vehicle operation cost, accident rates, congestion, pollution and pre-mature deterioration of roads. To achieve this objective, it will be necessary to carry out research studies, construct experimental road sections and strengthen the existing capabilities of R&D organisations. Areas like highway planning, management and designing, construction and material management pavement maintenance, bridge designs, road safety and environment studies will receive greater attention. Special attention will be paid to design improvement of non-motorised vehicles to achieve better efficiency and avoidance of drudgery. In addition to the fresh R&D efforts, it is equally important to gainfully utilise the results of research work already carried out in the field of construction, maintenance and rehabilitation of road network in the developed countries. An effective mechanism will be evolved to identify these advanced technologies on selective basis with a view to adopting, introducing and absorbing them in our road development process.

Technology Upgradation

7.1.142 Recent years have witnessed phenomenal growth of road traffic in the country. Heavier vehicles with large volume of traffic ply on our highways. The traffic growth, existing inadequacies and deficiencies in the highway network call for a massive effort in

the development of highways in the country. In our endeavour to build quality roads, the adoption of new technology would ensure that roads are constructed to modern standards and specifications.

7.1.143 Road construction technology has not undergone any major change for several decades. Many countries have mechanised road construction by introducing sophisticated and modern equipment. Considering the constraint on financial resources and the availability of abundant labour force, the technologies employed in the developed world cannot be simply imitated. New techniques of construction have to be adapted to the prevailing conditions. Having regard to the magnitude of the task of road construction, it is necessary to adopt those technologies which can minimise the cost of construction and maximise the use of local resources. The introduction of machine-based technology will have to be restricted to high density traffic roads and those sections of highways which are to be commercialised.

Manpower Development

7.1.144 In order to keep pace with the technological development in the field of road construction and maintenance and to improve the quality of road construction by making optimum use of available resources, emphasis will be laid on the development of technological skills of the manpower engaged in road/bridge construction and maintenance by creating awareness of modern construction techniques. This objective would be achieved by strengthening the training programmes, conducted by various organisations including the National Institute for Training of Highway Engineers (NITHE) and the Central Road Research Institute (CRRI) and by holding seminars and workshops. To make effective use of the training facilities available in the country for highway engineers, efforts will be made to coordinate the training programmes of several State level training centres with that of NITHE.

Data Base

7.1.145 Transport planning is a continuous process. In the absence of adequate and reliable data, this process is inhibited. Data on traffic flows and resource cost is necessary to study the aggregate and mode-wise traffic trends, forecast traffic demands, evolve optimal patterns of allocation of traffic amongst different modes, formulate appropriate investment options and conduct cost-benefit appraisal. Of the two principal modes of transport, inadequacies of data pertaining to traffic flows and resource cost are more acutely perceived in relation to road. Considering the crucial importance of information on traffic flows and resource costs of different modes of transport, a mechanism will be set up to collect, update and analyse the data of traffic flows and resource cost on a regular basis.

ROAD TRANSPORT

7.1.146 Road transport is the dominant mode of transport for movement of passengers and freight in India. It is ideally suited for short and medium distances due to its advantages in terms of easy availability, flexibility of operation, adaptability to individual needs, door-to-door service and reliability. It is also the main mechanised means of transport in hilly and remote areas, not served by the railways. Road transport is one of the basic infrastructure for economic development of backward areas. It also provides feeder

service to rail traffic, airways, ports and harbours. Road transport has grown at a fast pace since 1950. The vehicle population has grown more than 100-fold during the last 45 years from 1951. The total number of all types of mechanised motor vehicles increased from a mere 3 lakh in 1950 to 336 lakh in 1996. The category-wise number of registered vehicles is given in Annexure-7.1.12.

Review of the Eighth Plan

Outlay and Expenditure

7.1.147 There was a shortfall in the expenditure as compared to the outlay for road transport under the Central Sector in the Eighth Plan. As against the approved outlay of Rs.264 crore, the expenditure was only Rs.80.16 crore. The shortfall was primarily on account of the discontinuation of capital contribution to State Road Transport Corporations from 1993-94 onwards and the transfer of Delhi Transport Corporation to the Government of the National Capital Territory of Delhi (N.C.T.D.) w.e.f. August, 1996. The scheme-wise outlay and expenditure during the Eighth Plan are given in Annexure-7.1.13.

Goods Transport

7.1.148 The goods vehicle fleet grew from 8.63 lakh in 1986 to 17.85 lakh in 1996, registering more than a two-fold increase. Light carriage vehicles exhibited a faster growth than heavy carriage vehicles. For instance, the number of heavy goods vehicles increased by 106 per cent, while that of light carriage vehicles registered an impressive growth of 190% during the last ten years.

7.1.149 The road freight operations are almost wholly owned and operated by the private sector. The State Road Transport Corporations in Jammu & Kashmir, Manipur, Mizoram, Sikkim and Tripura however, provide freight services with a limited number of trucks. A two-tier structure is prevailing in freight transport operations in the country. One of the two tiers is of those transport companies/agencies which secure most of the freight contracts because of their reputation, reliability and dependability in services, the network of branches across the country, recognition by the banks and ability to offer security against the loss/damage. The other tier is of smaller operators having one to three vehicles. About 80- 90% of truck operators are estimated to be of this category.

7.1.150 The commercial vehicle fleet in the country is not utilised optimally because of the high proportion of over-aged vehicles, absence of assured loads owing to individual truck owners being lone operators and poor loading and unloading facilities at the terminals leading to abnormal delay and detention. In order to overcome these constraints, it is necessary to set up loading and unloading facilities, parking areas, provision of space for transport operators' offices served by banks and post offices in the outskirts of the cities. The setting up of such facilities by the State Governments would facilitate the formation of cooperatives of small truck operators. It would then be possible to coordinate the freight operations carried out at the two levels.

7.1.151 The country presently has outdated truck technology and practice of overloading trucks resulting in severe damage to roads. There is need of modernising truck technology and strengthening of enforcement machinery to check the menace of overloading.

7.1.152 An important feature of the road transport in India is that the bulk traffic on both National and the State highways is moved on two-axle rigid trucks. These vehicles are generally over-loaded and cause excessive damage to the highways.

7.1.153 Road pavements deteriorate under the action of vehicle wheels. The damaging effect of vehicle loads is cumulative in nature. The more the traffic and higher the wheel loads, the more will be the pavement deterioration and earlier the need to strengthen the road crust. It has been established that the damaging effect of an axle load increases exponentially and not linearly in relation to the damage caused by a standard axle of 8.16 tonnes. Multiplier for the damaging effect is fourth power of the ratio of actual axle load to the standard axle. Thus, an axle load of 12 tonnes will cause five times the damage than a standard axle and a 16 tonne axle load will imply damage equal to 16 passes of the standard axle. Since pavement design is based on cumulative number of standard axle loads over the design service life, higher axle loads eventually cause premature distress/failure of the road pavement. In turn this means higher vehicle operating costs and in the long run, need for increased outlays for road improvement and maintenance. While efforts would be made to strengthen the enforcement machinery to check overloading, it will also be necessary to modernise the truck fleet by introducing multi-axle vehicles.

Passenger Transport

7.1.154 The passenger services through road transport are provided both by the public and the private sectors in the country. However, over the years, the share of the public sector in the total fleet of buses has declined. (Annexure – 7.1.14) While in 1980-81 the public sector held 43 per cent of the total number of buses in the country in 1995-96 its share came down to 24.7 per cent.

State Road Transport Undertakings (SRTUs)

7.1.155 There is no uniformity in the organisational set up of the public sector road transport undertakings. Some States have Corporations constituted under the Road Transport Corporation Act, 1950, while some others have registered them under the Companies Act, 1956. Some States have departmental undertakings too.

7.1.156 The total reported fleet strength of the SRTUs as on 31.3.1997 was 1.13 lakhs, with a total capital investment of Rs.8187 crore. These SRTUs covered a length of 1074 crore effective kilometers during 1996-97. In the same year, 2337 crore passengers were carried by them. The SRTUs employ manpower of the order of 8 lakh.

Physical performance of SRTUs

7.1.157 There was an overall improvement in the productivity of SRTUs during Eighth Plan. Vehicle productivity increased from 257 revenue earning kilometers per bus held per day in 1989-90 to 278 km. per bus held per day in 1996-97. Similarly the staff productivity improved from 35.3 revenue earning kilometer per worker per day in 1989-90 to 40.5 km. per worker per day in 1996-97. Fuel efficiency improved considerably from 4.35 kilometres per litre (kmpl.) to 4.50 kmpl. during the same period. The details are in Table-7.1.12.

Table – 7.1.12
Performance of State Road Transport Undertakings

Performance Indicator	Seventh Plan ending (1989-90)	Eighth Plan ending (1996-97)
Fleet utilisation (% of buses on road)	89	89
Vehicle productivity (km. per bus held per day)	257	278
Staff productivity (km. per worker per day)	35.3	40.5
Bus staff ratio (on fleet operated)	7.93	7.6
Fuel consumption (kmpl.)	4.35	4.5

7.1.158 There are however, wide differences in the performance, efficiency and productivity of the various SRTUs. While there are examples of efficiently run organisations like the road transport corporations in Tamil Nadu, Andhra Pradesh, Rajasthan, Maharashtra, Karnataka and Haryana Roadways, others are still deficient in many areas. The road transport corporations in Bihar, Assam, Orissa etc., offer considerable scope for improvement. These SRTUs would need to chalk out an action programme for speedy improvement. The SRTU-wise details are in Annexure-7.1.15.

Financial Performance

7.1.159 Most of the SRTUs incurred losses and faced serious financial constraints. As per the latest estimate, the net loss incurred by the SRTUs was Rs.770 crore in 1996-97, compared to Rs.342 crore in 1992-93. The main reasons for the losses incurred by SRTUs were : uneconomic fares, delay in revision of fares which in most of the cases took four to five years, loss on account of concessional travel and operations on uneconomic routes.

Non-motorised Transport

7.1.160 Non-motorised transport modes, powered by human and animal energy meet a substantial segment of the country's transport needs. The human energy based modes include pedestrians, bicycles, manual rickshaws, cycle rickshaws, hand carts and boats. Animal powered modes include pack animals, animal drawn carts and tongas.

7.1.161 Very little data is available on a number of travel characteristics of the non-motorised modes of transport. A rough estimate puts the number of cycle rickshaws in India at 5 million and of bulluck carts at over 15 million. Similarly, the population of draught animals is estimated at about 85 million which represents the equivalent of about 40 million horse power or 30,000 MW capacity and makes available 50 billion energy units

FINANCIAL HEALTH OF ROAD TRANSPORT UNDERTAKINGS

- While the physical performance of the State Road Transport Undertakings (SRTUs) has been improving, the financial performance of the undertakings has been deteriorating. A major reason for this is inability of State Government to ensure economic fares, delays in implementing fare increases and numerous fare concessions given to different classes of passengers.
- There are wide variations in the fares fixed by various State Governments. The fare charged in the plains in Haryana is 35.76 paise per passenger km. against 18.22 paise in Tamil Nadu. In the hills, Himachal Pradesh charges 45.75 paise per passenger km. while Jammu & Kashmir 21.25 paise per passenger km.
- Another factor which adversely affects the finances of the undertakings is the concession in fares granted by the State Governments. The SRTUs incur loss of Rs.385 crore annually due to concessions to students, physically handicapped, journalists, freedom fighters and other categories of commuters.
- The SRTUs also carry the social burden of providing services to remote areas where load factors are very low and operations are therefore uneconomic. The loss incurred by SRTUs on this account was estimated at Rs.546 crore in 1996-97. The financial burden borne by SRTUs on account of concessional travel and operation on uneconomic routes is much larger than the total loss of Rs.770 crore incurred by them. Judicious pruning of these concessions, would help to eliminate these losses which are otherwise a burden on State finances.

per year. The non-motorised transport estimated to carry 210 billion passenger kms. and 43 billion tonne kms. as per the details given in Table-7.1.13.

Table – 7.1.13

Non-Mechanised Transport in India

	Freight Traffic (Billion Tonne)	Orig. Freight Traffic (Million Km.)	Passenger Traffic (Billion Tonne)	Orig. passenger (Million Pass.Km)
1. Human Transport	6.00	420.00	203.00	17150
2. Animal Transport	37.17	1922.50	7.2	360
Total (1 + 2)	43.17	2342.50	210.20	17510

7.1.162 In terms of tonne kms. and passenger kms. the share of non-motorised modes in total traffic is only 5% and 11% respectively. However, in terms of originating traffic these modes carry more than 5 times the freight and 4 times the passenger traffic as compared to the railways. These figures indicate the magnitude of the transport demand met by the non-motorised modes of transport.

7.1.163 The non-motorised modes are relatively inexpensive, environment-friendly, involve simple technology, have large employment potential, and sustain the rural economy. Considering the significance of non-motorised modes of transport, surveys and

field studies will be initiated to improve the availability of data on the operation of these modes. The non-motorised modes also represent stagnant technology and drudgery. There is an urgent need for providing simple technological inputs of improved designs and standardisation of spare parts, in order to ensure smooth and safe movements on pathways, improve efficiency and reduce drudgery. Research in this direction will be encouraged so that the non-motorised modes fulfil their niche role in the transportation system.

Policy Framework

7.1.164 The rapid growth of vehicle population, the inadequacy of road infrastructure, the growing concern for environmental degradation and the proliferation of personal modes of transport call for emphasis on the provision of public modes of transport and introduction of mass rapid transit system in the metro cities. The bus technology, which continues to be primitive, needs improvement in various directions including the design of chassis.

7.1.165 In the urban areas, particularly in mega cities, the scope for generating additional capacity to meet the rising traffic demand is limited. On the other hand, private vehicle ownership is increasing at a rapid pace. It is, therefore, necessary to resort to demand management through such measures as parking control, cordon pricing, prohibition of personal cars driving down to central business destinations and enforcement of car pooling, with a view to curbing the inefficient use of private vehicles, conserve fuel, minimise environmental impact and generate revenues for augmentation of capacity on public transport system. In the arena of road freight transport, emphasis will be laid on the upgradation of vehicle technology, particularly shift to multi-axle rigid trucks from two-axle rigid trucks and rationalising Motor Vehicle Tax preferably on annual basis. The administration of the Motor Vehicle Act will be streamlined and simplified. Enforcement will be made more effective. The objective will be to plug the leakages of revenue and reduce harassment of transport operators. In order to improve transparency and fairplay representatives of the transport operators will be involved in reviewing the operation of the enforcement machinery. The improvement in road safety will receive special attention during the Ninth Plan. The non-motorised modes of transport, which play an important niche role in the transportation system, will be provided with technological inputs to improve their efficiency and reduce drudgery.

7.1.166 The measures taken during the Eighth Plan to improve the productivity of the State Road Transport Undertakings will be continued during the Ninth Plan. These measures include replacement of overaged buses, inservice training to the operational staff, improved management practices and upgradation of vehicle technology. Efforts will also continue to periodically review the fare structure to compensate for the increased cost of operation. As a result of the measures, proposed to be taken, the productivity of SRTCs is likely to be improved. The productivity targets for the Ninth Plan are given in Annexure-7.1.15.

7.1.167 The growing traffic demand cannot be met by the public sector undertakings alone. Supply of transport, therefore, has to be improved through integrated transport service by the public and the private sectors. The private sector is already playing a dominant role in the passenger transport service operation. The private sector own and operate 75% of the total bus fleet in the country. Considering the growth in traffic and the need for replacement of buses in the public sector, the share of the private sector is expected to rise further in the Ninth Plan. In view of the constraint of resources and the need to run the SRTUs

efficiently, the SRTUs would give priority to acquisition of buses for replacement. The incremental fleet requirement will, however, be met primarily by the private sector. However, those SRTUs, which have resources may be allowed to acquire fleet for expansion.

Capital Contribution

7.1.168 From 1988 onwards the release of the Centre's matching capital contribution is limited to those State Road Transport Corporations, which do not incur net loss or run at break-even. Over the years, the SRTCs have been incurring losses on account of concessions to different categories of commuters, delayed and inadequate fare revision, operation on uneconomic routes etc. To minimise the losses, the State Governments have been advised to meet the incremental traffic demands through the private operators. The capital contribution to the SRTCs, in the light of this directive, was practically withdrawn. The SRTCs play a crucial role, particularly in the tribal, remote, hilly and sparsely populated areas. Capital contribution to some SRTCs may enable them to turn around financially. It is, therefore, proposed to review this policy during the Ninth Plan.

Private Sector Participation

7.1.169 In the recent past, as a result of a deliberate policy of the Government, the private sector increasingly shared the burden of the public sector in providing the passenger traffic services. While this has helped in meeting the passenger traffic requirements in the country, it has also exposed certain weaknesses of the private sector road transport operation. The bulk of passenger road transport services in the private sector are provided by operators who own one or two buses. These operators do not adhere to schedule, neglect maintenance and show scant regard for road safety. The presence of a large number of operators makes the task of the State regulatory bodies in enforcing laws, rules and regulations extremely difficult. The private sector operators, guided by maximisation of profits, opt for remunerative routes, with the result that remote and rural areas where the operation is unremunerative tend to be neglected.

7.1.170 The weaknesses in the private sector road transport operation point to the need for organising transport operation on sound corporate lines. It is necessary that the State Governments formulate suitable guidelines, which inter-alia, lay down the minimum viable size of the fleet, criteria of technical and financial soundness of the operators and a suitable mix of remunerative and un-remunerative routes which the private sector will be called upon to operate. The objective should be to ensure that the operators discharge their social and statutory obligations and provide efficient and reliable road transport services.

Road Safety Programme

7.1.171 The steep increase in the road traffic, the spurt in personalised vehicles, the phenomenal growth in heavy and over-loaded commercial vehicles and the inadequacies as well as the deficiencies in the road network have aggravated the problem of road safety. About 3 lakh road accidents are reported every year in the country, resulting in a loss of about 60,000 human lives which indicates that, on an average, there is one fatality in every five accidents. The fatality rate on Indian roads is exceptionally high, as compared to that of the world. India's share in the world vehicle population is only 4.2 per cent, whereas

in terms of fatalities it is 9 per cent. The accidents in the metro cities particularly in Delhi are increasing at an alarming rate. The total estimated economic loss as a result of accidents, including damage to the property, is estimated at Rs. 6000 crore per year.

7.1.172 Road safety is a multi-disciplinary area. Engineering, education, enforcement and public awareness play a big role. The focus on safety education provided in the Eighth Plan will be continued in the Ninth Plan. The road safety programmes in the Ninth Plan will also include proper signals, road signs, road markings, introduction of safety devices in manufacturing practices along with training/re-training of drivers and instructors, creation of awareness amongst road transport users, upgradation of safety monitoring practices by induction of modern technology, computerisation of traffic licensing system, systemising analysis of accidents etc. Traffic regulation through stringent enforcement of rules and severe punishment to frequent law breakers cannot be overemphasised.

Pollution

7.1.173 Pollution caused by the operation of automobiles has assumed an alarming proportion. The increasing number of transport vehicles, particularly personalised motor vehicles in the cities, cause air and noise pollution. The main reasons for the increasing level of pollution in the cities caused by road transport are poor maintenance of vehicles, large proportion of over-aged vehicles, more frequent traffic jams due to lack of traffic planning, extensive over-loading, poor upkeep of roads, crowded highways, ribbon development, prevalence of old technology in heavy motor vehicles and very lax enforcement of rules and regulations pertaining to the pollution emission norms.

7.1.174 While the pollution level caused by the road transport has been increasing in all the cities, the worsening situation in the mega cities deserve special attention. In these cities, the automobiles have the dubious distinction of having the maximum share in total pollution. For example, it is estimated that the automobiles in Delhi contribute to nearly 2/3rd of the total atmospheric pollution. The emission factors of different vehicles indicate that the personalised motor vehicles are the major contributors to pollution and this contribution is increasing at fast rate.

7.1.175 The emission of many of the pollutants in the country has increased rapidly during the past decade because of the rising vehicle pollution and the absence of pollution control. The rate of pollutant emission from vehicles is significantly higher than in the developed countries. Air pollution by the road vehicles, if not controlled now, is likely to increase manifold in the near future. There is, therefore, an urgent need to attend to the problem of pollution caused by road transport.

7.1.176 The Motor Vehicle Rules, 1988 provide for checking pollution. Their implementation, however, has not helped to control the increasing rate of pollution caused by the vehicles, particularly in the urban areas. This problem can be solved only through upgradation of technology in freight carriage, reduction in the number of personalised motor vehicles, awareness among transport users, strict enforcement of the legal provisions and strengthening of the public transport system. At the same time, it is necessary to contain the demand as well as relocate travel by resorting to demand management measures.

7.1.177 The main schemes proposed to be taken up in the Ninth Plan relate to development of infrastructure facilities for the operation of the buses of state road transport

undertakings, strengthening of the motor vehicles department, road safety programmes and provision of loading and unloading facilities in the outskirts of major cities.

PORTS

7.1.178 Ports, which are the gateways to India's international trade, handle over 90% of foreign trade. There are 11 major ports and 139 operable minor/intermediate ports, studded along the 5560 kms. of the coast-line of India. The major ports are administered by the Port Trusts under the control of the Central Government, whereas the responsibility of minor/intermediate ports lies with the concerned maritime State Governments. Major ports of the country are Calcutta and Haldia, Mumbai, Chennai, Cochin, Kandla, Visakhapatnam, Paradip, Tuticorin, New Mangalore, Mormugao and Jawahar Lal Nehru. A port at Ennore is under construction by Chennai Port Trust. Port facilities, to some extent, have also been provided in Andaman & Nicobar Islands and Lakshadweep by Andaman Lakshadweep Harbour Works(ALHW) under the Central Government. A major portion of the dredging requirements of capital/maintenance nature are taken care of by the Dredging Corporation of India.

Eighth Plan Review

Traffic and Capacities

7.1.179 The traffic at all the major ports has been growing continuously over the years. The traffic handled at major ports was 156.64 million tonnes in 1991-92, which increased to 215.21 million tonnes in 1995-96 and further to 227.26 million tonnes in 1996-97, thereby registering an annual average growth of nearly 7.3% during the Eighth Plan period. The details of port-wise traffic handled during the Eighth Plan are given at Annexure 7.1.16.

7.1.180 The POL traffic has registered a significant growth in terms of volume handled. However, its overall share in the total traffic has declined from 44.3% in 1992-93 to 43.16% in 1996-97. The container traffic has shown a remarkable growth potential. The container traffic accounted for nearly 4.58% of the total traffic handled by the ports in 1992-93 which increased to 9.06% in 1996-97. The container traffic is likely to increase substantially in the Ninth Plan. Coal and general cargo are the other areas where substantial growth in traffic has been witnessed during the Eighth Plan. The composition of traffic during the Eighth Plan is given at Annexure 7.1.17.

Productivity

7.1.181 Port productivity, in terms of average ship berth day output and idle time at berth as percentage of total time at berth, has registered an improvement during the Eighth Plan period. The average ship berth day output increased from 3942 tonnes in 1991-92 to 4002 tonnes in 1994-95 and to 4249 tonnes during 1996-97. The idle time at berth as percentage of total time at berth decreased from 37% in 1991-92 to 33% in 1994-95 and further to 31% in 1996-97. However, the average turn around time of a ship increased from 6.7 days in 1991-92 to 7.8 days in 1996-97. During the same period, the average pre-berth waiting time has also shown an upward trend. It increased from 1.6 days in 1991-92 to 2.4 days in 1994-95 and further to 3.1 days in 1996-97.

7.1.182 Labour productivity is one of the important indicators for measuring the performance of a port. An analysis of the average output per "Gang Shift" achieved versus the norm of various cargo handled fixed in 1990, reveals that this ratio varies widely from 50% to 200%. Secondly, this ratio in most of the cases is much above 100% which signify that the prescribed norms itself are at a low level and need to be updated and scientifically determined.

7.1.183 Equipment utilisation has been low in most categories of equipment. Low productivity is mainly due to the operational constraints, such as, equipment breakdown, time spent on service and power failures etc. Overaging of installed equipments is another area of concern. Out of the total fleet strength, 88% of Wharf Cranes, 66% of mobile cranes and 31% of Fork Lift Trucks have crossed their economic life.

Eighth Plan Outlay and Programme

7.1.184 During the Eighth Plan an outlay of Rs.3216 crore was approved for the ports sector. Against this, the actual expenditure totalled Rs. 1907.01 crore, of which the major ports accounted for Rs.1741.03 crore. Out of the total expenditure of Rs.1907.01 crore, Rs.1521.42 crore or 80% came from the internal resources and inter-corporate loans of major ports. The budgetary support accounted for 20% of the expenditure. A part of the budgetary support was on account of foreign aided projects (about Rs.158.04 crore) and the domestic budgetary support was 11.9% of the expenditure. The details of the Eighth Plan Outlay and Expenditure from 1992-93 onwards are given at Annexure 7.18.

7.1.185 In respect of major ports there has been a heavy shortfall in expenditure as compared to the outlay during 1992-97. The main reasons for the shortfall have been the delays caused in sanctioning the schemes, slow progress of work by the contractors, adverse weather conditions, contractual disputes/litigation, delays involved in tender finalisation/ awarding of contracts and deferment of projects/ schemes, etc

Operational strategy for the Ninth Plan

7.1.186 During the Ninth Plan port development should keep pace with the expansion in traffic and changes in the shipping scenario including the size of ships, specialisation and automation etc. Container facilities would need to be augmented at the ports in line with the developments abroad. Mechanised loading and unloading facilities would need to be developed at certain locations to handle the coal requirements of the existing and new power stations which are likely to be commissioned during the Ninth Plan. However, the funding of such captive facilities would need to be done by the user agencies. Efforts need to be made to improve the POL handling facilities at the ports by planning in such a way that the completion of tanker discharge/unloading operations is achieved within 24 hours. Acquisition of new tankers and special carriers should take note of shipboard capacities, port facilities available and contemplated. Night navigation facilities would need attention at all the major ports to improve the turn-around of tankers, other vessels and berth utilisation. Before embarking on any major investment in creation of additional infrastructure facilities, the development and modernisation of existing port facilities should receive priority to improve productivity at-ports. Besides, the maintenance of port infrastructure would need to be improved. The port capacity would need to be adequately augmented in view of the projected traffic requirements during the Ninth Plan, with larger private sector participation and development of selected minor ports.

PRODUCTIVITY OF INDIAN PORTS

- Port productivity in the Indian context is not just an assessment of the cargo handling time but depends also to a very large extent on the productivity of the entire logistic chain of which the port is only a link. The chain also comprises road-railway linkages, inadequate inland warehousing facilities, customs clearance procedures etc. which also affect port productivity.
- Certain productivity indicators like average ship berth day output, idle time at berth, and average ship turnaround time (ASTA) have been continuously improving but are still much lower when analysed with comparable foreign ports. The ASTA for container ships in ports such as Singapore is only 6 to 8 hours whereas in India it is 3.74 days at the most modern port, JNPT. In terms of containers handled per crane hour the average for Indian ports is 14 to 17 boxes as against 25 to 27 for Singapore, 28 for Hongkong, 26 for Colombo and 27 to 30 for Kalang.
- The area of port productivity must receive major focus in the Ninth Plan period. Modernisation of port equipment, revamping the organisational structure of ports and investments in inter-modal arrangements are all expected to yield higher productivity and greater customer satisfaction. During the Ninth Plan period it is proposed to augment port capacity to reach 424 MT. Measures to improve productivity of both man and machine as reflected in the modernisation and manpower planning methods are expected to contribute substantially to the capacity creation effort over the 9th plan period.

7.1.187 The traffic projections (commodity – wise during 2001-02 are detailed in Table 7.1.14.

Table 7.1.14
Commodity-wise Traffic Projections -- Ninth Plan --- Port Sector
(in Million Tonnes)

S.No./Commodity	Estimated Throughput During 2001-02
1. POL	186.7
2. Iron Ore	34.4
3. Coal	93.7
4. Fertilizer	14.2
5. Containers	38.7
6. Other Gen. Cargo	56.2
Total	423.9
The details of capacity augmentation are given below:	
i) Capacity of major ports as on 31.3.97	215 MT
ii) Capacity creation in the major ports during 1997-2002 on account of New Schemes	122 MT
Of which :	
a) Schemes to be funded by Ports	35 MT
b) Improvement of the capacity of existing assets	11 MT
c) Schemes to be undertaken through Private Sector	45 MT
d) to be created by captive users	31 MT
iii) Capacity accrual on account of spillover schemes of 8 th Plan which are under implementation	37 MT
iv) Additional capacity expected on account of productivity increase in Major Ports and contributions by development of minor ports.	50 MT
TOTAL	424 MT

7.1.188 The Ninth Plan visualises an actual physical capacity addition of about 209 million tonnes which include capacity addition of 122 million tonnes on account of new schemes (Annexure 7.1.19) depicting an annual growth of 19.4 percent. The major increase in capacity will take place at JNPT, Kandla, Mormugao, New Mangalore, Mumbai, Chennai and Paradip, mainly to handle POL, coal and container traffic.

7.1.189 In order to augment the resource base for the development of ports as envisaged above, there are a number of other steps that need to be taken including structural changes in the management of major ports. They are discussed in the subsequent paragraphs.

Corporatisation of Ports

7.1.190 The provisions of the Major Port Trusts Act, 1963 do not allow operation of services by Port Trusts on commercial lines. The approval of the Central Govt. is required in a majority of decisions. Under this restrictive ambit, the ports are unable to operate in a market oriented economy with flexibility in commercial operations.

CORPORATISATION OF PORTS

- The present organisational structure of the major ports in the form of Port Trust presents many problems. It creates time lags in decision making and is not conducive to such commercially oriented decision making needed for the management and operation of a modern port.
- A corporatised organisational structure will impart administrative autonomy which will directly improve the efficiency and viability of operations. As a corporate entity Indian major ports would be able to raise resources through equity and debt from the market. Access to institutional finance will be easy since tangible assets will be available for use as collateral. Joint ventures with foreign ports and private sector will be smoother and more efficient in a corporatised framework.
- Steps are being taken by the Govt. of India towards facilitating corporatisation. The Ennore port will be the first corporatised port which will be followed by Jawahar Lal Nehru port in the second phase. Action in respect of corporatisation of other ports will be taken up on the basis of a study and experience with regard to corporatisation of the earlier ports.

Joint Ventures

7.1.191 A scheme for formation of Joint Ventures between major ports and foreign ports, between a major port and minor port(s) and between major ports and private companies (Indian and Foreign) has been approved. The objective is to attract new technology, introduce better managerial practices, expedite implementation of schemes, foster strategic alliances with minor ports for creation of optimal port infrastructure and enhance the confidence levels of the private sector in the funding of ports.

7.1.192 The existing norms of productivity of labour and equipment will be stepped up and manning scales rationalised. Mechanical aids and cargo handling techniques will be introduced.

7.1.193 The surplus labour under both cargo handling and non cargo handling categories will be identified, re-trained for other trades where feasible and re-deployed to the best extent possible for meeting the additional requirement of labour during the Ninth Plan period.

7.1.194 Systematic and well-designed training will be imparted to the port personnel to improve their skills and to prepare them for the switch over from conventional general cargo handling operations to more sophisticated container handling and also for fast bulk handling operations. The training will also be given to managerial officers to improve their managerial capability.

7.1.195 All efforts will be made to eliminate the multiplicity of agencies present in commercial cargo handling operations and ensure unified cargo handling labour with complete inter-changeability between shore and ship. The start made in this direction at the Mumbai and Cochin ports for the merger of Dock Labour Boards with Port Trusts may be continued and extended to other ports.

7.1.196 The complementary role of intermediate and minor ports to major ports in handling domestic and international traffic is well recognised and necessary assistance will be extended for selective development and modernisation of such ports showing potential and promise.

Private Sector Participation

7.1.197 The broad objectives of participation of private sector in port development have been to bring about an improvement in efficiency, productivity and quality of service as well as to usher in competitiveness in the provision of port services. In addition, the private sector is expected to mobilise adequate resources required for capacity augmentation and to introduce the latest technology and improved management techniques in the ports sector.

7.1.198 The modernisation and augmentation of capacity at major ports to meet the projected traffic demand require huge investment. With a view to harnessing sufficient resources, ushering in an element of competition and introducing the latest technology and improved management techniques, the Government has opened up the port sector for private participation. The Major Port Trusts Act 1963, permits private sector participation in port development and as such, no specific legislation is necessary for ensuring private sector participation in this sector. The issue of private sector participation in ports gained momentum during the Eighth Plan and the focus shifted from leasing of existing assets to creation of new port assets through private sector participation. In order to ensure transparency and uniformity, detailed guidelines have been laid down in respect of the procedures to be followed for inviting private investment. The Government has already awarded the project for construction, management and maintenance of two berths container terminal on BOT basis at JNPT to a consortium headed by an Australian firm. The cost of the project is around Rs.700 crore to be spent in three years. The new terminal will augment the container handling capacity at JNPT to around one million TEUs annually. Other ports are also preparing/implementing projects to augment capacity through private investment.

7.1.199 The following areas have been identified by the Government for private sector participation in the ports sector :

- i) Leasing out assets of the ports
- ii) Construction and operation of container terminals, multipurpose cargo berths and specialised cargo berths, warehousing, storage facilities, tank farms, container freight stations, setting up of captive power plants, etc.
- iii) Leasing of equipment for cargo handling and leasing of floating rafts from the private sector.
- iv) Pilotage.
- v) Captive facilities for port-based industries.

7.1.200 In order to attract the much needed private sector participation in the port sector during the Ninth Plan, it has been decided to amplify the guidelines to enable the major ports to forge joint ventures in the field of port development and operations with Indian companies having/not having foreign equity. Joint ventures will also be forged between major ports and maritime State Governments in respect of projects in their own ports or other ports or ports of maritime State Governments. During the Ninth Plan, with a view to bringing in global technology in port development and operations, it is envisaged to promote tie-up between Indian major ports and suitable foreign State ports, like Singapore/Rotterdam etc. under a Government to Government bilateral assistance programme, which would obviate the need to follow the tender route and help in the speedy implementation of various projects in the port sector.

7.1.201 Further, to make the system transparent and streamlined, an independent Tariff Authority for Major Ports has been set up to deal with tariff matters. The Authority will fix and revise the various port charges and the charges to be collected by private providers of ports facilities and publish the same from time to time.

7.1.202 During the Ninth Plan, an ambitious investment plan through private sector participation is to be initiated. In addition to plan allocations for major ports, resources to the extent of Rs. 8000 crore are likely to be available for development of ports. A major portion of this investment is expected from the private sector.

Science & Technology

7.1.203 In the light of the rapid technological changes taking place in the maritime industry, the three major areas, where automation will be aimed at during the Ninth Plan, are :

- (a) use of Vessel Traffic Managements System (VTMS) to facilitate night navigation and help in safe pilotage of vessels at the port channels.
- (b) use of computers in cargo handling operations (especially in container terminals) as without a well developed data base and computer system to monitor the operations, efficiency in container handling operations cannot be realised.
- (c) use of Electronic Data Interchange (EDI) for trade related document transactions to enable the ports and the port user community to usher in computer networking.

Manpower Planning

7.1.204 Initially, the handling of cargo for loading/unloading of ships in the Indian ports was to be done manually and was highly labour intensive. This scenario has changed with the advent of technological development in the maritime transportation system. The emphasis has shifted towards carriage of goods in larger vessels, and mechanised loading/unloading. The cumulative outcome of all these has been handling a larger quantity of cargo with less number of workers at the Indian ports.

7.1.205 The manning scales were evolved over a period of time based on local conditions and other factors that prevailed at individual ports. The existing norms of productivity of labour and equipment can be stepped up and the manning scales rationalised based on a more rationalised categorisation of cargos, introduction of mechanical aids and cargo handling techniques. Innovative efforts, including private sector participation in maintaining and leasing equipment, need to be initiated to improve the productivity levels at ports.

Development of Intermediate and Minor Ports

7.1.206 Minor/intermediate ports are in the concurrent list of Constitution of India. The primary responsibility of their development and management rests with the concerned maritime State Governments. There are 163 minor and intermediate ports, out of which 139 are stated to be operable at present. Only a few of these ports are well developed, providing all-weather alongside berthing facilities, each handling over 1.0 million tonnes per year. Many are only fair weather ports. The minor ports handle cargo like fishery products, foodgrains, fertilizers, building materials etc.

7.1.207 The traffic handled by the minor ports is continuously on the rise. Traffic handled by these ports has increased from 12.78 million tonnes in 1990-91 to 24.93 million tonnes in 1996-97. Currently, nearly 10% of the total traffic is being accounted for by the minor ports.

7.1.208 The role of minor ports is increasingly assuming importance owing to the development of coastal shipping and is viewed as an alternative to the over-congested major ports. Therefore, there is an urgent need for the concerned States to provide adequate funds for the development of minor ports so that they can effectively cater to coastal and sailing vessels and thereby serve as instruments for the development of hinterland. The Ministry of Surface Transport, Government of India as major policy initiative setup a Committee for Navigational Safety in Ports (NSPC) to take care of all aspects of navigational safety, navigational aids, pilotage, hydrographic survey etc., covering new and existing minor/captive/private ports. The Ministry of Surface Transport has also set up a Maritime States Development Council under the chairmanship of the Minister for Surface Transport with Transport/Port Ministers from Maritime States as members with a view to coordinating the developmental activities of minor ports.

7.1.209 For proper development of port infrastructure and to check wasteful duplication of port facilities, an integrated approach will be evolved in the Ninth Plan to ensure utmost coordination among the major and minor ports.

ROLE OF MINOR PORTS

- Traffic at Indian ports in the year 2020 is estimated to be 1,200 million tonnes whereas the existing capacity at the major ports can, at most be expanded to 550 MT. Future expansion in port capacity therefore has to come through development of minor ports in a manner complementary to the major ports.
- The responsibility for developing minor/intermediate ports vests with the concerned State Governments. However, the Government of India has also taken a number of steps to facilitate minor port development including amendments to the Major Port Trusts Act, 1963 to facilitate joint ventures between major and minor ports to enable them to access institutional funding and adopt the latest port management techniques.
- Gujarat has taken the lead in planning the development of 10 green field ports of which 6 would be exclusively under the private sector. These projects are likely to involve an investment of Rs.14,566 Cr. The ports to be developed by the private sector are to be given on BOMT (Build Operate Maintain and Transfer) basis.
- Maharashtra has decided to invite competitive bids for the development of 7 minor ports (out of 48 in Maharashtra) on Build Own Operate Transfer (BOOT) basis. In addition the State Govt. has also formulated a policy for allocation of sites for captive jetties required by port based industries in the other minor ports. Many in principle approvals have also been given to some companies for construction of private jetties to handle cargo.
- Andhra Pradesh has embarked on a minor port development strategy in respect of two intermediate ports at Kakinada and Machilipatnam and 10 minor ports. During the Ninth Five Year Plan the State Govt. has decided to develop five ports viz., Kakinada, Machilipatnam, Vodarevu, Nizampatnam and Bhavanapadu at an estimated cost of Rs.41.02 Cr. The development of Deep Water Port at Kakinada taken up with ADB loan assistance is completed and ships are being handled from October, 96 successfully. The State Govt. has also decided to privatise the operation and maintenance of the existing three berths on Operate Maintain Share and Transfer (OMST) basis and the future berths to be constructed on Build Operate Share and Transfer (BOST) terms. In Phase I the ports of Kakinada, Machilipatnam, Krishnapatnam and Nizampatnam were offered to the private sector and the remaining ports in Phase II.

Andaman & Lakshadweep Harbour Works (ALHW)

7.1.210 The ALHW executes the Plan projects related to the development of port and harbour facilities in the Union Territories of Andaman & Nicobar Islands and Lakshadweep. During the Eighth Plan, Rs.70.84 crore were spent on the schemes run by ALHW

7.1.211 In the Ninth Plan, the emphasis has been given on completion of spillover schemes of the Eighth Plan and to carry out new schemes based on future requirements as indicated in the "Master Plan for Transport System in the Andaman & Nicobar Island and Lakshadweep" prepared by the Expert Committee and the recommendations of the Expert Committee (1986) set up for the "Development of Harbours in Lakshadweep". Both these Expert Committees were set up by the Ministry of Surface Transport.

Minor Ports Survey Organisation (MPSO)

7.1.212 The MPSO was created in 1962 for carrying out hydrographic surveys of minor ports and inland waterways. This organisation works on “no profit, no loss basis” and charges for the survey undertaken. At present, this organisation is carrying out hydrographic surveys required for the construction and expansion of ports and harbours, inland waterways, survey of rivers for navigation and flood control, coastal erosion and general navigational surveys of harbours. During the Eighth Plan, the MPSO has spent Rs. 11.40 crore in its survey-related activities.

Dredging Corporation of India (DCI)

7.1.213 The DCI was created in 1976 to provide integrated dredging services to the major ports, minor ports, etc. The DCI has a modern fleet of seven trailer suction hopper dredgers, two large cutter suction dredgers with pipelines, one ocean going tug and three inland dredgers and other allied crafts.

7.1.214 It was projected that 131 million cubic metres of capital dredging would be undertaken during the Eighth Plan period. Against this, only 46 million cubic metres of capital dredging has been actually carried out. During the Eighth Plan, DCI spent Rs. 88.43 crore on the dredging - related activities.

7.1.215 The Ninth Plan proposals have been formulated keeping in view the following needs: (a) replacement of DCI dredgers which are more than 15 years old; (b) augmentation of dredging capacities to meet the maintenance requirements of major and minor ports; (c) meeting the emerging needs of IWAI for Inland dredgers and (d) providing for ship-repair facilities for DCI dredgers. The projected dredging requirements during the Ninth Plan period is estimated to be around 534 million cubic metres comprising of capital dredging of 142 million cubic metres and maintenance dredging of 392 million cubic metres.

SHIPPING

Introduction

7.1.216 The role of shipping in promoting trade and economic development in a country has been recognised by maritime countries world over. For India, with a coast line of about 5560 kms. studded with 11 major ports and more than 139 operable minor and intermediate ports, this sector is of vital importance. At present, over 90% of its international trade in terms of volume and 77% in terms of value is moved by sea.

7.1.217 In all, there are 80 shipping companies including the public sector, Shipping Corporation of India (SCI) in the country. Of these, 10 principal private companies own a fleet of 115 ships with a tonnage of 2.245 million GRT accounting for 32.7% of the total tonnage. The largest shipping company is SCI. It owns 118 ships with a tonnage of 3.037 million GRT accounting for 44.2% of the total tonnage.

7.1.218 The financial position of most of the shipping companies has improved over a period of time. The financial position of SCI has also shown an encouraging trend. There has been a steady improvement in the financial performance of SCI over the years. The net profit

of the company increased from Rs.109 crore in 1990-91 to Rs.143.18 crore in 1992-93 and to Rs.323 crore in 1995-96 but came down to Rs.233 crore in 1996-97.

7.1.219 An analysis of the age-profile of the Indian fleet, however does not depict an encouraging picture. A large number of vessels have either completed their economic life or are due to complete it in the near future. Nearly 15% of the total fleet is in the age group of above 20 years and 56% in the age group of 11 to 20 years, thus leaving only 29% in the age group of below 10 years. 31% of the ships owned by SCI is in the age group upto 10 years, 56% between 11 and 20 years and another 13% in the age group of more than 20 years.

7.1.220 The Indian shipping industry also plays a prominent role in foreign exchange (FE) earnings of the country. During 1996-97, the Indian shipping industry earned foreign exchange to the tune of Rs.5008 crore, as compared to Rs.3176 crore during 1992-93. The FE earnings of SCI were higher at Rs.2310.06 crore during 1996-97, compared to Rs.1745 crore during 1994-95.

7.1.221 The share of Indian shipping in India's overseas trade is continuously declining, after attaining the peak level of about 41% in 1987-88. At the beginning of the Eighth Plan, the share of Indian flag ships in its overseas trade was nearly 36% and by the terminal year of the Plan it dropped to 28 percent. This decline can be attributed mainly to the stagnating fleet strength, despite the fact that India's exports and imports have grown at an average annual rate of 18 percent. The liberalisation of the Indian economy has sparked of a rapid growth in imports necessitating the country to promote the shipping sector so as to generate foreign exchange earnings/savings. The requisite fleet expansion programme needs to come through both the public and the private sectors.

Eighth Plan Performance

7.1.222 Indian shipping has made a steady progress during the post-independence period. The Indian tonnage, which was only about 1.92 lakh GRT on the eve of independence, reached 6.6 million GRT by the beginning of the Eighth Plan.

7.1.223 For the expansion of Indian tonnage, the Government has taken a number of steps during the Eighth Plan. These include liberalisation of the procedures regarding acquisition of vessels, liberalisation of ship repair procedure outside India and amendment of the Merchant Shipping Act to facilitate external commercial borrowings by the shipping companies. As a result of these policy initiatives, the Indian tonnage has exceeded the Eighth Plan target of 7 million GRT in December, 1995 itself i.e. more than a year ahead.

Eighth Plan Thrust Areas

7.1.224 The thrust areas in the shipping sector during the Eighth Plan included scrapping of obsolete vessels, acquisition of modern fuel-efficient vessels, gradual delicensing and deregulation of the shipping industry, cargo support to Indian shipping, human resource development etc.

7.1.225 In order to develop the Indian shipping industry, a new shipping policy was initiated in 1991. The several policy measures initiated since then are summarised below:

- i) No approval is required for acquisition of ships, except small crafts.
- ii) No approval is required for sale of ships and acquisition of ships from an Indian shipyard.
- iii) Shipping companies are given freedom to time charter out Indian ships.
- iv) Shipping companies are allowed to retain the sale proceed(s) of their ships abroad and utilise the same for fresh acquisition.
- v) Shipping companies are allowed to acquire vessels through bare boat charter-cum-demise method.
- vi) The shipping companies are permitted to get their ships repaired in any shipyard without seeking prior approval of the Government.
- vii) Quarterly Block Allocation Scheme for repair of ships has been dispensed with entirely and the RBI now releases foreign exchange for ships repair/drydocking and spares for imported capital goods without any value limit.
- viii) Certain sections of the Merchant Shipping Act have been amended to facilitate external commercial borrowings by the Indian shipping companies for acquisition of ships from abroad.

Plan Outlay and Expenditure

7.1.226 The details of the Eighth Plan outlay and the progress of expenditure for the shipping sector are given in Table 7.1.15

Table 7.1.15
Plan Outlay and Expenditure

(Rs. Crore)

Scheme	8 th Plan	1992-96	1996-97		8 th Plan
	1992-97 Outlay	Expdr. (Actual)	Outlay	Expdr.	Expdr.
1. Shipping Corp.n.of India	3300.00	2390.78	1895.03	267.80	2658.58
2. Interest Subs- idy for sailing vessels	1.82	Nil	-	-	-
3. DG Shipping	98.18	89.81	25.01	14.50	104.31
Total	3400.00	2480.59	1920.04	282.30	2762.89

Externally Aided Projects

7.1.227 To meet the training needs, the Directorate General of Shipping is in the process of upgrading and modernising the training equipments through a grant-in-aid from the Government of Japan. The on-going schemes relate to acquisition of three simulators, namely ship handling simulator; engine room simulator and liquid cargo handling simulator. These simulators have since been acquired and become operational.

Tonnage Acquisition Target for the Ninth Plan

7.1.228 The emphasis during the Ninth Plan will be mainly on maintaining the existing share of Indian flag vessels in its overseas trade. At present, the share of Indian shipping is as follows:

- (i) In the liner trade it is 9.8 per cent, as against India's entitlement under UNCTAD Liner Code of 40 per cent.
- (ii) In the dry bulk trade it is 15.6 per cent as against the expectation of 50 per cent.
- (iii) In POL products it is 51.8 per cent as against the expectation of 80 per cent.

7.1.229 The shipping tonnage of 7.13 million GRT of the Indian fleet represents 1.4 per cent, of the world tonnage of 507.87 million GRT as on 1st July, 1996. To maintain the existing share, the ideal level of Indian tonnage should be around 14 million GRT by the end of the Ninth Plan. But, keeping in view the ground realities like the prevailing difficult conditions in international shipping, shortage of trained and qualified manpower, and constraint of resources, a tonnage of 9 million GRT has been set as the target for the Ninth Plan. The additional tonnage would be 50 per cent newly built ships and 50 per cent second-hand acquisitions.

Ninth Plan - Thrust Areas and Strategy

7.1.230 Recognising the role of the shipping sector in the context of the over-all growth strategy in general and the promotion of export and foreign exchange earning in particular, modernisation and diversification of Indian fleet will be accorded top priority during the Ninth Plan. The other objectives are:

- (i) The world of shipping has undergone a structural change with the introduction of container vessels. The strength of the Indian fleet will be augmented with the acquisition of modern fuel-efficient vessels particularly suited for handling container cargo.
- (ii) To remove the constraints with a view to achieving the target of 9 million GRT, the endeavors in brief, will be to (a) create a conducive environment for raising resources from the capital markets and external borrowings, (b) relax the existing constraints of licensing and sectorwise allocation of tonnage in India's overseas and coastal trade in a

phased manner; (c) provide further autonomy in ship acquisition; (d) address the issues of recruitment, training and retention of manpower in Indian Flag vessels; e) make appropriate amendments to the Merchant Shipping Act; (f) ensure speedy development of coastal shipping.

- (iii) Innovative means will be considered for the expansion of the fleet. The setting up of subsidiaries off shore, dual registration of ships and foreign investment either as joint ventures or directly will be encouraged.
- (iv) The system of cargo support of canalising the cargo of public undertakings and Government Departments/ agencies through Transchart arrangement will continue. The present policy of purchase on FOB and sale on CIF terms is to be followed vigorously.
- (v) The infrastructural facilities at the ports will be geared not only to relieve the existing congestion but also to take steps to develop the 'hub and feeder' system to enable them to handle large containerised vessels in an efficient manner. The repair facilities will be strengthened to meet the requirements of the shipping sector.

Coastal Shipping

7.1.231 Coastal shipping is one of the most energy efficient and the cheapest mode of transport for movement of bulk commodities over long distances. It entails no investment in line-haul capacity except in navigational aids and terminal facilities. Considering the vast coast line and severe congestion faced by the land modes of transport, the coastal shipping offers an effective alternative means of transport. The land route particularly along Chennai, Visakhapatnam on the east coast is parallel to the coast thereby holding the potential for diversion of rail/road cargo to the sea route which will result in immense savings owing to the energy efficiency of this mode of transport.

7.1.232 Presently, the cargo moved by coastal shipping comprises coal, clinker, cement, crude oil, POL and iron ore. Over the years, the general cargo, which is an important component of the coastal trade, has been weaned away by other modes of transport. Thermal coal is presently the major commodity moved by coastal shipping with a share of 63% followed by POL (23%) and iron ore (12%). General cargo accounts for just 1% of the total coastal cargo.

7.1.233 The development of coastal shipping has been slow despite the fact that the entire coastal trade is reserved for Indian vessels. The shipowners are reluctant to acquire dedicated coastal vessels due to various impediments such as complex customs procedure, time-consuming system of port clearance, high manning scales at par with overseas shipping, poor port infrastructure etc.

7.1.234 One of the important thrust areas during the Ninth Plan will be the development of coastal shipping so that the potential of this mode of transport could be tapped with a view to relieving the pressure on other surface modes of transport.

7.1.235 The Ninth Plan target of coastal tonnage is around 1 million GRT, as compared to 0.7 million GRT as at present. This target has been fixed in view of the increased movement

expected for commodities like coal, iron ore, clinkers etc. in the Indian coast on account of new projects which are coming up viz. Power plants (involving coal movement), mega refineries (involving POL movement), new cement plants on the west coast (involving movement of coal, clinker and cement) etc.

7.1.1236 Though the target is modest, it can be achieved only if the various constraints to the growth of coastal tonnage are removed. The low productivity at major ports, the paucity of ship repair services and the relative under development of minor ports all affect the operations of coastal shipping very adversely. A package, which may include the creation of infrastructure facilities, the simplification of customs procedure, fiscal incentives for development of coastal shipping and synchronising minor port development with the needs of coastal shipping is essential to remove the various impediments hampering its growth.

7.1.237 The development of coastal shipping in the country warrants that it should be accorded a status at par with other modes of domestic transport system without subjecting it to rigorous customs procedures. Further, there is a need to develop water transport as a part of a multi-modal transport system to connect the major/minor ports with the hinterland in a cost-effective manner for the efficiency of the maritime trade to increase the tonnage handled in our ports. Development of minor ports is a necessary precondition for according coastal shipping its proper place in the domestic transport system. While developing these ports special care should be taken to ensure that adequate infrastructure is provided for onward transmission of goods to hinterland.

Manpower Planning

7.1.238 The ship acquisition target set for the Ninth Plan will require more than 10,000 trained crew to man them. In addition, India is endowed with a tremendous potential to enter into the field of export of manpower services which has become a major source of foreign exchange earnings in developing countries like Philippines and South Korea. This warrants not only the strengthening of the existing training institutes approved by the DG(Shipping) but also initiatives being taken urgently to supplement the efforts of DG (Shipping) by the development of private merchant marine training institutes and involvement of other major players in the field.

7.1.239 Keeping in view the enforcement of stringent standards of training and certification of merchant marine personnel in the wake of the implementation of IMO Convention, it is necessary to upgrade the existing training facilities. State-of-the-art simulators will need to be acquired besides other training equipment, to strengthen the training infrastructure.

Lighthouses & Lightships

7.1.240 The Department of Lighthouse and Lightships is a revenue earning Department and derives its income from light dues and light charges from ships. During the Eighth Plan, the anticipated revenue earning is Rs.266 crore.

7.1.241 The Eighth Plan provided an outlay of Rs.57 crore. Against this, the expenditure has been Rs.25.48 crore.

7.1.242 In the Ninth Plan, emphasis will be placed on automation of existing lighthouses, improvement in visual aids, replacement of existing light house tenders and improvement of training facilities. Establishment of new light houses would be considered on a selective basis.

INLAND WATER TRANSPORT (IWT)

Introduction

7.1.243 Inland water transport (IWT) is an energy efficient and cheapest mode of transport for bulk commodities originating and terminating on the water fronts. It has a high employment potential. However, at present it forms a very small part of the total transport network. In terms of tonne kilometres its share is less than 1 per cent. The main reason for the small share of IWT is its spatial limitation.

7.1.244 India has navigable waterways aggregating 14,544 kms., of which only about 5,200 kms. of major rivers and 485 kms. of canals are suitable for operation of mechanised crafts. Most of the waterways suffer from navigational hazards like shallow waters and narrow width of the channel during dry weather, siltation, bank erosion, absence of infrastructure facilities like terminals and inadequacy of navigational aids. The existing availability of vessels for IWT in the public and private sectors put together is less than 400 vessels including tankers, bulk carriers, dumb barges and others of average capacity of 600 tonnes.

7.1.245 Inland water transport was given priority commencing from the Sixth Plan by laying stress on the development of waterways and modernisation of vessels. The two Central Government organisations namely, the Inland Waterways Authority of India (IWAI) and the Central Inland Water Transport Corporation Ltd. (CIWTC) together constitute the basic machinery for bringing about a visible growth of the IWT sector. The Inland Waterways Authority of India (IWAI) was set up in October, 1986 to coordinate and implement various Central schemes for the development of waterways. Three waterways have been declared as "National Waterways" These are : Allahabad-Haldia stretch of Ganga-Bhagirathi Hooghly river system; Sadiya-Dhubri stretch of Brahmaputra river and the West Coast Canal (Kolla-Kottapuram) alongwith Chempakara Canal and Udyogmandal Canal. A number of hydrographic surveys and techno-economic studies have been undertaken on various waterways.

7.1.246 The Central Inland Water Transport Corporation (CIWTC) was set up in 1967 by the Government to (i) operate river services, (ii) build ships for which it has a ship building yard at Rajabagan and (iii) undertake ship repair. The CIWTC has been incurring heavy losses. Its capacity remains under-utilised for want of adequate traffic offerings.

Review of Eighth Plan

7.1.247 Inland water transport was given a high priority during the Eighth Plan. A provision of Rs.240 crore was made for IWT for the Eighth Plan, against which only a sum of Rs.63.94 crore was spent.

7.1.248 There has been a wide gap between the Plan allocation and actual expenditure. Only 26% of the allocated funds have been utilised by the IWT sector during the Eighth Plan. There have been major shortfalls in the implementation of the schemes related to

modernisation of Rajabagan dockyard, vessel acquisition and development and maintenance of West Coast canal. In general, there have been delays in conceptualisation and execution of the schemes and in achieving the physical and financial targets set for the IWAI and the CIWTC during the Eighth Plan.

7.1.249 The cargo moved by the CIWTC has not shown any upward trend and in fact it constituted a very insignificant proportion of the total cargo moved by IWT mode. In contrast the private operators in Goa have shown a remarkable progress and maintained a steady upward trend in terms of iron ore movement by IWT. The private operators in Calcutta have also made considerable progress in increasing their tonnage.

Ninth Plan - Thrust Areas & Strategy

7.1.250 The potential of cargo movement by the declared National Waterways and other waterways is estimated to be 50 billion tonne kms. by 2005, compared to the current level of less than one billion tonne kms. Considering the potential role and significance of IWT, it is necessary that a substantial step-up in the traffic is achieved in the Ninth Plan, so that the IWT sector will be able to launch itself as a future alternative mode of environment-friendly transport system in the sectors identified for its growth. It is estimated that a shift of one billion tonne kms to IWT will reduce the fuel cost by Rs.25 crore and the cost of transportation by Rs.45 crore.

7.1.251 Keeping in view the constraints facing IWT and recognising its potential for growth, the thrust will be to make IWT as an acceptable mode of transportation. The basic requirements identified are: reduction in cost and time of transportation and enhancement of safety and reliability of the cargo. To achieve this, fairway, fleet, terminals and navigational aids are pre-requisites and unless these facilities are provided, IWT will not be able to offer its inherent advantages in terms of cost of transportation and fuel saving.

7.1.252 To achieve a substantial step-up in traffic in the Ninth Plan the thrust should be on the creation of infrastructure in the form of fairways with adequate depth and width besides the setting up of terminals and navigational aids. At the same time, there is a need to augment the IWT fleet by suitable type of vessels and ensure adequate cargo support. The objective of developing IWT as an important mode of transport cannot be achieved only through the provision of budgetary support to the State enterprises. The private sector has to play a crucial role in the development of the sector. The private sector may be involved not only with ownership and operation of vessels for cargo and passengers but also with the construction and operation of terminals and river ports, the provision and operation of mechanised cargo handling system, fairway development including dredging, provision and maintenance of navigational facilities and provision of pilotage services. In order to attract the private sector for development of this mode, suitable fiscal incentives as well as measures aimed at providing cargo support need to be considered. The Inland Waterways Authority of India (IWAI) is the nodal agency for the development of the navigational infrastructure in the National Waterways.

7.1.253 Considering the huge requirements of investible funds, there is also a need for taking suitable policy initiatives to channelise the funds for identified user agencies. In the Ninth Plan, efforts will be made for pooling the resources through captive users such as public sector undertakings dealing with oil, coal, fertilisers and cement. These agencies

will be encouraged to make liberal investment in IWT sector either as soft loan or as capital investment which would be recoverable either directly or indirectly over a period of time.

7.1.254 Another important avenue to be explored as a source of funding for the IWT projects would be the external resources. Investment in potential waterways as turn-key package with external assistance may be explored as part of privatisation.

7.1.255 Efforts will be made to strengthen the activities of CIWTC through its fleet acquisition programme to facilitate movement of cargo through mechanised cargo-vessels. Its performance specially in terms of fleet capacity utilisation needs urgent improvement.

7.1.256 Modernisation of waterways needs to be planned to facilitate 24-hour navigation in the inland waterways. To meet this goal, a number of lighted buoys are to be provided along the entire water route. Possibilities will be explored for private participation in the provision of turn-key project for the supply, installation and maintenance of lighted buoys.

7.1.257 Special emphasis would be laid on the development of inland water transport facilities in the North-Eastern region. The main bulk commodities, which can be considered suitable for inland water transport movement are coal, POL, foodgrains, limestone and dolomite etc. The development of inland water transport facilities in the North-Eastern region would ensure cost effective transportation of the above mentioned commodities.

7.1.258 In the past, there have been delays in the formulation and execution of the schemes/projects on account of organisational constraints. Accordingly, human resource development is also essential if the Plan objectives are to be achieved. With the objective of making IWT economically viable and self sustaining, a massive increase in its outlay has been suggested.

Need for inter-sectoral coordination

7.1.259 Interlinking waterways and ports with coastal shipping holds good prospects in respect of several river systems in India. For instance, Ganga- Brahmaputra-Sunderbans river system has the potential to be integrated with Haldia-Calcutta ports, the Brahmani-Mahanadi river system with Paradip port, Krishna-Godavari-Buckingham Canal with Chennai port, West Coast Canal with Cochin port and the Mandavi-Zuari-Cumberjua Waterway with Mormugao Port. The development and connectivity of these waterways with the ports will not only ensure development of the entire hinterland but will also help in relieving the pressure on the other already congested modes of transportation. Research and Development in IWT sector

7.1.260 Due to the nascent stage of development of the IWT sector, R&D has to play a crucial role in the development on this sector. Design of low-cost and shallow-draft vessel and introduction of navigational aids are important factors for improving the economics of IWT. In view of this, during the Ninth Plan, an R&D Cell will be set up in IWAI to act as a nodal agency to coordinate the R&D activities required to be carried out in this sector.

Manpower Planning

7.1.261 Being labour-intensive in nature, the IWT sector has the potential for creating employment generation to many categories of personnel for river conservancy and river-development activities, operation and maintenance of terminals and in particular, for manning the inland vessels.

7.1.262 The requirement of trained manpower in the IWT sector can be classified into two groups. The first category would consist of professionals in various fields, like hydrography, navigation, civil engineering, mechanical engineering, naval architecture and transport economics for the development and management of the waterways and operation of various supporting infrastructural facilities. The second category of personnel would be required for operational purposes to man the inland vessels.

7.1.263 For building up trained and skilled manpower for IWT operations, the augmentation of Human Development Programme will be accorded priority and the setting up of a National Inland Navigation Institute, Regional Navigational Institutes and Regional Crew Training Centres will be considered during the Ninth Plan.

7.1.264 The safety record of inland water transport is not very encouraging. The various factors such as navigation aids etc. suggested earlier for the development of inland water transport would help in improving the safety of inland water transport operations.

CIVIL AVIATION

General

7.1.265 The civil aviation sector is broadly structured into three distinct functional entities, namely regulatory-cum-developmental, operational and infrastructural. The regulatory functions are performed by the Directorate General of Civil Aviation(DGCA) and the Bureau of Civil Aviation Security (BCAS). The operational functions are performed by Air India Ltd., Indian Airlines Ltd., Pawan Hans Helicopters Ltd. and other scheduled/non-scheduled airline operators. Air India Ltd. (AI) provides international air services to/from India. Indian Airlines Ltd.(IA) and other scheduled/non-scheduled operators are responsible for providing domestic air services in the country. Indian Airlines Ltd. also provides international air services to some of the neighbouring countries. Pawan Hans Helicopter Ltd. provides helicopter support services primarily to the petroleum sector.

7.1.266 The infrastructural facilities are provided by the Airports Authority of India, which is responsible for the management of 92 airports, including the five international airports at Delhi, Mumbai, Calcutta, Chennai and Thiruvananthapuram, and 28 civil enclaves at the defence airports. The Indira Gandhi Rashtriya Uran Akademi (IGRUA) is the premier flying institute responsible for imparting flying training for award of Commercial Pilots Licence and Commercial Helicopters Pilots Licence. Hotel Corporation of India, a subsidiary of Air India Ltd., is responsible for providing in-flight catering and it also operates hotels in the vicinity of airports for catering to the transit passengers.

Review of the Eighth Plan

7.1.267 Several significant developments took place in the field of civil aviation during the Eighth Plan period. With the repeal of the Air Corporation Act 1953 in 1994, the monopoly of Indian Airlines, Air India and Vayudoot over scheduled air transport services ended. Consequently, 6 private operators, who were hitherto operating as air taxis, were granted the status of scheduled airlines. During Eighth Plan, 7 scheduled operators and 19 air taxi operators have been given permits for operation of domestic air transport services in India. Air India Ltd. and Indian Airlines Ltd. were registered as companies under the Companies Act, 1956 and the undertakings of Air India Corporation and Indian Airlines Corporation were transferred to the respective new companies w.e.f. 1.3.1994. With the enactment of the Airports Authority Act, 1994, the two airports authorities viz. the International Airports Authority of India (IAAI) and the National Airports Authority (NAA) were merged w.e.f. 1.4.1995 to form a single unified body, viz., the Airports Authority of India (AAI). Vayudoot Ltd. was merged with Indian Airlines Ltd. w.e.f. 25th May, 1993.

7.1.268 Against an outlay of Rs. 3998 crore a sum of Rs. 7096.58 crore was spent during the Eighth Plan. The details of the outlays and expenditure during the Eighth Plan period for different constituent units in the civil aviation sector are given at Annexure-7.1.20. The bulk of the expenditure (98.76%) was financed from Internal and Extra Budgetary Resources (IEBR). The plan of Air India, Indian Airlines, Pawan Hans and Hotel Corporation of India were entirely financed from their IEBR.

Policy Framework and Programme for the Ninth Plan

7.1.269 In domestic air transport operations, the objective would be to provide adequate capacity, ensure healthy competition between the private and the public sector as also safe and reliable operations. To achieve this objective, the private sector would be encouraged to provide air service, while ensuring that only the technical and financially sound players enter the field. In this regard transparent norms would be worked out and regulatory mechanism strengthened with a view to promoting a healthy competition amongst the airlines and protecting the interest of the users.

7.1.270 Indian Airlines was virtually the sole provider of domestic air services for about four decades. With the opening of the domestic Civil Aviation sector, a number of Indian companies announced their plans to start an airline. However, a few of them really got started. Since many of them did not pursue the airline business, their licenses were cancelled. A couple of companies made an early exit after showing their presence for a while. The new airlines which remained in the field concentrated and over-expanded on trunk routes, made inroads into Indian Airlines market share on these routes and in the process reduced the capacity of the national carrier to subsidise the operation on other routes including those in backward and isolated areas. Led by over-enthusiasm these new entrants operated without adequate trained personnel and experience, sustained on the poached highly skilled manpower trained by the Indian Airlines and benefited by the route network developed by the national carrier during a period of more than four decades. While new entrants operated old aircrafts, which were heavy of fuel, Indian Airlines, faced with shortage of skilled manpower particularly pilots, could not fully utilise the rated capacity of the state-of-art aircraft acquired at a heavy cost. Unhealthy business practices

and the tendency to offer more frills to the passengers brought about the financial ruin of some of the new entrants; in the process, financial health of the national carrier was also adversely affected.

7.1.271 The national carrier plays an important role in the provision of air services in the country. One of the policy objectives for the development of civil aviation in the 9th Plan would be to create a proper environment to enable the national carriers to operate to full capacity and bear the social burden which it is required to carry and, in the process, ensuring that the country gets adequate return for investment made in developing infrastructure, in training highly skilled manpower and in acquisition of the sophisticated and costly array of equipments and instruments.

7.1.272 The bulk of the capacity of both the Indian Airlines and the private operators is deployed on trunk routes carrying heavy traffic. The regional routes, particularly, in isolated and backward areas are characterised by shorthaul operation un-economic load factor, high cost of operation and low revenue yield. The operations on these routes are usually unviable. In order to ensure that the scheduled operators provide air services on these routes, Route Dispersal Guidelines were issued. Under these guidelines, scheduled operators operating on specific trunk routes are required to deploy a part of their capacity on regional routes including routes in backward and remote areas. However, the main burden for providing services on routes serving remote and backward areas is borne by the Indian Airlines. It is necessary that the financial losses of providing air services on these routes are shared equitably by all operators. It is equally important to ensure that remote areas are provided with reliable air services. To meet these objectives, a more transparent and enforceable mechanism for cross subsidising these routes from the surplus generated by operation on trunk routes will be evolved.

7.1.273 Air services for distances less than 300 kms. are generally uneconomical as compared to surface modes. The corridors where good surface transport modes can be introduced as an alternative to air services will be identified.

7.1.274 There are twenty airports in seven States in the North Eastern Region. Development programmes have been planned at the airports at Guwahati, Agartala, Shillong, Dimapur and Lilabari. In addition, development works are already in progress at airports at Imphal, Tezpur, Silcher, Dibrugarh etc., with the financial assistance from North Eastern Council. Further, two new greenfield aerodrommes are under construction under State Plan at Tura in Meghalaya and Lengpui in Mizoram. Efforts will be made for operating flights in the North Eastern Region to connect each State with Calcutta/Guwahati, preferably on a daily basis. In this connection, the recommendations of the High Level Commission on tackling the backlogs in basic minimum services and infrastructural needs would be kept in view.

7.1.275 International air services are governed by bilateral agreements. The general objective of India's bilateral civil aviation relations will be to provide adequate capacity to facilitate easy movement of international traffic to/from India. But in doing so, a balance will be struck between the interests of the national carriers on the one hand and promotion of trade, commerce and tourism and convenience of passengers on the other. A more liberal approach will be adopted while negotiating the opening up of new routes, under-served routes and routes providing connection to neighbouring countries.

7.1.276 The future development/upgradation of airports in the country will be undertaken on the basis of the role they are expected to play in handling the air traffic. Master Plans for the development of international, national and regional hubs shall be prepared and upgradation/modernisation taken up accordingly. Private sector investment will be encouraged in the construction of new airports from greenfield level and legal framework will be created for private/joint participation in the airlines and airport development projects.

7.1.277 Facilities for maintenance of aircrafts of domestic /foreign airlines will be developed and training of foreign pilots will be encouraged so as to promote regional cooperation and enhance foreign exchange earnings.

Air India Ltd.

7.1.278 The international passenger traffic passing to/from India has shown a growth of 4.8% per annum during the period 1987-94. The growth rate for foreign carriers has been 6.3% per annum whereas that of Indian carriers has been only 1.74 percent. As a result of this, the market share of Air India in the international passenger traffic has shown a steady decline from 32.8% in 1980 to about 21.3% in 1997.

7.1.279 The growth in capacity and traffic carried by Air India Ltd. during the Eighth Plan period is shown in Table 7.1.16.

Table 7.1.16
Capacity and Traffic - Air India
(in million)

Year	Capacity Available (ATKMs)	Capacity Utilised (RTKMs)	Load Factor (%)
1991-92	1973.1	1148.6	58.2
1992-93	1904.7	1094.8	57.5
1993-94	1912.9	1093.8	57.2
1994-95	2316.2	1384.6	59.8
1995-96	2610.4	1619.0	62.0
1996-97	2452.1	1484.6	60.5

7.1.280 While the capacity increased by 24.27%, traffic registered a growth of 29.25% in the Eighth Plan. The financial performance of the Air India during the Eighth Plan period is indicated in Table 7.1.17.

Table 7.1.17
Air India - Financial Performance

(Rs. in crore)

	92-93	93-94	94-95	95-96	96-97
Operating Revenue	2435.86	2581.76	2989.01	3426.55	3533.19
Operating Expenses	2146.28	2459.96	2920.06	3647.56	3945.82
Operating Profit/(loss)	289.58	121.80	68.95	221.01	412.63
Total Revenue	2583.19	2767.96	3130.26	3562.70	3817.78
Total Expenses	2250.05	2566.06	3089.46	3834.54	4114.72
Net Profit/(loss)	333.14	201.90	40.80	(271.84)	(296.94)

7.1.281 Air India recorded profits during the first three years of the Eighth Plan. Its market share in the international traffic, however, declined during the period to a low level of around 20% in 1993. With the capacity injection through wet leasing of aircrafts, starting from December, 1994, the market share improved to 21.3% in 1997. The profitability of Air India during the period, however, was seriously affected by a softening of yields, partly caused by the necessity of selling the higher capacity.

7.1.282 Air India's Gulf operations, which have been the most profitable segment in its network, have been badly hit by over capacity resulting from the combined effect of new entrants like Indian Airlines, Oman Aviation and Qatar Airways. The resultant decline in Air India's passenger load factors on the Gulf from 64.7% in 1992-93 to 57.9% in 1995-96 put a downward pressure on yields, straining the profitability of the airline.

7.1.283 The losses of Air India in Europe went up from about 85 crore in 1993-94 to about Rs. 188 crore in 1995-96 because of increased bilateral entitlements to European carriers, which, through higher capacities have led to fare wars and increased discounting in a bid to attract traffic. Further, the fall in the value of Indian rupee has affected Air India's profitability adversely, as its proportion of dollar-related expenditure is higher than its proportion of dollar-related revenues.

7.1.284 The key to improvement in the financial performance of Air India is in maximising yields and improving the net margins. To achieve this objective, Air India will intensify the marketing efforts, improve its product and on time performance. Given the capacity constraint and the need to maximise asset utilisation, Air India will also strive to increase the market share through code shares and alliances. The strategy will be to deploy maximum fleet of the airline on core network and derive feed by building up secondary network through alliance and tie-ups.

7.1.285 Air India has a number of routes which do not cover even their cash cost of operations but continue to corner the capacity. This calls for reducing the frequencies on these routes and redeployment of the released capacity on relatively profitable routes such as India- Gulf route. In the Ninth Plan as a part of turn-around strategy, route rationalisation and redeployment of capacity will be a dynamic function so that Air India would be able to respond proactively to variations in market demand.

7.1.286 The physical and financial performance of Air India will be examined in depth with a view to working out a comprehensive strategy for turn-around.

7.1.287 The fleet of Air India as on December 31, 1996 consisted of 28 owned aircrafts, comprising 9 Boeing 747-200, 2 Boeing 747-300, 6 Boeing 747-400, 8 Airbus A310-300 and 3 Airbus A300-B4 aircraft. At present, Air India's fleet consists of 5 types of aircraft having varied capacity and technical features. This necessitates higher investment in creation of infrastructure facilities which are sub-optimally utilised.

7.1.288 In the Ninth Plan, therefore, Air India will standardise its fleet to three aircraft types. The fleet with lesser aircraft types will require lesser investments on spares, maintenance facilities and simulators and will also result in better utilisation of aircraft infrastructural facilities and technical manpower of pilots and maintenance engineers.

Indian Airlines Limited

7.1.289 The long-term annual growth in domestic passenger traffic from 1960-61 to 1987-88 has been around 10% per annum. However, during the period 1988-93, the growth was erratic and negative on overall basis. Following the entry of private scheduled operators, making available additional capacity on domestic routes, domestic passenger traffic grew significantly in 1993-94. The growth, however, was not sustained and began to taper off from the very next year and later declined further to register a negative rate of growth in 1996-97.

7.1.290 The growth in capacity and traffic carried by Indian Airlines Ltd during the Eighth Plan period is indicated in Table 7.1.18.

Table 7.1.18
Capacity and Traffic - Indian Airlines
(in million)

Year	Capacity Available (ATKMs)	Capacity Utilised (RTKMs)	Load Factor (%)
1991-92	1089.9	761.1	69.8
1992-93	967	685	70.9
1993-94	1057	695	65.8
1994-95	1026	686	66.9
1995-96	1045.8	722.7	69.1
1996-97	1075.2	698.1	64.9

7.1.291 Indian Airlines achieved a negative growth of (-)1.34% and (-)8.28% in capacity and traffic, respectively in the Eighth Plan. This is largely because Indian Airlines could not utilise its fleet and other facilities optimally due to exodus of pilots and engineers after the opening up of the sector to the private operators. There was a marked decline in aircraft utilisation by Indian Airlines during the 1990s and the level achieved in 1995-96 for A-300, A-320 and B-737 aircrafts hovered between 1600 and 2200 hours, which is far below the previous or a desirable level of 2700 hours per annum per aircraft.

7.1.292 The share of Indian Airlines in the domestic market declined with the induction of capacity by other domestic operators. The loss in market share is largely concentrated on the trunk routes of Indian Airlines resulting in the private operators cornering almost half of this market segment.

7.1.293 The fleet of IA at the end of Eighth Plan consisted of 10 A-300 aircrafts, 30 A-320 aircrafts and 12 B-137 aircrafts.

7.1.294 The financial performance of Indian Airlines during the Eighth Plan period is indicated in Table 7.1.19.

Table 7.1.19
Indian Airlines - Financial Performance
(Rs. in crore)

	92-93	93-94	94-95	95-96	96-97
Financial Operating Revenue	1513.12	1781.79	2044.72	2466.81	2848.55
Operating Expenses	1592.01	1849.76	2008.48	2310.30	2713.24
Operating Profit/(loss)	(78.89)	(67.97)	36.24	135.31	266.65
Total Revenue	1560.97	1816.37	2070.24	2489.84	2914.39
Total Expenses	1756.08	2074.83	2258.97	2599.82	2928.98
Net Profit/(loss)	(195.11)	(258.46)	(188.73)	(109.98)	(14.59)

7.1.295 The Airline has incurred losses during Eighth Plan period. The deterioration in the physical performance of the airline was reflected in its financial performance. The airline, which was making profits till the end of 1980s, started making losses since 1989-90. From 1989-90 to 1996-97 Indian Airlines has incurred losses of over Rs.1000 crore including a sum of around Rs.767 crore in the Eighth Plan. This has led to a severe reduction in the reserves of the Indian Airlines. Apart from the unsatisfactory physical performance, the reasons for poor financial performance after 1989-90 include the grounding of A 320 aircraft from February 1990 till October, 1990, the burden assumed by the airlines after the merger of Vayudoot and the absorption of high increase in the input cost by Indian Airlines.

7.2.296 Indian Airlines operations on routes in the North East & Jammu and Kashmir have been traditionally loss-making. But these operations are vital and have to be maintained. Earlier, Indian Airlines was able to cross-subsidise these routes from surpluses on profitable routes. With the introduction of private airlines and consequent decline in the market share and profitability on trunk routes, the capacity of Indian Airlines to cross-subsidise these routes has been severely eroded. Indian Airlines has been operating services to these areas well above the mandatory guidelines of DGCA. The losses suffered by Indian Airlines on account of operations on these routes amount to Rs. 325 crore for the period from 1989-90 to 1994-95.

7.1.297 A Committee of experts has examined the various causes of the deterioration in physical and financial performance of the Airlines and suggested turn-around strategies. In line with the recommendations of the Committee, a fresh equity injection of Rs. 125 crore will be made by the Government of India to enable the Airlines to realign its presently unacceptable levels of leverage and also to serve as an indicator of the Government's continued commitment to the Airlines. As a part of financial restructuring the equity share holding of the Government in the Company will be brought down to 49%. The major effort, however, has to come from the organisation itself. It is, therefore, necessary that the airlines should continue to improve its product so as to remain a dominant airline particularly on the trunk routes. This objective will be achieved through better fleet utilisation and by ensuring healthier industrial relations oriented towards enhanced productivity.

7.1.298 Indian Airlines has to play a role distinct from that of privately owned commercial airlines. A leading carrier in domestic aviation in which considerable amount of public investment had been made in the past, Indian Airlines is expected to meet certain strategic requirements and provide services which may be essential in the national interest. Indian Airlines is to act as a leader of the airlines industry in the country in establishing safety norms, reliability, productivity as well as viability. Over the years, it has developed expertise not only in the provision of air services but also in the field of engineering services and development of highly skilled personnel. Indian Airlines, therefore, has the potential to develop as a dominant regional player not only as a provider of air services but also as an institution which can provide training and engineering services to other users and airlines, both domestic and regional.

7.1.299 In order that Indian Airlines play this role, it is necessary, on the one hand, to create a conducive policy framework; and, on the other, to take suitable financial and organisational measures to make the airlines a viable and a vibrant enterprise. This calls for the restructuring of Indian Airlines in which all stakeholders will be involved. Apart from financial restructuring aimed at improving its financial health and providing a sound

capital base, organisational restructuring will also be carried out so that it can function as a company managed by a Board constituted of professionals. Indian Airlines has to be given autonomy in their day- to- day working without the Government relinquishing its responsibility. There is a need to evolve fleet planning strategy which takes into account the route structure of the Indian Airlines so as to ensure optimum utilisation of resources, particularly aircrafts.

7.1.300 The market share of Indian Airlines in the domestic passenger traffic is presently hovering around 65 percent. Indian Airlines has targetted a market share of around 55-60% in the Ninth Plan.

Airports Authority of India

7.1.301 The Airports Authority of India is responsible for management and development of civil airports and civil enclaves at Defence airports in the country. Apart from this, the Authority is also responsible for providing navigational facilities to the aircrafts operating in India.

7.1.302 In 1996-97, 3.96 lakh aircraft movements involving 243 lakh domestic and 122 lakh international passengers and 2 lakh metric tonnes of domestic and 4.8 lakh metric tonnes of international cargo were handled at the AAI Airports. Presently, air operations are being carried out only through 61 airports. The remaining are lying unutilised or at best handling occasional aircraft operations.

7.1.303 The Airports Authority of India was able to attain substantially the goal of upgradation of infrastructure and modernisation of communication facilities as well as maintenance of existing infrastructure during the Eighth Plan period. In order to keep pace with the growth of international trade and for promotion of exports the airport infrastructure was upgraded in terms of storage space, better handling capacities and development of cargo complexes particularly in Delhi and Mumbai airports. Investments were also made in respect of the hinterland airports, having potential for exports as well as tourism such as Agra, Jaipur, Ahmedabad, Varanasi, Lucknow, Thiruvananthapuram. Substantial investments were made for the development of air strips and upgradation of communication facilities and other infrastructure in remote areas like North-East, J&K, Andaman & Nicobar islands as private investment was unlikely on account of the remoteness of the areas and adverse economic factors. Twelve airports were identified for being developed as model airports and renovation/construction of new terminal complexes, extension of runways, upgradation of communication facilities and other passenger related facilities were undertaken on a priority basis.

7.1.304 The Airports Authority of India has significantly improved its financial performance during the Eighth Plan period. The details of the financial performance of the International Airports Division and the National Airports Division are given in Table 7.1.20.

Table 7.1.20
Airports Authority of India
(International Airports Division)
Financial Performance

(Rs. in crore)

Financial	92-93	93-94	94-95	95-96	96-97
Revenue	282.80	333.59	419.97	535.43	580.29
Expenses	187.07	214.87	236.27	317.84	389.50
Net Profit/ (Loss)	95.73	50.22	97.70	217.59	190.79

Airports Authority of India
(National Airports Division)
Financial Performance

(Rs. in crore)

Financial	92-93	93-94	94-95	95-96	96-97
Revenue	192.77	264.13	414.13	467.90	561.83
Expenses	175.90	210.73	319.97	409.44	506.92
Net Profit/ (Loss)	16.87	53.40	94.16	58.46	54.91

7.1.305 During the Ninth Plan period, the emphasis would be on upgradation and expansion of airport infrastructure. At present, almost all the international airports are facing capacity shortage and therefore congestion. The traffic projections in case of the airports which are not presently facing congestion indicate that only with the augmentation of capacity it would be possible to meet the future traffic demand.

7.1.306 The major thrust in the Ninth Plan will be to augment the capacity both in passenger and cargo terminals at the international airports with the objective to ease the congestion which is likely to accentuate with the growth of traffic in the Ninth Plan. Investments will be made on modernisation and upgradation of communication and navigational facilities at all airports to improve the air traffic management system in the overall interest of safety and capacity utilisation.

7.1.307 The capacity, demand and augmentation for passenger terminals at the five international airports in the Ninth Plan period is summarised at Annexure-7.1.21.

7.1.308 Keeping in view the growth of traffic, capacity augmentation in passenger terminals at Mumbai, Calcutta, Thiruvananthapuram and Chennai is proposed during 9th Plan period. Preliminary action will be taken during the Plan period so as to augment capacity further at passenger terminals in Thiruvananthapuram, Chennai and Delhi.

7.1.309 The capacity, demand and augmentation for international cargo terminals at the international airports in the Ninth Plan period is summarised at Annexure-7.1.22. The capacity of cargo terminal at Calcutta, Chennai and Delhi will be augmented.

7.1.310 The traffic demand at both passenger and cargo terminals would be closely monitored.

7.1.311 Apart from augmenting the capacity at terminals, the programme for upgradation of runways, additional taxi-ways and increased aircraft parking stands at the international airports would be taken up during the Ninth Plan period as is summarised at Annexure-7.1.23.

7.1.312 These works are proposed to be taken at all the five international airports with a view to improving the runway capacity and safety of operation, facilitating the efficient movement of aircraft and providing better service to passengers.

7.1.313 The airports other than five international airports handle approximately 26.5% of the total traffic. In the Ninth Five Year Plan period 30 domestic airports would be further developed for meeting the traffic demand. AAI has planned to take up expansion and modification of existing terminal building, construction of new terminal building and terminal complexes at 30 Airports. Extension/strengthening and construction of new runways at 28 airports are planned during the period. It is proposed to upgrade and modernise the Ground and safety services at the airports.

7.1.314 Communication and navigational facilities will be improved in the interest of safety. Installation of Aircraft Collision Avoidance Systems (ACAS) equipment on all aircrafts flying in India shall be made mandatory. Satellite based Communication, Navigation, Surveillance /Air Traffic Management (CNS/ATM) systems are being introduced at Delhi and Mumbai airports. These will be extended to other airports as soon as possible. The objective will be to cover the entire air space by Secondary Surveillance Radars and Satellite Based Systems. Further, a greater civil- military liaison will be maintained for joint surveillance of Indian air space.

7.1.315 Speed and efficiency will be ensured in passenger and cargo handling. For this purpose, technological and other improvements will be made by the introduction of automation and computerisation, mobile check-in counters, improvement in immigration and security checks, mechanisation of baggage and ground handling services, provision of aero-bridges, improvement in systems of passenger transfer between terminals, improvement in cargo terminals, reduction in bunching of flights and contracting out the operation and maintenance facilities.

Development of airports through public/private participation

7.1.316 As airport construction is highly capital intensive, Government alone will not be able to meet the investment requirement. Private sector, therefore, will have to be encouraged to participate in the construction of airports at greenfield level. A greenfield airport may be permitted where an existing airport is unable to meet the projected requirements of traffic or a new focal point of traffic emerges with sufficient viability. It can be allowed both as a replacement for an existing airport or for simultaneous operation. The Government may, while permitting a greenfield airport decide whether it will be in the public or private sector or to be taken up as a joint venture.

7.1.317 In order to involve private sector in the development of airports in the country, Ministry of Civil Aviation and Airports Authority of India have taken certain steps. These include creation of Directorate of Infrastructure Development in Airports Authority of India, creation of Airport Restructuring Committee to identify existing airports for private sector participation etc. However, it is necessary to take up concrete steps for involving private sector in the development of airports. These have been identified and would be taken up by the Ministry of Civil Aviation and Airports Authority of India in a time bound manner.

PRIVATE PARTICIPATION IN DEVELOPMENT OF AIRPORTS

- There is a need for the participation of private sector in the development of airports both for reasons of bridging the gap in resources as also to bring in greater efficiency in management of airports. The legislative framework for privatisation of airports already exists in India. In fact, some airports are already owned by State Governments, private companies and even individuals.
- The strategy in the Ninth Plan will be to permit utmost latitude in the patterns of ownership and management of airports in the country. All the options in respect of the management of airports or parts of airports will be kept open. These could be on Build-Own-Transfer (BOT), Build-Own-Lease-Transfer (BOLT), Build-Own-Operate (BOO), Lease-Develop-Operate (LDO), Joint Venture, Management Contract or Wrap-around Addition basis. In each individual case, the exact pattern could be negotiated, depending on the circumstances.
- Ministry of Civil Aviation will identify existing airports, in respect of which private sector involvement for development and upgradation of infrastructure is desired. Initially five airports will be identified for upgradation as world class international airports. Ministry of Civil Aviation will also prepare a shelf of projects in respect of greenfield airports. The pre-feasibility reports will be made available to private investors
- In order to attract private investment, Airports Authority of India (AAI) will be corporatised. AAI will create separate profit centres for all individual airports and hive them off as subsidiary companies on a case to case basis, for the purpose of entering into commercial arrangements or joint ventures with private parties. An independent statutory body will be set-up to facilitate expeditious decision on the proposals for setting up of greenfield airports.

Pawan Hans Helicopters Limited

7.1.318 The main function of Pawan Hans Helicopters Ltd. is to provide support services to the oil sector. Pawan Hans is also meeting the helicopter requirements of State Governments, PSUs and other customers. With the increased competition, owing to the entry of private operators, Pawan Hans would need to strengthen its customer base. The Company is exploring new areas for providing helicopter services such as police, para military forces, geophysical surveys, adventure sports and tourists charters. It also hopes to become a maintenance centre for light helicopters for other smaller operators.

7.1.319 The financial position of Pawan Hans is quite sound as it was having monopoly in the market segment being catered to by it. However, with the entry of private operators, Pawan Hans will have to gear up to meet the challenge.

Directorate General of Civil Aviation

7.1.320 Directorate General of Civil Aviation (DGCA) is making efforts to enhance the level of air safety in India. These efforts are yielding good results and as a result number of accidents are decreasing. The efforts will not only be continued but intensified in the Ninth Plan so as to enhance the safety level. DGCA has identified several steps to achieve this objective.

7.1.321 The main thrust during the Ninth Plan period would be on stepping up the regulatory control through reorganisation, expansion of existing disciplines and development of human resources through intensive advanced training.

Bureau of Civil Aviation Security

7.1.322 The Bureau of Civil Aviation Security (BCAS) is responsible for ensuring adequate security arrangements at the airports in all its aspects. During the Ninth Plan period, the BCAS will augment the existing Bomb Detection and Disposal Squads units at Delhi, Mumbai, Calcutta and Chennai airports. It will also provide latest security equipment namely Explosive Detectors, Coloured X-Ray Baggage inspection Systems, Metal Detectors (Door Frame and Hand held) at various airports in the country.

Indira Gandhi Rashtriya Uran Akademi

7.1.323 The IGRUA was set up in 1985 to provide training for commercial pilots. The Akademy, located at Fursatganj, U.P. is equipped with modern training aids including aircraft, helicopters and flight simulator etc. The Akademi, was initially being funded by the Government, Air India and Indian Airlines for meeting its requirement towards capital expenditure. However, since the major beneficiaries of the pilots getting the training from the Akademi are the two national carriers, viz., Air India and Indian Airlines, it was decided that they should be required to contribute towards the expenditure of the Akademi.

7.1.324 With the entry of the private operators on the civil aviation scene, the national carriers are no more the only beneficiaries of the training imparted by the Akademi. Therefore, contributions will also be raised from the private airlines. Efforts will be made to make the Akademi self-sustaining by increasing the number of trainees and enhancing the fees charged from the trainees.

Hotel Corporation of India

7.1.325 Hotel Corporation of India is a subsidiary of Air India. After a gap of about 11 years, it has turned the corner and is earning profits from 1994-95. The Company hopes to earn profits during the Ninth Plan period. The Air India will explore the possibilities of disinvestment in the Company during the Ninth Plan period.

PROFILE OF TRANSPORT SECTOR

Sl. No.	Item		1950-51	1960-61	1970-71	1980-81	1990-91	1991-92	1995-96	1996-97
1.	RAILWAYS									
1.1	Route Length	Kms.	53596	56247	59790	61240	62367	62458	62915	62725
1.2	Electrified Route Length	Kms.	388	748	3706	5345	9968	10653	12306	13018
1.3	Throughput									
1.3.1	Freight traffic (Total)	M.Tonnes	93.00	156.20	196.50	220.00	341.40	360.00	405.50	409.02
1.3.2	Net Tonne (Kms.)	B.T.Kms.	44.12	87.68	127.36	158.47	242.70	256.90	273.52	279.99
1.3.3	Passengers Originating	Millions	1284	1594	2431	3613	3858	4049	4018	4153
1.3.4	Passenger Kms.	Millions	66517	77665	118120	208558	295644	314564	341999	357013
2.	ROADS									
2.1	Total Length	000 Kms.	400	525	915	1485	2350	2486	3320	N.A.
	of which National Highways	000 Kms.	22	24	24	32	33.7	33.7	34.5	N.A.
2.2	Percentage of Village with 1000 + population connected with all weather roads	Percent	NA	NA	N.A.	29	45.8	46.6	85.7	N.A.
2.3	Surfaced Length	000 Kms.	156	234	398	684	1113	1160	1517	N.A.
3.	ROAD TRANSPORT									
3.1	No. of Goods Vehicles	In '000	82	168	343	554	1356	1514	1785	N.A.
3.2	No. of Passenger Buses	In '000	34	57	94	162	331	358	449	N.A.
4.	MAJOR PORTS									
4.1	No. of major ports	Numbers	5	9	10	10	11	11	11	11
4.2	Traffic handled	M.Tonnes	19.38	33.12	55.58	80.27	151.67	156.64	215.34	227.26
5.	MINOR PORTS									
5.1	Traffic handled	M.Tonnes	N.A.	N.A.	6.69	6.73	11.27	13.33	24.36	24.93
6.	CIVIL AVIATION									
6.1	Indian Airlines									
(i)	Available Tonne Kms.	Million	N.A.	113	208	663	927	1090	1046	1075
(ii)	Revenue Tonne Kms.	Million	N.A.	83	161	420	699	761	723	698
6.2	Air India									
(i)	Available Tonne Kms.	Million	N.A.	N.A.	515	1623	2260	1973	2610	2452
(ii)	Revenue Tonne Kms.	Million	N.A.	N.A.	275	980	1381	1149	1619	1485
6.3	No. of Airports and Civil Enclaves	Numbers	N.A.	N.A.	N.A.	84	117	117	120	120
7.	INLAND WATER TRANSPORT									
7.1	Length of Navigable Waterways	Kms.	14544	14544	14544	14544	14544	14544	14544	14544

Road and Rail Route Length in Relation to Area and Population in India
As on 31st March, 1996 (State-Wise)

ALL INDIA/STATE/UTs	Area (Sq.Kms.)	Population (Lakhs) 1991 Census	Total Road Length (Kms.)	Road Length (Kms.)		Rail route Length(Kms.)		
				Per 100 Sq. Kms. of Area	Per 1 Lakh of Population	Total	Per 100 Sq. Kms.	Per 1 Lakh of Population
1	2	3	4	5	6	7	8	9
ALL INDIA	3291080	8443	2403634	73.0	284.7	62915	1.91	7.45
1. Andhra Pradesh	275068	664	172669	62.8	260.0	5057	1.84	7.62
2. Arunachal Pradesh	83743	9	10240	12.2	1137.8	1	0.00	0.11
3. Assam	78438	223	68079	86.8	305.3	2441	3.11	10.95
4. Bihar	173877	863	85565	49.2	99.1	5283	3.04	6.12
5. Goa	3814	12	7457	195.5	621.4	79	2.07	6.58
6. Gujarat	196024	412	133850	68.3	324.9	5320	2.71	12.91
7. Haryana	44212	163	27907	63.1	171.2	1452	3.28	8.91
8. Himachal Pradesh	55673	51	29610	53.2	580.6	266	0.48	5.22
9. Jammu & Kashmir	222236	77	13042	5.9	169.4	88	0.04	1.14
10. Karnataka	191791	448	142754	74.4	318.6	3124	1.63	6.97
11. Kerala	38863	290	141856	365.0	489.2	1053	2.71	3.63
12. Madhya Pradesh	443446	661	198936	44.9	301.0	6000	1.35	9.08
13. Maharashtra	307690	788	359262	116.8	455.9	5462	1.78	6.93
14. Manipur	22327	18	10760	48.2	597.8	1	0.00	0.06
15. Meghalaya	22429	18	8391	37.4	466.2	0	0.00	0.00
16. Miroram	21081	7	6910	32.8	987.1	2	0.01	0.29
17. Nagaland	16579	12	13732	82.8	1144.3	13	0.06	1.08
18. Orissa	155707	315	210238	135.6	667.4	2191	1.41	6.96
19. Punjab	50362	202	58151	115.5	287.9	2121	4.21	10.50
20. Rajasthan	342239	439	134632	39.3	306.7	5924	1.73	13.49
21. Sikkim	7096	4	1834	25.8	458.5	0	0.00	0.00
22. Tamil Nadu	130058	556	205706	158.2	370.0	4005	3.06	7.20
23. Tripura	10486	27	14726	140.4	545.4	45	0.43	1.67
24. Uttar Pradesh	294411	1390	237358	80.6	170.8	8934	3.03	6.43
25. West Bengal	88752	680	77579	87.4	114.1	3817	4.30	5.61
UNION TERRITORIES								
A & N Islands	8249	3	1224	14.8	408.0	0	0.00	0.00
Chandigarh *	114	6	1723	1511.4	287.2	11	9.65	1.83
D & N Haveli	491	1	518	105.5	518.0	0	0.00	0.00
Daman & Diu	3814	1	(a)	--	--	0	0.00	0.00
Delhi *	1483	94	26582	1792.4	282.8	214	14.43	2.28
Lakshadweep	32	1	(b)	--	--	0	0.00	0.00
Pondicherry	495	8	2343	473.3	292.9	11	2.22	1.38

Note: * Road length in terms of 12' width

(a) Included in Goa State (b) Not available

TRANSPORT SECTOR - OUTLAY AND EXPENDITURE UNDER THE PLANS

(CENTRE + STATES)

(Rs. crore)

Sector	First Plan (1951-56)		Second Plan (1956-61)		Third Plan (1961-66)		Fourth Plan (1969-74)		Fifth Plan (1974-79)		Sixth Plan (1980-85)		Seventh Plan (1985-90)		Eighth Plan (1992-97)		
	Outlay	Expend.	Outlay	Expend.	Outlay	Expend.	Outlay	Expend.	Outlay	Expend.	Outlay	Expend.	Outlay	Expend.	Outlay	Expend.#	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Railways	267	217	900	723	890	1326	1050	984	2202	2053	5100	6585	12334	16549	27202	32302	
Roads	135	147	263	242	297	440	871	862	1353	1701	3439	3887	5200	6335	12833	16095	
Road Transport	12	)	)	)	)		27	92	128	461	503	1196	1276	1990	2151	4119	3538
Ports	37	28	45	33	)153	93	195	249	571	488	647	725	1230	1513	3557	2302	
Shipping	26	19	48	53	)	40	141	155	450	469	755	468	827	720	3669	3033	
IWT					)	4	12	11	32	16	72	63	226	188	331	152	
Lighthouses & Lightships					)	4	7	6	14	9	12	*	30	*	57	25	
Civil Aviation	29	23	43	49	55	49	208	177	337	294	859	957	758	1948	4033	7249	
Other Transport	0	0	0	0	0	0	0	0	0	0	0	0	0	49	72	239	244
Total Transport Sector	506	434	1299	1100	1395	1983	2571	2522	5420	5543	12080	13961	22644	29476	56090	64940	
Total Public Sector	2069	1960	4800	4672	7500	8577	15902	15779	39822	39426	97500	109291	180000	218729	434100	535252	
Transport Sector as %age to Public Sector	24.5	22.1	27.1	23.5	18.6	23.1	16.2	16.0	13.8	14.1	12.4	12.8	12.6	13.5	12.9	12.2	

* Included under Ports sector.

Anticipated.

Annexure 7.1.4

Railways - Financing of Plans - Approved and Actual Outlays					Rs.crore)
Year	Budgetary Support	Extra Budgetary Resources Bonds etc)	Internal Resources	Total	
1992-93	Approved	1925	1200	2575	5700
		(34.0)	(21.0)	(45.0)	(100.0)
	Actual	2589	1025	2548	6162
		(42.0)	(17.0)	(41.0)	(100.0)
1993-94	Approved	960	1300	4240	6500
		(15.0)	(20.0)	(65.0)	(100.0)
	Actual	974	856	4030	5860
		(17.0)	(14.0)	(69.0)	(100.0)
1994-95	Approved	1150	1684	4315	6515
		(18.0)	(16.0)	(66.0)	(100.0)
	Actual	1145	779	3582	5506
		(21.0)	(14.0)	(65.0)	(100.0)
1995-96	Approved	1150	2250	4100	7500
		(15.0)	(30.0)	(55.0)	(100.0)
	Actual	1138	1118	4208	6464
		(18.0)	(17.0)	(65.0)	(100.0)
1996-97	Approved	1439	2750	4111	8300
		(17.0)	(33.0)	(50.0)	(100.0)
	Actual	1465	2383	4462	8310
		(18.0)	(28.0)	(54.0)	(100.0)
1997-98	Approved	1831	3050	3419	8300
	(BE)	(22.0)	(37.0)	(41.0)	(100.0)
	(RE)	2001	2983	3419	8403
		(24.0)	(35.0)	(41.0)	(100.0)
1998-99 (BE)		2200	2900	4400	9500
		(23.0)	(31.0)	(46.0)	(100.0)

Note: Figures in parentheses indicate percentage to total

Railways - Major Plan Head-wise Investment

(Rs. crore)

Sl. No.	Plan Head	Seventh Plan		Eighth Plan									
		Outlay	Expr.	1992-93		1993-94		1994-95		1995-96		1996-97	
				Outlay	Expr.	Outlay	Expr.	Outlay	Expr.	Outlay	Expr.	Outlay	Expr.
1.	Rolling Stock	4290	5294	2260	2408	2750	2320	2700	1956	2940	2533	3805	4158
2.	Workshops including Production Units	(1200	927	300	155	260	136	170	120	200	101	140	111
3.	Machinery & Plant	(	353	90	63	85	40	77	35	95	36	90	62
4.	Track Renewals	2500	3582	1000	1063	1010	970	970	1024	1050	1150	1050	1202
5.	Bridge Works	284	251	90	71	80	72	90	73	160	85	80	81
6.	Gauge Conversion	(1300	1759	550	689	810	931	925	1150	1000	1117	1000	1061
7.	Doubling	(		130	213	219	232	150	206	300	218	300	244
8.	Traffic Facilities - yard Remodelling & Others	(		130	112	100	121	75	72	152	85	140	117
9.	Signalling & Telecommunication works	400	425	150	153	165	156	225	169	285	208	296	228
10.	Computerisation	400	184	45	16	60	26	80	58	100	45	75	43
11.	Electrification Projects	830	961	235	235	280	278	260	291	390	348	360	279
12.	Other Electrical Works	80	169	68	65	65	44	60	61	90	67	90	61
13.	New Lines	350	916	200	293	200	252	190	240	203	211	220	296
14.	Staff Quarters	(175	131	25	27	28	29	28	22	31	22	60	31
15.	Amenities for Staff	(	104	30	27	33	31	33	34	35	35	60	47
16.	Passenger & Other user's Amenities	(	77	50	36	60	68	60	74	90	88	120	88
17.	Other Specified works	0	112	30	25	30	19	40	22	24	17	25	16
18.	Inventories	100	554	90	274	90	-143	90	-418	85	-98	10	27
19.	M.T.P.	400	473	170	178	170	225	230	255	240	196	190	145
20.	Railway Research	25	26	5	8	5	3	11	8	20	2	9	3
21.	Investment in PSUs	0	251	52	51	0	51	51	54	10	0	10	10
Total		12334	16549	5700	6162	6500	5860	6515	5506	7500	6464	8130*	8310

* In addition to this an amount of Rs.170 crores as additional budgetary support was provided to Ministry of Railways.

Physical Targets for Railways during the Ninth
Plan (1997-2002)

Item (1)	1997-98 (2) Provisional Actuals	1998-99 (3)	1999-2000 (4)	2000-01 (5)	2001-02 (6)	
Traffic Targets:						
1.(a) Revenue Earning originating freight traffic (Million tonnes)	430	450	475	500	525	
(b) Transport output (Billion tonne kms)	288	308	323	338	353	
2.(i) Originating passenger traffic (million)						
a) Suburban	2720	2738	2821	2904	2989	
b) Non-Suburban	1662	1729	1751	1772	1793	
c) Total	4382	4467	4572	4676	4782	
(ii) Passenger Kms (Billion)						
a) suburban	80	83	85	86	87	
b) Non-Suburban	291	306	308	311	313	
c) Total	371	389	393	397	400	
4. Physical Targets						
i) Acquisition of rolling stock						
(a) Locomotives: (Nos)						
Electrical	193	158	170	165	165	851
Diesel	151	178	156	150	150	785
(b) Coaches: (Nos)						
EMU/MEMU/DMUs	293	420	420	420	420	1973
Others (Conventional)	2122	2037	2150	2250	2350	10909
(c) Wagons (Nos)	26000	26000	27000	28000	29000	136000
ii) New Lines						
(RKms)	236	133	150	150	150	819 kms
iii) Gauge Conversion (RKms)	900	810	750	650	600	3710 kms
iv) Track Renewals (Track Kms)	2812	2710	2800	2800	2800	13922 kms
v) Electrification (RKms)	514	500	420	450	450	2334 kms
vi) Doubling (RKms)	500	500	500	500	500	2500 kms

CENTRAL SECTOR ROADS - TARGETS & ACHIEVEMENTS

Sl. No.	Scheme	Unit	VII Plan Period		VIII Plan Period (1992-97)	
			Target	Achievements	Target	Achievements
1.	Missing Link	Km.	15	9	-	-
2.	Widening to two lanes	Km.	1503	1636	1094	901
3.	Widening to four lanes	Km.	116	96	615	245
4.	Strengthening weak 2 lane	Km.	3351	4025	3445	3542
5.	Bypasses	Nos.	11	12	14	9
6.	Major Bridges	Nos.	70	56	73	37
7.	Minor Bridges Including ROB	Nos.	375	392	326	264

Outlay/Expenditure of Road Sector (Centre -- Eighth Plan 1992-97)

(Rs. crore)

Name of the Scheme	8th Plan Outlay	1992-93		1993-94		1994-95		1995-96		1996-97		1992-97 Total Exp.
		BE	Exp.	BE	Exp.	BE	Exp.	BE	Exp.	BE	Exp.	
Revenue Section												
1. Research & Development	24.00	7.90	1.92	5.04	2.20	4.05	3.18	4.50	3.20	3.25	1.00	11.50
2. Grant to NHAI	0.00	0.50	0.00	0.01	0.00	3.00	3.00	3.00	3.00	10.00	10.00	16.00
3. Strategic Roads	42.00	11.10	10.50	12.51	10.09	9.51	9.50	7.51	7.50	7.51	4.67	42.26
4. TOTAL (Revenue)	66.00	19.50	12.42	17.56	12.29	16.56	15.68	15.01	13.70	20.76	15.67	69.76
Capital Section												
5. Machinery	30.00	2.50	1.85	2.50	1.77	2.43	2.38	1.00	0.32	2.50	2.44	8.76
6. National Highway (Original Works)	1350.00	320.87	320.84	298.69	296.98	317.50	317.54	366.34	351.94	365.64	365.64	1652.94
7. Externally aided Schemes	914.00	80.00	80.30	220.00	173.35	267.50	261.48	319.55	265.04	317.00	369.80	1149.97
8. National Highway Authority of India	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00	200.00	200.00
9. Works entrusted to NHAI	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	24.00	24.00	44.00
10. Border Roads Development Board	150.00	38.00	41.00	41.00	47.04	48.00	48.00	52.00	51.00	53.00	52.99	240.03
11. Schemes of Economic & Importance	60.00	2.50	2.50	3.25	3.25	3.04	0.74	12.00	3.25	12.00	12.00	21.74
12. TOTAL Capital	2534.00	443.87	446.49	565.44	522.39	522.39	630.14	638.44	691.55	974.14	1026.87	3317.44
GRAND TOTAL (Revenue + Capital)	2600.00	463.37	458.91	583.00	534.68	538.95	645.82	653.45	705.25	994.90	1042.54	3387.20

HIGH DENSITY TRAFFIC CORRIDORS OF NATIONAL HIGHWAYS

Sl. No.	NH No.	Section	Appx. Length KM
I. DELHI-BOMBAY			
1.	8	Delhi-Jaipur	260
2.	8	Jaipur-Ajmer	135
3.	8	Ajmer-Udaipur	273
4.	8	Udaipur-Ahmedabad	287
5.	8	Ahmedabad-Mumbai	473
		Total	1428
II. DELHI-CALCUTTA			
1.	2	Delhi-Agra	200
2.	2	Agra-Kanpur	280
3.	2	Kanpur-Allahabad-Varanasi	331
4.	2	Varanasi-Barhi	284
5.	2	Barhi-Calcutta	395
		Total	1490
III AGRA-BANGALORE			
1.	3,25	Agra-Jhansi	200
2.	26	Jhansi-Lakhnadon	400
3.	7	Lakhnadon-Nagpur	160
4.	7	Nagpur-Hyderabad	400
5.	7	Hyderabad-Bangalore	560
		Total	1720
IV. MUMBAI-CHENNAI			
1.	4	Mumbai-Pune	145
2.	4	Pune-Satara-Belgaum	315
3.	4	Belgaum-Chitradurga-Bangalore	455
4.	4	Bangalore-Chennai	320
		Total	1235
V. CHENNAI-BANGRIPOSI (JN WITH NH NO.6)			
1.	5	Chennai-Vijayawada	434
2.	5	Vijayawada-Vishakhapatnam	395
3.	5	Vishakhapatnam-Bhubaneswar	418
4.	5	Bhubaneswar-Bangriposi	286
		Total	1533
VI. MUMBAI-CALCUTTA			
1.	3	Mumbai-Dhule	273
2.	6	Dhule-Nagpur	515
3.	6	Nagpur-Sambalpur	554
4.	6	Sambalpur-Calcutta	576
		Total	1918

Annexure 7.1.10

PHYSICAL TARGETS FOR THE NINTH PLAN

YEAR 1997 – 2002

ACTIVITY	1998-99 Physical Kms/nos.	1999-2000 Physical kms/nos.	2000-01 Physical kms/nos.	2001-02 Physical kms/nos.	TOTAL Physical kms/nos.
1. Widening to two lanes (kms.)	267	218	256	291	1032
2. Four laning (kms.)	36	29	37	51	153
3. Strengthening/providing Paved shoulder (kms.)	624	584	657	729	2594
4. Bypasses (nos.)	4	4	5	7	20
5. Major Bridges/ Rehabilitation	9	7	9	11	36
6. Minor Bridges/ROBs(nos.)	45	44	51	58	198

Note : Item-wise achievement against Serial Nos. 1-6 of the Table above were 162 Km., 49 Kms., 314 Km., NIL Nos., 4 Nos., and 28 Nos., respectively during the year 1997-98.

TENTH FINANCE COMMISSION

PROVISION FOR MAINTENANCE OF ROADS

(Rs. lakhs)

State	1995-96	1996-97	1997-98	1998-99	1999-2000	1995-2000
1	2	3	4	5	6	7
Andhra Pr.	22471	30069	37667	45265	52863	188335
Arunachal Pradesh	1242	1628	2014	2399	2785	10068
Assam	9295	11711	14128	16544	18960	70638
Bihar	13586	16663	19741	22819	25896	98705
Goa	914	1246	1579	1912	2245	7896
Gujarat	25257	29732	34208	38683	43159	171039
Haryana	6998	7544	8099	8658	9177	40476
Himachal Pr.	3889	4928	5968	7007	8047	29839
J&K	2749	3470	4191	4912	5633	20955
Karnataka	14133	17785	21436	25088	28740	107182
Kerala	10957	12772	14588	16403	18219	72939
Madhya Pr.	28685	30922	33195	35486	37615	165903
Maharashtra	47356	51050	54802	58583	62098	273889
Manipur	400	667	933	1200	1466	4666
Meghalaya	2812	3031	3254	3479	3688	16264
Mizoram	1303	1404	1508	1612	1708	7535
Nagaland	1438	1709	1980	2251	2522	9900
Orissa	15280	20807	26334	31861	37388	131670
Punjab	8393	10938	13482	16027	18571	67411
Rajasthan	19238	20738	22263	23799	25227	111265
Sikkim	851	917	984	1052	1116	4920
Tamil Nadu	25697	27702	29738	31790	33697	148624
Tripura	996	1339	1681	2024	2366	8406
Uttar Pr.	31753	43086	54420	65753	77087	272099
West Bengal	12975	17541	22108	26674	31240	110538
Total	308668	369399	430301	491281	551513	2151162

Annexure 7.1.12

Category-wise number of Registered Motor Vehicles
(As on 1st March)

(in '000 Nos.)

Year	Two wheelers	Four wheelers	Buses	Goods vehicles	Others	Total vehicles	Index
1951	27	159	34	82	4	306	100
1961	88	310	57	168	42	665	217
1971	576	682	94	343	170	1865	609
1981	2618	1160	162	554	897	5391	1762
1991	14200	2954	331	1356	2533	21374	6985
1993	17183	3361	364	1603	2994	25505	8335
1995	20831	3841	423	1794	3406	30295	9898
1996	23111	4189	449	1785	4024	33558	10967

Source: Ministry of Surface Transport, Transport Research Wing.

Outlay and expenditure for Eighth Plan

Important Projects/ Schemes	8th Plan 1992-97	
	Approved outlay	Actual Expdr.
1. Delhi Transport Corp.	140.00	19.42
2. Capital Contribution to SRTCs	70.00	27.14
3. Road Safety Prog.	35.80	29.87
. Road safety Cell	0.30	0.34
. Publicity Measure	5.00	2.37
. Grant-in-Aid	1.50	0.82
. Pollution Testing Equip.	10.00	6.86
. Road Safety Equip.	10.00	13.99
. National Highway/Petrolling Scheme	9.00	5.49
4. Training Prog. including computer	7.10	0.73
. Training of Instr.	4.50	0.22
. Training Prog.	0.10	-
. Training of Driver	2.00	0.02
. Computer	0.50	0.49
5. Research & Development	4.00	0.16
6. CIRT	4.50	1.67
7. Mis. including Studies	2.60	0.62
. Transport Studies	2.00	0.46
. Data Collection	0.60	0.16
8. New Scheme	0.00	0.55
. Control of V. Pollution	0.00	0.34
. Energy Conservation	0.00	0.21
Total	264.00	80.16

Share of Fleet (Passenger Buses) in the
Private & Public Sector

(In '000 Nos.)

Year	Private Sector	Public Sector	Total	Share of public sector(%)
1980-81	92	70	162	43.0
1981-82	91	74	165	44.8
1982-83	100	76	176	43.2
1983-84	119	77	196	39.3
1984-85	131	80	211	37.9
1985-86	143	84	227	37.0
1986-87	152	89	241	36.9
1987-88	170	95	265	35.8
1988-89	179	99	278	35.6
1989-90	203	102	312	32.7
1990-91	225	106	331	32.0
1991-92	251	107	358	29.8
1992-93	271	110	381	28.7
1993-94	282	110	392	28.0
1994-95	315	110	425	25.9
1995-96	338	111	449	24.7

Source: Ministry of Surface Transport, Transport Research Wing.

PHYSICAL PRODUCTIVITY INDICATORS OF STATE ROAD TRANSPORT UNDERTAKINGS - EIGHTH PLAN AND NINTH PLAN

NAME OF THE S.R.T.U.	Fleet Utilisation (% age of Buses on Road)		Vehicle Productivity (Kms. per bus held per day)		Staff Productivity (Kms. per worker per day)		Bus Staff Ratio (On fleet operated)		Fuel Efficiency (Kms. per litre)	
	8th Plan	9th Plan	8th Plan	9th Plan	8th Plan	9th Plan	8th Plan	9th Plan	8th Plan	9th Plan
	Terminal	Terminal	Terminal	Terminal	Terminal	Terminal	Terminal	Terminal	Terminal	Terminal
	Year	Year	Year	Year	Year	Year	Year	Year	Year	Year
	1996-97	2001-2002	1996-97	2001-2002	1996-97	2001-2002	1996-97	2001-2002	1996-97	2001-2002
	Lat. Est	Target	Lat. Est	Target	Lat. Est.	Target	Lat. Est	Target	Lat. Est	Target
1. Andhra Pradesh	97	97	306	310	39.8	41.0	8.0	7.8	5.0	5.0
2. Arunachal Pradesh	84	84	139	128	23.5	28.1	5.4	5.4	3.7	3.7
3. Assam	76	85	143	220	14.7	26.0	13.6	9.7	4.1	4.3
4. Bihar	78	70	34	183	4.7	1.0	48.0	312.0	4.0	4.0
5. Goa	73	79	195	215	32.0	34.0	8.5	8.0	3.7	4.0
6. Gujarat	87	88	293	303	45.1	45.1	7.5	7.5	4.8	5.0
7. Haryana	95	95	300	320	54.1	57.7	5.8	5.8	4.4	4.5
8. Himachal Pradesh	97	97	207	226	39.6	40.4	5.4	5.7	3.4	3.5
9. Jammu & Kashmir (B)	70	80	93	121	15.4	18.2	6.7	6.5	3.6	3.7
10. Karnataka	91	94	274	294	43.5	50.8	6.3	5.8	4.6	4.5
11. Kerala	80	80	271	276	36.6	39.6	9.2	8.7	3.8	3.9
12. Madhya Pradesh	80	91	206	260	22.7	37.5	11.2	6.9	4.3	4.6
13. Maharashtra	93	94	280	305	39.5	45.4	7.4	7.4	4.6	4.6
14. Manipur (B)	41	64	84	103	7.6	10.7	22.0	10.6	3.5	3.5
15. Meghalaya	50	61	73	98	15.2	22.2	9.6	7.3	3.3	3.4
16. Mizoram (B)	45	60	45	56	7.1	6.9	14.3	13.3	3.2	3.3
17. Nagaland	29	65	47	92	8.3	18.4	19.4	7.7	3.7	3.5
18. Orissa	64	90	139	255	18.0	35.0	14.0	8.0	4.0	4.1
19. Punjab Roadways	94	95	241	268	44.9	50.8	5.3	5.3	4.2	4.2
20. PEPSU RTC	90	93	258	270	46.9	49.9	4.8	5.0	4.3	4.3
21. Rajasthan	90	91	281	300	51.7	57.4	6.2	6.0	4.8	4.8
22. Sikkim (B)	70	75	65	75	20.7	20.7	5.1	5.1	3.2	3.2
23-42 Tamil Nadu	93	94	383	394	52.3	51.3	7.9	7.8	4.2	4.3
43. Tripura (B)	60	75	90	135	9.2	15.8	14.0	10.5	3.5	3.5
44. Uttar Pradesh	91	93	214	252	30.6	38.5	7.4	7.0	4.6	4.7
45. Calcutta STC	79	85	146	174	15.9	21.3	11.7	9.7	3.5	3.5
46. North Bengal STC	72	90	193	261	27.6	36.2	9.6	8.0	3.9	4.0
47. South Bengal STC	58	81	132	204	26.0	36.9	9.3	6.3	3.7	4.1
ALL INDIA AVERAGE	89	92	278	302	40.5	44.5	7.6	7.3	4.5	4.5

Volume of Traffic at Major Ports

(In Million Tonnes)

Name of the Port	1991-92	92-93	93-94	94-95	95-96	96-97
1. Calcutta/Haldia	16.00	18.34	18.50	20.54	21.52	23.12
2. Mumbai	26.26	28.95	30.51	30.67	33.92	33.73
3. J.L.Nehru	2.79	3.01	3.38	5.01	6.87	8.07
4. Chennai	25.05	25.33	26.54	29.46	30.72	31.85
5. Cochin	7.48	7.98	7.62	8.63	11.50	11.74
6. Vizag	21.52	22.76	25.59	30.03	32.82	34.50
7. Kandla	21.00	22.91	24.50	26.50	30.34	33.73
8. Mormugao	15.10	16.31	18.72	18.88	18.09	17.31
9. Paradip	7.30	7.60	8.33	10.12	11.26	11.58
10. New Mangalore	8.27	7.09	8.63	8.01	8.88	12.46
11. Tuticorin	5.87	6.22	6.70	8.04	9.29	9.17
Total	156.64	166.50	179.02	195.89	215.21	227.26

Composition of Traffic Handled at Major Ports

(In million Tonnes)

Commodity	1991-92	1992-93 Actuals	1993-94 Actuals	1994-95 Actuals	1995-96 Actuals	1996-97 Actuals
POL	67.60	73.76	76.92	80.37	90.92	98.08
Iron Ore	32.10	29.83	34.10	34.35	34.56	33.30
Coal	22.40	24.49	26.81	30.80	33.79	34.87
Fertiliser	9.92	9.91	9.47	11.00	12.36	7.18
Container	6.72	7.62	11.90	15.01	17.44	20.59
General Cargo	17.90	20.89	19.82	24.36	26.14	33.49
Total	156.64	166.50	179.02	195.89	215.21	227.26

Ports - Eighth Plan Outlay and Expenditure

S.No.	Annual Plan	Approved Outlay (Rs.crore)	Expenditure incurred (Rs.crore)	Percentage Utilisation Plan Outlay
(A)	MAJOR PORTS			
(i)	1992-93	541.66	253.44	46.8
(ii)	1993-94	584.34	270.99	46.4
(iii)	1994-95	434.50	310.54	71.5
(iv)	1995-96	721.43	419.26	58.1
(v)	1996-97	576.60	486.80	84.4
	Total (A)	2858.53	1741.03	60.9
(B)	OTHERS (DCI, ALHW, MPSO, etc.)			
(i)	1992-93	71.10	20.58	28.9
(ii)	1993-94	37.20	45.71	122.9
(iii)	1994-95	40.50	26.58	65.6
(iv)	1995-96	92.70	42.44	45.8
(v)	1996-97	55.00	30.67	55.8
	Total (B):	296.50	165.98	55.9
	Grand Total (A) + (B):	3155.03	1907.01	60.44

**Port-wise Traffic and capacity projections
at the end of Ninth Plan**

(In Million Tonnes)

S.No.	Name of the Port	Capacity		Planned Capacity Augmentation By the End of 2002		
		(As on 31.3.97)	Traffic (2002)	New Schemes	Spill Over of VIII Plan	Prod. Improv. and others
1.	Calcutta	7.87	8.65)	
2.	Haldia	17.70	23.08	7.5)	
3.	Paradip	10.90	33.46	4.0)	
4.	Vizag	31.45	45.01	0.5)	
5.	Chennai	25.90	56.54	9.5)	
6.	Tuticorin	7.60	16.24	3.1	) 37	50
7.	Cochin	13.46	16.74	4.5)	
8.	New Mangalore	16.45	34.91	13.0)	
9.	Mormugao	19.18	23.58	18.0)	
10.	Mumbai	30.80	43.45	11.0)	
11.	JNPT	9.90	24.51	15.3)	
12.	Kandla	24.00	97.80	36.0)	
Total		215.21	423.94	122.4	37	50

Statement Showing Details of Outlays and Expenditure during 8th Plan - Civil Aviation.

(Rs. crores)													
Sl. No.	Name of the Organisation	8th Plan Outlay	1992-93		1993-94		1994-95		1995-96		1996-97		1992-97 Expdr. during Eighth Plan
			Approved Outlay	Actual Expdr.	Approved Outlay	Actual Expdr.	Approved Outlay	Actual Expdr.	Approved Outlay	Actual Expdr.	Approved Outlay	Actual Expend.	
1.	Air India Limited	1800.00	395.50	571.76	724.70	450.62	747.01	703.11	2952.44	946.88	2907.75	1214.16	3886.53
2.	Indian Airlines Limited	1220.00	193.57	155.24	418.97	335.66	428.18	308.40	411.41	358.43	445.00	397.93	1555.66
3.	Vayudoot	5.00	0.50	0.50	5.66	NA	4.00	-	-	-	-	-	0.50
			(0.50)	(0.50)									(0.50)
4.	Pawan Hans Limited	80.00	25.57	4.90	28.28	1.20	14.90	8.27	29.80	4.10	106.25	31.43	49.90
5.	Airports Authority of India												
a)	International Airports Div.	400.00	117.97	58.23	135.80	79.31	119.60	71.56	162.31	100.41	205.92	131.12	440.63
b)	National Airports Div.	400.00	275.47	75.38	250.00	253.54	342.36	275.67	300.00	262.03	381.50	189.25	1055.87
		(67.00)	(20.00)	(1.50)	(3.71)	(1.54)	(13.11)	(11.35)	(46.25)	(39.72)	(48.55)	(18.06)	(72.17)
6.	D.G.C.A.	25.00	7.00	5.84	7.25	2.08	4.00	2.91	5.45	1.82	2.90	1.58	14.23
		(25.00)	(7.00)	(5.84)	(7.25)	(2.08)	(4.00)	(2.91)	(5.45)	(1.82)	(2.90)	(1.58)	(14.23)
7.	B.C.A.S.	10.00	1.42	0.30	1.00	(0.004)	1.00	0.0024	1.66	0.44	2.00	0.40	1.15
		(10.00)	(1.42)	(0.30)	(1.00)	(0.004)	(1.00)	(0.0024)	(1.66)	(0.44)	(2.00)	(0.40)	(1.15)
8.	I.G.R.U.A.	45.00	15.00	0.51	4.98	2.71	9.99	0.12	4.33	0.02	24.20	0.07	3.43
							(4.99)	(0.12)					
9.	Hotel Corporation of India	10.00	4.00	2.47	15.80	3.07	15.00	30.96	18.00	30.37	63.73	21.81	88.68
10.	Aero Club of India	3.00	0.08	0.00	0.01	0.00	0.01	0.00	0.01	-	0.01	-	-
			(0.08)		(0.01)		(0.01)		(0.01)		(0.01)		
TOTAL		3998.00	1036.08	875.13	1592.45	1128.19	1686.05	1401.00	3885.41	1704.5	4139.26	1987.75	7096.58
		(107.00)	(29.00)	(8.14)	(11.97)	(3.62)	(23.11)	(14.26)	(53.37)	(41.98)	(53.46)	(20.04)	(88.05)

NOTE : Figure in bracket indicates budgetary support

Annexure-7.1.21

AIRPORTS AUTHORITY OF INDIA
CAPACITY, DEMAND AND AUGMENTATION FOR PASSENGER TERMINALS AT INTERNATIONAL AIRPORTS
NINTH PLAN

Airports	At Commencement of plan period (Annual in Millions)		Growth rate	At completion of plan period (Annual in Millions)		Action plan
	Capacity	Demand		Capacity	Demand	
Mumbai International	5.0	4.76	5.5%	7.5	6.22	Construction of Ph-III International Terminal to be completed in Aug'99.
Domestic	6.45	6.30	10.5%	6.45	10.39	Construction of Ph-II Domestic terminal under sanction. Expected completion Dec.2002. Capacity on completion-11.0 million. Demand on completion 11.27 million.
Thiruvananthapuram International	0.36	0.85	7.5%	0.42	1.22	Extension of existing Terminal to be completed in Dec'99. New Complex to be constructed after techno-economic viability studies and land acquisition.
Domestic	0.80	0.26	10.5%	0.80	0.42	No action Required
Calcutta International	0.52	0.61	7%	1.65	0.86	Modification Ph-I to be completed in Dec'2000. Modification Ph-II to be completed in March 2002.
Domestic	3.70	1.96	10.5%	3.70	3.23	New Domestic Terminal already commissioned in 1995.
Chennai International	0.46	1.54	7.5%	1.80	2.20	Construction of International Terminal (Ph-II) being taken up, Completion Dec'2001.
Domestic	2.67	1.83	10.5%	2.67	3.01	Ph-II Domestic terminal proposed in Xth Plan.
Delhi International	3.4	3.7	7%	3.40	5.18	Feasibility report of Phase-II terminal under submission, possibility of private participation being explored
Domestic	7.2	4.3	10.5%	7.20	7.04	Possibility of private participation for Constn. Of New domestic terminal being explored.

**AIRPORTS AUTHORITY OF INDIA
CAPACITY, DEMAND AND AUGMENTATION FOR
INTERNATIONAL CARGO TERMINALS AT MAJOR AIRPORTS
NINTH PLAN**

AIRPORT	At Commencement of Plan period (Annual in '000 tonnes)		Growth rate	At completion of plan period (Annual in '000 tonnes)		Action plan
	Capacity	Demand		Capacity	Demand	
Mumbai	186.86	200.20	12%	219.80	352.82	By implementing 'Instant Cargo Scheme', dwell time being reduced from 12 days to 48 hours for import and 2 days to 24 hrs. for export which shall provide for enhanced capacity.
Calcutta	28.00	19.85%	12%	28.00	34.98	Construction of Integrated Cargo Terminal Ph-I to be completed in 2003. Capacity on Completion -33000 tonnes. Demand on completion -38660 tonnes. Phase-II will be taken subsequently during 10 th plan period.
Chennai	59.53	57.40	12%	93.44	101.16	Construction of Integrated Cargo Terminal Ph-I to be completed in Oct'99.
Delhi	50.00	154.85	12%	219.50	272.90	Export Cargo Terminal Ph.-II to be completed in Aug'99. Import Cargo Terminal Ph.-II to be completed in 2000. By implementing 'Instant Cargo Scheme', dwell time being reduced from 12 days to 48 hrs. for import and 2 days to 24 hrs. for export which shall provide for enhanced capacity.

Annexure – 7.1.23

**AIRPORTS AUTHORITY OF INDIA
ACTION PLAN FOR MISCELLANEOUS WORKS
AT INTERNATIONAL AIRPORTS
NINTH PLAN**

AIRPORTS	DESCRIPTION	ACTION PLAN
MUMBAI	<p>Recarpetting of Secondary Runway</p> <p>Construction of Parallel Taxi Track to main runway.</p> <p>Construction of New Taxi Links.</p> <p>Construction of Apron</p> <p>Terminal Building</p> <p>Cargo Complex</p> <p>Fire detection and fighting measures.</p> <p>Operational and facilitation equipment's</p>	<p>Bituminous overlay being provided for restoration of the pavement. Under construction to increase the runway capacity.</p> <p>Under construction for efficient movement of aircraft.</p> <p>For parking additional 3 nos. B-737 aircraft and 3 Nos. A-320 aircraft.</p> <p>Modification and face lifting works in hand.</p> <p>New shed for storing heavy cargo being provided.</p> <p>Facility being upgraded.</p> <p>CCTV systems, Passenger Frisking/Baggage check equipment and other operational equipment's being upgraded/augmented.</p>
THIRUVANANTHAPU RAM	<p>Extension of main runway.</p> <p>Extension of apron.</p> <p>Terminal Building.</p>	<p>The main runway has been extended by 350 m to permit B-747 aircraft operation.</p> <p>The existing apron being modified to accommodate 7 parking bays including one for B-747 against 4 parking bays at present.</p> <p>International Terminal being modified/extended to increase the capacity from 0.36 million pax to 0.42 million pax and augment passenger handling areas. The building is being provided with central airconditioning..</p> <p>Domestic Building modified for increased passenger handling.</p>

CALCUTTA	Resurfacing of main runway.	Bituminous overlay being provided for restoration of the pavement.
	Reconstruction of portion of parallel taxi track.	Disused portion of parallel taxi track being reconstructed to increase the runway capacity and efficient movement of aircraft.
	Construction of Apron.	4 new bays are being added. 6 old bays are being reconstructed/strengthened.
	Terminal Building.	Cityside Canopies are proposed for both the terminals for protection of passengers/visitors from bad weather.
CHENNAI	Strengthening of secondary runway.	The existing secondary runway being strengthened to handle B-737/A-320 type aircraft. The runway is also being improved to meet international standards.
	Construction of Apron.	6 new aircraft parking bays are being added.
	Terminal Building.	The Central atrium of International Building is being covered to augment security hold space. Airside corridor with 2 additional aerobridges is being provided.
DELHI	Strengthening of secondary runway.	Bituminous overlay being provided for restoration.
	Strengthening of main runway.	Bituminous overlay being provided for restoration and strengthening to cater to heavier aircraft like MD-11.
	Construction of Taxi Track.	A new taxi track connecting the runways is being built for increasing runway capacities.
	Construction of Apron.	7 new International bays have been added.
	Terminal Building.	Modification and facelift of both terminals are in hand.

7.2 TELECOMMUNICATIONS

7.2.1 Telecommunication is one of the prime support services needed for rapid growth and modernisation of various sectors of the economy. Although the sector has grown rapidly in recent years, its growth needs to be accelerated further in the Ninth Plan. It is equally important to accelerate structural changes in this sector in line with trends in other countries to ensure that the telecommunication services are not only made available on the scale needed to sustain rapid growth in the economy as a whole but also that the quality and cost of these services come up to the requirements of a modernising economy.

Eighth Plan Review

7.2.2 The two basic thrust areas of the Eighth Plan were rapid expansion of telecom network and its transformation into a modern and efficient system. Provision of an additional 75 lakh Direct Exchange Lines (DELs) and installation of 3.09 lakh Village Public Telephones (VPTs) were among the major targets fixed for the Eighth Plan. With the announcement of the National Telecom Policy in May 1994, it was estimated that 100 lakh DELs will be required to be provided during the Eighth Plan to make available telephone on demand by 1997 and cover all the villages with public telephony by March 1997. The private sector was envisaged to play an important role in achieving this objective. However, due to various constraints, the provision of basic telecom services by the private operators is yet to take off as desired.

7.2.3 The performance of the Government sector in achieving the targets has been quite encouraging. Against the target of creating an additional net switching capacity of 93 lakh lines, the achievement has been 109.58 lakh lines i.e. 17.8% more than the target. Similarly, in the case of providing new connections, about 87.33 lakh DELs have been provided against the target of 75 lakh DELs, the achievement being about 16.4% more than the target.

7.2.4 As a result of the Mid-Term Review, the original targets fixed for trunk capacity (TAX) and optical fibre system were substantially enhanced from 2.72 lakh lines to 7.0 lakh lines and from 20000 route kms to 40000 route kms respectively with a view to improving the long distance connectivity. The achievement has been 9% higher than the target in the case of TAX capacity and 15% higher in the case of optical fibre cable.

7.2.5 Rural connectivity was one of the major objectives of the Eighth Plan. According to the original Plan target, 3.09 lakh villages were to be covered by March 1997. On the basis of the Mid-Term Review, the target was increased to 3.38 lakh Village Public Telephones (VPTs) due to increase in the number of villages from 5.76 lakhs to 6.05 lakhs. Assuming a significant contribution by the private sector, the National Telecom Policy (1994) had revised the target to cover all the 6 lakh villages by March 1997. As the provision of basic services by the private operators did not take off as envisaged, the achievement of the target was limited to the extent of resources availability with the Department of Telecommunication. The progress in this regard has been such that only about 57.2% of the target could be achieved. Paucity of funds and delay in the supply of equipment were the two important factors responsible for the situation. All other important targets have been achieved during the Eighth Plan. Details are in Annexure 7.2.9.

7.2.6 On the financial side, the performance of the public sector with regard to resource mobilisation has been quite encouraging. Internal resources (IR) contributed about 80% of the anticipated Plan expenditure against the target of 70 percent. Against an approved outlay of Rs.25,137 crore, the likely expenditure is estimated to be Rs.27480 crore (at 1991-92 prices). The telecom sector has fared better than expected with regard to the extent of reliance on budgetary support for financing Plan expenditure. Against the targeted budgetary support of Rs.390 crore, the actual utilisation is expected to be Rs.109.42 crore, i.e. less than 0.4% of the total outlay against the approved level of 1.5%.

7.2.7 An outlay of Rs.23946 crore was approved for the Department of Telecommunications including the Mahanagar Telephone Nigam Limited (MTNL) with internal and extra-budgetary resources constituting 99.6 per cent of the approved outlay. The performance of the Department in respect of internal resource generation has been very encouraging as the achievement was 25% more than targeted (at 1991-92 prices). However, its performance in respect of resource mobilisation through bonds has not been satisfactory as only 65.6% of the target could be achieved. Unfavourable conditions in the capital market were primarily responsible for such development. The good performance in internal resource mobilisation more than compensated the shortfall in market borrowings (bonds) and the actual expenditure Rs.26102 crore was about 10% more than targeted (at 1991-92 prices). The Table 7.2.1 gives the details:

Financing pattern - DOT & MTNL

(Rs. Crore)

	Approved outlay	As % of total	Actual Expenditure	As % of total
IR	16556.00	69.14	20677.45	79.22
Bonds	7026.00	29.34	4612.15	17.67
Others	0.00	0.00	712.44	2.73
BS	364.00	1.52	100.07	0.38
Total:	23946.00	100.00	26102.09	100.00

7.2.8 The performances of the public sector undertakings in the telecom sector has been a mixed one. The two service organisations, viz. Mahanagar Telephone Nigam Limited (MTNL) and Videsh Sanchar Nigam Limited (VSNL), have performed quite well. But both of them have enjoyed monopoly position in their respective areas. The same has not been true for the equipment manufacturing units, i.e. ITI Ltd. and HTL Ltd., whose performance has been adversely affected, as a consequence of the policy of deregulation, liberalisation and competition. From a profit-making unit in 1993-94, ITI Ltd. has become a losing concern for the third year in succession. The surplus generated by HTL Ltd. is only marginal and it may go the ITI way, if the present situation continues. The main factors adversely affecting the performance and profitability of these companies are:-

- i) significant decline in the prices of telecom equipment;
- ii) surplus manpower/large overheads;
- iii) high cost of production/lack of modernisation and
- iv) high interest liability.

7.2.9 The value-added services witnessed a healthy growth during the Eighth Plan. For Radio Paging and Cellular Mobile Telephone services private operators were given licences through a system of tendering. Radio Paging service was expected to be available in most of the cities throughout the country by the end of 1997. Licences have also been issued to 36 companies for operation of Public Mobile Radio Trunked Services (PMRTS) in 80 cities on the basis of proposals invited in January, 1995. For the operation of E-Mail, Voice/Audiotex and 64 Kbps CUG domestic Data VSAT service using INSAT satellite system 16,38, and 13 licences have been issued respectively. These services have become operational on a commercial basis in many areas of the country. Cellular Mobile Telephone Services have already started in four metropolitan cities with two operators in each city. In other telecom circles 33 licences for 18 circles have been issued to 13 companies since December, 1995. Out of 33 licensees, 22 have already started their services in more than 50 cities/towns with a customer base of more than 1 lakh. Six licences have been issued in the six States of Andhra Pradesh, Maharashtra, M.P., Rajasthan, Gujarat and Punjab. Internet services are being provided in about 20 cities at present by DOT and VSNL. The public data network "INET" has been extended to 95 cities, out of a total of 105 major cities planned for the INET. A high-speed satellite network called HV-NET has started operating which provides 64 Kbps data and voice communication capability from any point in the country. Integrated Services Digital Network (ISDN) has been started in 9 cities. More than 200 international leased circuits have been provided for software export.

Present Status

7.2.10 The basic telecom services network has expanded from 1 lakh connections at the time of independence to 178 lakh Direct Exchange Lines (DELs) as on 31.03.98. It has witnessed a consistently high growth of 16-17% per annum during the last decade i.e. 1987-97. The growth was further accelerated to more than 20 per cent during the Eighth Plan. During 1997-98, the growth rate was still higher at 22.4%. However, the growth in the waiting list has been equally impressive growing from 12.87 lakh in 1987-88 to 27.06 lakh in 1997-98. During the last five years, the waiting list on the average has been about 26.5 lakh. Viewed in the context of requirement and population size of the country, the rapid expansion seems moderate as reflected in the low telephone density of 1.84 (March, 1998) against the world average of 12. The main features of the present telecom network are :

- More than 23400 telephone exchanges working in the country.
- A network of more than 178 lakh telephone connections with about 20% of the total connections working in the rural areas.
- STD/ISTD facility is available to more than 90% of the subscribers.

- A network of about 4.28 lakh PCOs in urban areas.
- Availability of variety of services such as Mobile Radio Telephone, Radio Paging, Facsimile, Data Transmission, Integrated Services Digital Network (ISDN) etc. to cater to the business and other needs of customers.
- Cellular services are available in 4 metro cities and all other Circles except Andaman & Nicobar Islands and J&K.
- Six licences for basic services have been granted for six States of M.P., Andhra Pradesh, Gujarat, Rajasthan and Maharashtra. Two operators M/s Bharati Telenet Ltd. in M.P. and Hughes Ispat Ltd. in Maharashtra have started providing services.

7.2.11 The telecom sector has witnessed some fundamental structural and institutional reforms in the past decade. Telecom equipment manufacturing was completely deregulated in 1991. Value added services (including cellular services) were thrown open to private sector in 1992. Basic services were opened to private participation in 1994 by dividing the country into 21 Telecom Circles and allowing one private operator per Circle to compete with DOT. An independent Telecom Regulatory Authority of India was set up in 1997. A new Policy for Internet Service Providers (ISPs) was announced in 1998 allowing independent service providers to enter the sector ending the earlier monopoly of VSNL. Reorganization of DOT separating policy making function and service provision and corporatisation of DOT's operational network are two major institutional reforms which need to be implemented.

NEW POLICY FOR INTERNET SERVICE PROVIDERS (ISPs)

Internet is a rapidly growing international 'network of networks' and easy access to the Internet is an important element in international connectivity. The new Internet Policy announced by Govt. of India aims at the widest possible access to this facility at affordable prices. Provision of Internet service has been opened to the private sector with liberal terms to ensure quick growth. The salient features of the Policy are :

- ❖ Any Indian company is eligible to be licensed as an ISP. The foreign equity permissible is capped at 49%.
- ❖ Licence period would be 15 years. No licence fee for the first five years and Re. 1 per annum for subsequent years.
- ❖ Separate licence will be issued for each service area. For this purpose, the country has been divided into separate service areas in three categories viz. :
 - Category 'A' Service Area – whole of India
 - Category 'B' Service Area – 20 territorial Telecom Circles, Metros – Delhi, Mumbai, Calcutta and Chennai and four major cities – Ahmedabad, Bangalore, Hyderabad and Pune.
 - Category 'C' Service Area – in secondary switching areas of DOT.
- ❖ A company may obtain any number of licences. There shall be no limit on number of licences that can be granted to a company in a particular area.
- ❖ Performance Bank Guarantee (PBG) of Rs.2 crore for Category 'A' Service Area, Rs.20 lakh for Category 'B' Service Area and Rs.3 lakh for Category 'C' Service Area to be submitted along with application for each service area.
- ❖ International connectivity would be through gateways of DOT, VSNL or authorised public/Government organisations. Private ISPs are allowed to provide gateways after obtaining security clearance. Direct interconnectivity between two separately licenced ISPs shall be permitted.
- ❖ Establishment of transmission links – Private ISPs can obtain transmission links on lease from DOT, licenced Basic Service Operator, Railways, State Electricity Boards, National Power Grid Corporation or any other operator especially authorized to lease such lines. ISPs may also establish their own transmission links, provided they are not available from authorised sources and subject to permission of authority.
- ❖ ISPs will be free to fix their own tariff. However, the TRAI may review and fix a tariff at any time.
- ❖ Telephony on the Internet is not permitted.

Ninth Five Year Plan

Policy Framework

7.2.12 Telecommunications is a prime support service needed for rapid growth and modernisation. It is also one of the fastest growing sectors in India and has immense potential for growth. The telecommunication activity is commercial in nature and people are willing to pay for it. Of all infrastructure sectors, it is perhaps the best suited for private sector participation which would help to create a competitive environment and improve the quality of services to consumers. Deregulation and competition are key elements in telecommunication reforms all over the world and will be a guiding principle to the evolution of policy in this sector in the Ninth Plan and beyond.

7.2.13 Telecommunications is potentially a profitable sector and service provision by the Government sector should continue to be financed solely by internal and extra-budgetary resources. Budget support would be restricted to financing the monitoring and regulatory mechanisms only till they become self-financing. In exceptional situations some supplementation to the resources of the Department of Telecommunication (DOT) could be considered for providing services in unremunerative areas. To ensure efficiency of operations and effective competition with the private sector, the service provision function of the DOT will have to be performed purely on commercial lines. Necessary steps in this regard would be taken during the Ninth Plan. The organisational/institutional changes envisaged for the Government sector are discussed in detail under the head 'Problems and Strategy'.

7.2.14 The public sector will continue to play a dominant role in the provision of basic telecom services during the Ninth Plan. Out of 237 lakh new connections envisaged to be provided during the Ninth Plan, the Department of Telecommunication and MTNL are expected to provide 185 lakh additional connections. The Department would ensure the provision of necessary infrastructural facilities for the development of the telecom sector at the required pace. This will include creation of necessary facilities required for the smooth functioning of operations by the private sector both for the value-added as well as basic services, including inter-connectivity.

7.2.15 Private investment is also expected to play a major role supplementing the efforts of the public sector in expanding capacity and also providing competition within the system. In the area of value-added services, the private sector would continue to play a dominant role. The quantum of investment by the private operators would basically be determined by the rate of return on such investments - both basic as well as value-added services. Necessary steps would be taken to streamline policy so as to remove the various bottlenecks to ensure effective participation and adequate investment by the private sector.

7.2.16 The National Telecom Policy has envisaged that India should emerge as a major manufacturing base and major exporter of telecom equipment. The manufacturing capacity of the indigenous industry is small in relation to the other major operators in the world and exports constitute a very small proportion of the total production of telecom equipment in the country. Promoting exports as a thrust area and development of Indian multi-nationals should be among the major goals. To achieve this objective, the Ninth Plan would aim at removing the various constraints relating to transfer of the latest technology, access to cheap international finance, joint ventures with foreign companies, rationalisation of custom and import duties on inputs and development of a strong industry-sponsored R&D base

7.2.17 The annual production of telecommunication equipment in the country was estimated to be about Rs.5000 crore (1996-97). The requirement of the telecom equipment during the Ninth Plan is expected to be about Rs.90,000 crore, including about Rs.27,000 crore of direct imports of finished products. The domestic production is expected to be about Rs.62,000 crore during the Ninth Plan. Sufficient production capacities have been created in the areas of switching, transmission and terminal equipments to meet the Ninth Plan requirements though the domestic units have generally not been competitive in price compared to global market conditions. Sufficient capacities are required to be set up in the new and emerging areas of V-SAT equipment, Wireless in Local Loop (WILL), DLC systems, Cellular phones, radio pagers etc.

7.2.18 The Wireless Planning and Coordination (WPC) Wing, set up in 1952, is the national radio regulatory authority to ensure orderly utilisation of radio frequency spectrum and Geo Stationary Orbit (GSO). It is supported by the Wireless Monitoring Organisation (WMO) in this activity. With the opening up of the economy the number of players and services in the telecom sector is bound to increase manifold. Therefore, the Organisation would have to be strengthened and modernised to enable it to perform its regulatory functions effectively. The Government cannot afford to endlessly fund the massive investment needed for the modernisation efforts of the Organisation as the outlay of WMO is funded entirely through budget support. The internal resources of WPC/ WMO are mainly in terms of revenue collected from royalty, licence fee and examination fee. Recently, WMO has started charging the wireless users for services rendered other than of a regulatory nature such as removal of interference problems, radio noise measurements etc. These revenues are expected to increase substantially over time. The Ninth Plan should aim to make WMO self-financing.

7.2.19 The Telecom Regulatory Authority of India (TRAI), set up in 1997, is the apex organisation responsible for ensuring quality services and value for money to the consumers. The interests of the consumers as a group are protected by TRAI. For individual grievances, a consumer can approach a Consumer Forum. The three main areas of concern regarding the quality of services have been billing, fault repair and redressal of other grievances. An appropriate mechanism ensuring fool-proof and time-bound solution to the problems arising in the above three areas needs to be devised. Computerisation and use of appropriate technological inputs would have to be an integral part of the strategy for ensuring quality services.

7.2.20 For international connectivity, Videsh Sanchar Nigam Ltd. (VSNL) has a monopoly position till 2004 A.D. Keeping in view the ensuing competition in overseas communications, the VSNL has to be strengthened adequately so that it can compete effectively in a totally liberalised scenario. With rising tele-density and high penetration of services both in rural and urban areas, the demand for international telecom services is expected to increase manifold during the Ninth Plan. The strategy for development of VSNL has to be guided by the fact that the Company has been selected as one of the 'Navratnas', which is to be developed as an Indian Multinational.

7.2.21 The Mahanagar Telephone Nigam Ltd. (MTNL), which provides basic telecom services in Delhi and Mumbai, has till now enjoyed a monopoly position. In the Ninth Plan, it would be facing competition from the private operators. The quality of service and efficiency of operations would hold the key for its future growth and survival. The development strategy of the Company during the Ninth Plan should be guided by these two

factors. To enable MTNL to prepare itself for the competition, it is essential to give full functional freedom to it with regard to raising and deployment of resources, including access to international capital markets, choice of technology, strategic alliances/joint ventures with leading international players and redeployment and realignment of the work force. Recently, the Company has been accorded the 'Navratna' status which is expected to help it perform better.

Objectives and Targets

7.2.22 The National Telecom Policy 1994 outlined the basic framework for the future development of the telecom sector in the country. The stated objectives of the policy were : to provide telephone on demand; to achieve universal coverage; to ensure world standard in the services; to enable the country emerge as a major manufacturing base for telecom equipment and exports and to protect the defence and security interests of the country. Keeping in line with the basic spirit of the Policy, the major thrust during the Ninth Plan would continue to be on expansion, modernisation and improvement in efficiency. The major objectives envisaged for the Ninth Plan are :

- (i) Universal coverage or telephone on demand;
- (ii) Universal and easy accessibility;
- (iii) World standard services to the consumers at affordable prices;
- (iv) Demand-based provision of existing value-added services and introduction of new services;
- (v) Exports of telecom equipment and services as a major thrust area;

The detailed goals envisaged in pursuance of these broad objectives are given in Annexure-7.2.1. The National Telecom Policy itself will be reviewed and modified to reflect experience gained thus far and the rapid technological changes which characterise this sector.

7.2.23 The objective of universal coverage of basic telecom services is envisaged to be achieved by providing telephone on demand. It has been observed that the actual registered demand, reflecting the waiting list at any point of time, does not indicate the true demand for the basic services. There is a large element of latent demand, which has led to ever increasing waiting list along with sustained high growth of network expansion and provision of new connections. Taking into account the changing structural composition of the economy, the composition of telecom services and the relative tariff rates, a constant review of the demand projections for the basic services would be called for. As on 31.3.1997, the telecom network had 145.33 lakh Direct Exchange Lines (DELs), with a waiting list of 28.87 lakh. The demand at the beginning of the first year of the Ninth Plan is estimated to be 174 lakh DELs. It is projected to grow to 360 - 380 lakh DELs by the terminal year i.e. 2001 - 2002 and 818 lakh DELs by 2007. Thus, 186 - 237 lakh additional DELs would have to be provided by the Government and the private sector during the Ninth Plan to achieve the objective of providing telephone on demand in Ninth Plan and 437 lakh additional DELs during the Tenth Plan. The Department of Telecommunication, including MTNL, is expected to provide 185 lakh new connections

and the remaining 52 lakh DELs are envisaged to be the private sector's contribution. Similarly, Govt. sector is envisaged to provide 285 lakh DELs in the Tenth Plan, the private sector expected to contribute the remaining 152 lakh DELs.

7.2.24 Rural connectivity would be one of the major thrust areas during the Ninth Plan. Out of about 6 lakh villages, 3.01 lakh villages have been provided with telephone facilities so far (31.03.98). The remaining villages would be covered by the year 2002 through the joint efforts of the Department and the private operators. According to the guidelines issued for the entry of private operators into basic services, 10% of the total connections to be provided by them in each circle will have to be in the rural areas. Tentatively, a target of providing 2.39 lakh Village Public Telephones (VPTs) has been kept for the Department of Telecommunication for the Ninth Plan. Any shortfall in the contribution by private sector would be made by increased efforts by the Govt. Deptt. of Telecom would ensure that financial requirements of the programme are fully met. As the present technology i.e. analogue MARR system used for providing VPTs is not dependable, DOT would initiate necessary action to introduce new suitable technologies like Wireless in Local Loop (WILL), satellite based phones etc. at the earliest.

7.2.25 To ensure easy and smooth long-distance connectivity, a target of creating additional 18 lakh lines of trunk capacity (TAX) is proposed for the Ninth Plan. As long-distance connectivity is still the monopoly of the DoT, the entire capacity would be created by the Government sector. The optical fibre system would be the mainstay of transmission expansion during the Ninth Plan. A target of 1.4 lakh route kilometers of optical fibre system is proposed for the Ninth Plan.

7.2.26 The other major targets envisaged for the Department of Telecommunication for the Ninth Plan are :

- (i) One Public Call Office (PCO) for every 500 population in urban areas;
- (ii) Provision of adequate number of PCOs in public institutions like hospitals, shopping centres, educational institutions etc.
- (iii) STD PCO for every 10 kms. on the national highway;
- (iv) STD facility to all exchanges by the year 2000;
- (v) Digital connectivity to all exchanges upto SDCC level;
- (vi) Packet Switched Public Data Network (PSPDN) to cover all District Headquarters (DHQs).

7.2.27 Connectivity from public places and in an emergency is quite poor and accessibility is quite difficult. This is specifically true in the case of hospitals, educational institutions and highways. Depending upon the size and the number of persons that may require the facility at a particular point of time, adequate connectivity in the form of PCOs would be ensured during the Ninth Plan. To illustrate, the major hospitals in the capital should have adequate number of PCOs in the emergency, OPD wards and one PCO in the corridor of each ward. The option of operating these PCOs on

franchise basis or as "pay phones" should be an integral part of the strategy to improve accessibility and connectivity in this area. Besides ensuring substantial improvement in accessibility, it would also become a major source of employment in the telecom sector.

7.2.28 The value-added services are being provided by the private sector. These are envisaged to be provided on demand during the Ninth Plan. The demand for existing and new value-added services, as projected by the Working Group on Value-Added Services, is given in the Annexure 7.2.5.

7.2.29 Services like distance education and tele-medicine would be of immense help to the common people living in rural and remote areas. An integrated project for creating the basic infrastructure for the provision of value-added and other telecom services in rural areas is envisaged to be taken up on pilot basis during the Ninth Plan. It is proposed to take up this pilot project in two districts each - one developed and the other backward - of the four States i.e. Punjab, Orissa, Kerala and Maharashtra.

Science and Technology

7.2.30 Research and Development (R&D) would be accorded a higher priority during the Ninth Plan. The R&D effort in telecommunications has mainly been confined to the Government sector i.e. the Centre for Development of Telematics (C-DOT) and in-house research in the public sector undertakings. A strong industry - sponsored R&D effort is a pre-requisite for making the Indian firms competitive internationally both in the provision of services as well as in equipment manufacturing. Well-funded and result - oriented R&D has to be an important part of the strategy to achieve the goal of developing Indian multi-nationals in both these areas. With a view to ensuring the provision of adequate resources for this activity, it may be necessary to earmark a percentage of the turnover of the companies in the organised sector for R&D.

7.2.31 Due to the fast changing technology in this sector and the existing technological gap in relation to the developed countries, India will have to rely on transfer of technology in a big way in the near future. In this context, strategic alliances with leading international companies will have to be an integral part of the over-all exercise of technology transfer.

7.2.32 Software has become an important input in the telecom sector particularly for the switching equipment. It is crucial that India's competitive advantage in software is exploited to the fullest extent for this purpose. The country's expertise should be particularly relevant in areas such as network management systems and design of specialist chips.

7.2.33 The R&D effort would have to be diversified. Besides technology development, it should focus on services, systems, processes and markets. This will give the relevant user orientation to R&D activity. The R&D effort in telecommunication would be more effective if it is multi-disciplinary in character. The telecom sector involves some of the most sophisticated concepts in economics, social sciences and management, amongst other disciplines.

C-DOT

7.2.34 The Centre for Development of Telematics (C-DOT) is the main public sector agency engaged in the research and development activities in the telecom sector. The focus of its activities is on finding comprehensive solutions appropriate to the telecom network requirements of the country. The C-DOT has been a leader in the development of rural switching systems i.e. Rural Auto Exchanges (RAX). During the Eighth Plan, it has developed low capacity rugged digital switching systems. These are ideal for rural conditions as they are capable of operating in non-airconditioned environment with simple maintenance procedures and operational back-up. For urban and semi-urban applications, the C-DOT has developed a family of digital switching systems ranging from 1500 lines to 40,000 lines. In the area of transmission, its main achievements have been the development of low capacity digital radio technologies for interconnecting rural and urban exchanges, satellite system for digital multiplexers and optical communication systems.

7.2.35 During the Ninth Plan, the C-DOT plans to enhance its 256p RAX, both in technology and in features, so as to make it most contemporary. It will also help in increasing the size of the export market. In the area of switching, the other major projects envisaged during the Ninth Plan include :

- (i) Developing a large switch with a capacity of providing connectivity to 1,00,000 subscribers and associated trunks and Busy Hour Call Access (BHCA) of 1.5 million;
- (ii) Providing necessary support functions for deployment of intelligent network services in the field, including service switching functionality in the local exchanges and toll exchanges;
- (iii) Undertaking a project to design and develop Service Control Points (SCP), Service Management Systems (SMS) and Service Creation Environment (SCE) to make service provisioning very fast and to offer services as desired by the customers. The system shall facilitate the service provider to be different from network provider/operator and
- (iv) Developing ATM technology-based Broad Band ISDN (B-ISDN) family of switching systems.

In the area of transmission, the major projects envisaged during the Ninth Plan include :

- (i) Undertaking extensive work on optical switching systems relating to Optical; Line Terminating Equipment, Synchronous Digital Optical Network and Photonic Amplifiers;
- (ii) Developing personal wireless communication systems based on different technologies;
- (iii) Developing high speed optical network and
- (iv) Developing high speed satellite systems for cell transportation.

Implementation and Delivery System

7.2.36 The public sector would continue to play a dominant role in the provision of basic services during the Ninth Plan. An effective and streamlined monitoring system is vital to ensure proper and timely implementation of the policies and the Plan targets for the public sector. This would call for the setting up of a monitoring mechanism, whereby the progress of various projects in the public sector is jointly monitored by the DOT and the Planning Commission. An Empowered Committee, headed by the Secretary, DOT with members from Telecom Commission, Ministry of Finance, Planning Commission, Ministry of Environment and Forest and Ministry of Programme Implementation, has been constituted for this purpose. This Empowered Committee would monitor and review the progress of implementation of all important projects.

7.2.37 For improving the quality of telephone services provided by the Department of Telecommunication, some of the basic parameters need to be monitored regularly. The quantitative targets of quality improvement envisaged during the Ninth Plan are :

Targets of Quality Improvement			
Sl.No.	Parameter	1996-97 Achievement	2001-2002 Target
i)	Fault/100 stns/month	17.2	9.5
ii)	Trunk Efficiency %	80.6	85.0
iii)	Local Call completion rate (Live)	55.7	65.0
iv)	STD Call completion rate % (Live)	39.2	50.0

7.2.38 The overall implementation of the programmes in the telecom sector would be looked after by the Deptt. of Telecommunications. This would include overall policy formulation including licencing. DOT would also oversee the overall coordination between private and Govt. sector including the public sector companies. The Telecom Regulatory Authority of India (TRAI) would look after the various functions pertaining to regulation including ensuring compliance of terms and conditions of the licences, protecting interests of consumers, revenue sharing arrangement between operators, disputes between licensor and licensee etc.

Financing the Plan

7.2.39 The value-added service is one of the two main components of the telecom services. Under the prevailing policy, these services are to be provided by the private sector on demand. The necessary funds required for the provision of these services are envisaged to be mobilised by the private sector. The Govt. will initiate new policy measures to ensure that the required funds are available to the private operators at affordable cost.

7.2.40 With the opening up of the provision of basic services to the private companies, private sector funds are envisaged to play a significant role in financing the provision of these services. Assuming an additional demand of about 237 lakh lines during the Ninth Plan, funds of the order of about Rs.1,00,000 crore may be required for meeting the target of providing telephone on demand. The estimate is based on the prevalent cost of Rs.45,000 per line. The exact requirement of the funds would depend upon the technology to be used and other factors like the price of the equipment, duty structure etc. The Government sector comprising the Department of Telecommunication (DOT) and the Mahanagar Telephone Nigam Limited (MTNL) is expected to meet the bulk of the additional demand by providing about 185 lakh new connections. As in the Eighth Plan, the entire requirement is envisaged to be financed out of internal and extra budgetary resources generated by the DOT and the MTNL. However, to compensate the Government sector for bearing the responsibility of providing telecom services in the unremunerative areas like villages, remote, hilly, tribal and other areas, adequate budgetary support may have to be provided. Sharing a part of the licence fee could be one of the alternative mechanisms to achieve this. Budgetary support to the Govt. sector would be restricted to monitoring and regulatory mechanisms till they become self-financing.

7.2.41 The outlay requirements of the two PSUs engaged in the provision of service i.e. Videsh Sanchar Nigam Limited (VSNI) and Mahanagar Telephone Nigam Limited (MTNL) are envisaged to be met entirely out of their internal and extra budgetary resources. The two telecom equipment manufacturing units i.e. ITI Ltd. and HTL Ltd. are facing severe financial problems as a result of deregulation and competition from the private companies including the MNCs. The financing pattern for these two companies during the Ninth Plan would basically be determined by the revival package ultimately agreed to by the Government.

Special Focus Areas

7.2.42 In the special focus areas, the plans relating to i) National Capital Region (NCR); ii) North Eastern Region (NER); and iii) Tribal Areas will receive high priority.

I National Capital Region

7.2.43 Providing modern telecom facilities in the whole of the NCR at par with those provided in the National Capital Territory of Delhi is one of the major strategies to decongest Delhi. The plan for infrastructure development for telecommunication in the NCR should aim to provide the following :

- (i) to make telecom facilities available on demand in the entire NCR at par with Delhi;
- (ii) concessional tariff on telecom facilities in Delhi Metropolitan Area (DMA) towns as compared to the National Capital Territory of Delhi.

7.2.44 The number of working connections (DELs) in the NCR towns was 4.37 lakh as on 31.3.97. It is estimated that telephone demand would be 12.27 lakh as on 31.3.2002. Thus, 7.89 lakh new connections would have to be provided during the Ninth Plan to achieve

the objective of telephone on demand in the region. In the NCR towns, all the exchanges will be of electronic type and all the modern telecom facilities like cellular, paging, voice mail, videotex etc. will be made available in the entire NCR.

II North Eastern Region

7.2.45 The North Eastern region, being a sensitive border area and underdeveloped, would continue to be accorded special attention for the development of telecom facilities. Due to its difficult topography and landscape, the role of telecommunication is no less important than physical communications. Under the new initiatives announced by the Prime Minister for the North Eastern Region, all the Central Ministries/Departments have to earmark at least 10% of their budget for specific programmes in the North Eastern States. Efforts should be made to create necessary facilities during the Ninth Plan to provide fax facilities upto the block level as recommended by High Level Commission for tackling the backlog in basic minimum services and infrastructural needs. Keeping in view the special needs of the region for more reliable telecom network, all sub-divisional headquarters would be connected.

III Tribal Areas

7.2.46 The need for an efficient and reliable telecom network in the tribal areas could hardly be overemphasised. Therefore, a more vigorous effort would be taken in these areas. The DOT would provide a total of 7.44 lakh new telephone connections in the tribal areas during the Ninth Plan. The details in this regard are as follows :-

Tribal Sub-Plan – Telecom			
Items	Eighth Plan		Ninth Plan
	Target	Achvt.	Target
(i) Switching Capacity (lines)	307300	511682	930000
(ii) Direct Exchange (lines)	240000	392340	744000
(iii) VPTs (nos.)	25000	24527	118192
(iv) Earth Stations (nos.)	21	33	200

Problems, Strategy & Action Plan

7.2.47 To ensure free and fair competition and efficiency of services, the three functions of policy making, regulation and service provision have to be separated from each other and performed by independent entities. The regulatory function has already been separated from policy making and service provision by setting up the TRAI. However, the Department of Telecommunication continues as the policy maker and as one of the service providers in the area of basic services. To take the reforms programme to its logical

conclusion, policy making including licensing, has to be separated from the operational wing of DOT. For service provision, the DOT in its present form of a Departmental undertaking has many constraints which affect its efficiency vis-a-vis private sector operators which are run purely on commercial lines. These constraints relate to quick decision making regarding the choice and introduction of new technology; determining optimum size of manpower; its composition and realignment; mobilisation of resources including market borrowings and strategic alliances with private sector including joint venture with leading international companies. To overcome these problems, the Deptt. of Telecommunications would be reorganized separating the policy making function from service provision. The operational network of DOT would be converted into a single corporation. Review of the role of Telecom Commission shall be an integral part of such restructuring. Necessary action would be initiated immediately and the entire exercise completed during 1998-99.

7.2.48 The private sector participation in basic services is yet to take off as desired, though it was opened to the private operators in 1994 with the announcement of National Telecom Policy. Out of 21 Circles in the country, service provision by the private sector has started only in two Circles so far i.e. M/s Bharati Telenet in M.P. and M/s Hughes Ispat in Maharashtra. Private sector projects are perceived to be non-viable due to non-availability of finance at affordable cost, high incidence of licence fee and various implementation problems like Right Of Way (ROW) for laying telephone cables. Similar problems are being faced by operators of value added services. Except for cellular operators in metro cities, operators of various other value added services are stated to be facing financial problems. A comprehensive review of the present Policy is called for to ensure effective private sector participation. Ensuring adequate rate of return on investment to the private operators has to be an important part of the strategy. It would also require a comprehensive review of the terms and conditions of the licencing policy including the licences already issued. Recognising the urgent need to sort out these issues/ problems on priority basis, the Government has set up a Group on Telecommunications under the Chairmanship of Deputy Chairman, Planning Commission. The Group would make recommendations on :

- i) Proposed New Telecom Policy;
- ii) Issues relating to existing licensees of basic and cellular services and suggest appropriate remedial measures within the framework of new Telecom Policy and
- iii) Issues relating to TRAI.

7.2.49 Though private participation has been permitted in basic services, provision of long distance services, i.e. inter-circle connectivity continues to be a monopoly of the DOT. All over the world liberalisation in the area of long distance services has generally preceded liberalisation / privatisation of local services. Under the present policy, the monopoly of the DOT in the area of long distance services is to be reviewed in 1999. Similarly, the monopoly of VSNL in providing international connectivity is also due for review in the year 2004. To ensure world class services at competitive prices, this segment of the telecommunication sector would also have to be thrown open in due course. The necessary action towards review of the present policy of domestic long distance connectivity would be initiated at the earliest and the new policy implemented by 1999 end.

TOWARDS COMPREHENSIVE TELECOM REFORMS

Revolutionary changes are taking place in the telecom sector all over the world driven by rapidly changing technology which is reducing costs and increasing the scope for competition. As a result most countries are moving away from the traditional model of telecommunications being viewed as an integrated public sector monopoly to a de-regulated environment in which the sector is opened up to competition from private investors.

Models for telecom reforms vary across countries but a basic approach common to most models is to distinguish between three functions : policy making, service provision and regulation. The provision of services can be organised to allow for competition from the private sector service providers. The shift from a monopolistic structure to a competitive one must be the central objective of long term reforms in this sector. As competition is increased and private players are allowed to enter, the regulatory function must be so organised to provide assurance to private operators of fair treatment at the hands of the Government, especially where the policy envisages competition with existing public sector suppliers.

The position regarding telecom reforms in India can be summarised as follows :

- ❖ The regulatory function has been separated and assigned to the Telecom Regulatory Authority of India (TRAI). It is essential to ensure that TRAI is seen to be a credible and independent regulator with powers necessary to assure fair treatment for new private entrants.
- ❖ The service function has not been fully separated from the policy making function since both are combined in the DOT except for MTNL and VSNL being corporate bodies. It is necessary to separate DOT's service network into a separate corporation which, together with VSNL and MTNL will be public sector service providers distinct from DOT.
- ❖ Competition within the area of service provision also needs to be optimised. The present policy allows competition between MTNL/DOT and one basic and two cellular service operators in each of the four metros and 20 other Telecom Circles in rest of the country. However, inter-Circle connectivity is a monopoly of DOT which is due for review in 1999. International connectivity is a monopoly of VSNL until 2004.
- ❖ Internet services have been recently opened up to private investors ending the monopoly of VSNL in this area. However, ISPs are not permitted to provide voice telephony. This restriction needs to be examined in the context of the trend of convergence witnessed in the telecommunication sector.

Indian Telegraph Act, 1885 is archaic and totally outdated. It needs to be repealed immediately and replaced by a new legislation that takes into account the vast advances in technology and the present and future requirements of the industry.

- ❖ A basic problem in the Telecom sector is the unbalanced nature of the tariff. Local calls are heavily subsidised by overcharging on long distance and international calls. The TRAI is expected to submit its recommendations for a rational tariff structure. Over the longer run, telecom tariffs must reflect the relative cost of providing services. Cross subsidies benefiting particular segments should be kept to reasonable levels.

Experience thus far suggests that the policy framework needs review in many respects. The operational problems faced by cellular and basic service providers need to be examined and suitable corrective action taken to ensure effective competition from these sources. A comprehensive response to these problems needs to be worked out through a New Telecom Policy which will build on the existing policy and also seek to address problems of the future.

7.2.50 The success or failure of deregulation will largely depend on how well the TRAI functions. It has to be made truly autonomous and self-financing to ensure its effective functioning. As it will have to handle complex issues of a multi-disciplinary nature, it needs to be supported by a team of highly qualified professionals from different fields like economics, law, telecommunication, business administration and finance.

7.2.51 Under the present Policy, value-added services are provided by the private operators on franchise basis. For cellular mobile services and radio paging, only two private operators are permitted in each circle. If the frequency spectrum permits, the number of operators could be increased to ensure greater competition. Following the principle of ensuring level playing field to all the operators, the public-sector companies also need to be permitted to provide value-added services. Necessary action in this regard would be taken during 1998-99.

7.2.52 The National Telecom Policy has envisaged that India should emerge as a major manufacturing base and a major exporter of telecom equipment. The manufacturing capacity of the indigenous industry is small in relation to the other major operators in the world and export constitutes a small proportion of the total production. Development of Indian multi-nationals in this area should be our goal in the Ninth Plan. The non-availability of the latest technology, poor R&D base, non-adoption of exports as a strategy of growth and limited access to international financial markets for cheap finance are among the major constraints to the achievement of this goal. The Ninth Plan should endeavour to remove the bottlenecks by initiating necessary policy changes. This may include encouraging joint ventures, rationalisation of custom and import duties on inputs and development of a strong industry-sponsored R&D base.

7.2.53 The two PSUs i.e. ITI Ltd. and HTL Ltd. have developed sufficiently large capacities for the manufacture of various types of telecom equipments. Infact, ITI Ltd. is the single largest Company in the telecom equipment manufacturing sector in the country, both in terms of turnover as well as employment. These two Companies have also developed over the years necessary technological capabilities and have sufficient skilled manpower. However, as a consequence of the policy of deregulation, liberalisation and competition, their performance has been adversely affected and they are struggling for growth and stability. The existence of healthy, strong and efficient public sector companies provides the necessary cushion/check against the MNCs. The ITI Ltd. and the HTL Ltd. have an important role to play in this regard. These two Companies can also play an important role in realising our goal of making India a major manufacturing base and exporter of telecom equipment and developing Indian Multinationals in this area. The two Companies have to be made efficient and competitive to play their due role in the changed scenario. This would call for their revival and restructuring, including providing the necessary funds for capital restructuring and allowing them to go in for strategic tie-ups with leading international players.

7.3 POSTS

7.3.1 An efficient postal communication system is crucial for growth and modernisation. The Indian postal system is the largest in the world, having a network of 1.53 lakh post offices. In terms of population served per post office, it compares quite well with the rest of the world, both developed and developing countries. Only UK, France, Australia and USA, with a coverage of 2978, 3413, 4468 and 5203 persons served per post office respectively are ahead of India, where one post office serves an average population of 5518, covering on an average an area of 21.48 sq.kms. Besides providing a variety of postal services, the Indian postal system is playing a vital role in the resource mobilisation efforts, especially in the rural areas. The importance of these functions is illustrated by the deposits to the tune of Rs.91,795 crore in 160.5 million accounts mobilised under the Post Office Saving Banks (POBs) scheme as on March 31,1996

Eighth Five Year Plan - Review

7.3.2 Modernisation of the postal services by introducing the latest technology and expansion of the postal network in the uncovered areas, especially in the rural areas, were the two thrust areas of the Eighth Five Year Plan. A target of opening 3000 Extra Departmental Branch Offices (EDBOs), mainly in the rural areas, and 500 Departmental Sub-Offices (DSOs) were fixed for the Eighth Plan. The targets were later revised by the Department to 1440 and 650 for EDBOs and DSOs respectively. The performance with regard to the opening of DSOs, mainly in the urban areas, has been satisfactory with the achievement of 72% of the revised and 93% of the original target. However, in the rural areas only about 52% of the original target has been achieved. The response to the newly formulated scheme of Panchayat Sanchar Sewa Yojana has been lukewarm with only 38% of the target having been achieved.

7.3.3 Modernisation and mechanisation of postal operations were accorded the top priority in the Eighth Plan. The major targets fixed included installation of 5000 Multi Purpose Counter Machines (MPCMs), introduction of mechanised mail sorting system in two metro cities in addition to the commissioning of the system at Bombay and the setting up of the satellite-based money transfer system in 75 centres in the country. Except for the setting up of money transfer system, in respect of which the targets have been achieved fully, the performance in the other two areas has not been satisfactory. A mechanised mail sorting system was established in Chennai besides Mumbai. The metro city of Delhi would be covered during the Ninth Plan along with a few major urban hubs for mail processing. In the case of MPCMs only about half of the target could be achieved. Issues relating to choice of technology and standardisation of equipment, besides delay in the supply of equipment, were the main constraints.

7.3.4 During the first Seven Five Year Plans, construction of buildings has been the single most important activity of the Department of Posts. During the Eighth Plan, this activity was accorded a lower priority with mechanisation and modernisation of postal services being the first charge. However, keeping in line with the past trend, the building activity continued to be the dominant activity of the Department at the implementation level. The expenditure on buildings was excessive and out of control, constituting 52.55% of the actual expenditure, against 37.33% envisaged for it in the approved Eighth Plan outlay (at 1991-92 prices).

7.3.5 For the Eighth Plan, an outlay of Rs.325 crore was approved to be funded entirely through budget support. The expenditure is anticipated to be Rs.367.88 crore, which works out to Rs.286.77 crore at 1991-92 prices i.e. about 88% of the approved outlay. The shortfall in expenditure has been due to the slow take-off of the priority programme of modernisation and mechanisation of postal operations, especially during the first three years of the Plan.

Ninth Five Year Plan

Problems, Strategy and Policy Framework

7.3.6 The Ninth Plan would aim at making the postal services self-financing at the sectoral level. To achieve this objective, necessary policy measures would have to be initiated to recover the operational cost and gradually eliminate the subsidy provided on various services in a time-bound manner. However, cross subsidisation amongst services may continue so as to ensure the provision of the most essential services to the people, especially the poor, at affordable prices. Due autonomy may have to be given to the Postal Board to take appropriate decisions in this regard.

7.3.7 The revenue deficit of the Department of Posts has been steadily increasing over the years and is currently estimated to be Rs.1114 crore (1997-98 BE). The details of the revenue deficit are given in Table 7.3.1.

Non-Plan	1995-96 (Actuals)	1996-97 (Actuals)	1997-98 (RE)	1998-99 (BE)
Gross Rev. Expdtr.	2472.14	2982.32	3677.99	3788.51
Deduct Recoveries	662.31	1064.44	1144.10	1192.00
Net Expdtr.	1809.83	1917.88	2533.89	2596.51
Receipts	1150.42	1214.62	1625.00	1700.00
Net Deficit	659.41	703.26	908.89	896.51

While the dependence on manual systems in most of its operations has resulted in mounting operational cost for the Department, the deliberate policy of subsidising the services especially in rural, hilly and tribal areas in deference to their social significance, has combined to steadily widen the gap between revenue and expenditure of the Department.

7.3.8 The large quantum of subsidy provided on the postal stationery and services is the main reason for the deficit. Out of twenty three services provided by the Department, only four i.e. Letter, Speed Post, Insurance and Foreign Mail are currently yielding surplus per unit of activity/service. There seems to be little justification for subsidising services like Registration, Money Order, Saving Bank, Regd. Newspaper etc. While the cutting down of costs and improving the efficiency of operations have to be a continuous process, the situation also calls for a revision of rates at regular intervals, which has not been done to the extent required in the past. Services like competition post card, in respect of which people have the willingness and capacity to pay more, should be appropriately priced to generate more resources for the sector. Even the subsidy on postcards is excessive given the very low price charged for postcard. The pricing of services meant for business/commercial sector should be on a remunerative basis.

Subsidy on Major Postal Services - 1998-99 Projections					
	Cost per unit (Paisa)	Revenue per unit (Paisa)	Subsidy per unit (Paisa)	Total traffic (in lakh)	Total loss (Rs.Crore)
Post Card	336	25	311	4815	150
Letter Card	330	129	201	6760	135
Printed Postcard	336	150	186	1815	34
Comp. Postcard	391	258	133	379	5
Regd. Newspaper	389	26	363	1352	49
Registration	2065	1117	948	2729	259
Money Order	2871	1623	1248	1085	135
Parcel	3595	2724	870	619	54
Savings Bank	1704	1522	182	4717	86
I.P.O.	1392	93	1299	249	33
N.S.C.+K.V.P.	3132	2061	1071	671	72
Mahila S. Yojana	4019	1522	2497	123	31

7.3.9 Upgradation of technology and modernisation of postal operations would continue to be a thrust area during the Ninth Plan. The use of appropriate technology for speedy and reliable mail handling would be an important component of the strategy in this regard. The main areas involved are:

- (i) counter computerisation; ~
- (ii) mechanisation of mail handling;
- (iii) modernisation of post offices;
- (iv) electronic money transfer system and
- (v) introduction of mechanical aids.

7.3.10 Computerisation and information technology will have to play an important role in the entire scheme of modernisation of services, including developing effective and

efficient management information system. Besides improving the efficiency, it will lead to a marked improvement in the quality of services. Only a small segment of the vast network has been computerised so far. With the limited resources available with the Government in the form of budgetary support, it is not feasible to achieve the desired speed, spread and extent of computerisation. To achieve full computerisation of various services and operations throughout the country in a time-bound manner, the possibility of private sector participation, including lease finance in this area will have to be seriously explored during the Ninth Plan.

7.3.11 The area of service provision would be further expanded during the Ninth Plan by introducing new and diversified services including value-added services. Provision of customised services, like mass mailing services, hybrid mail, corporate money transfer, etc. would be an important element of the strategy in this regard. New value-added services, like premium saving bank services based on smart card, gift services, etc. would be extended. The quality and efficiency of speed post/courier services would be further improved and extended to more areas during the Ninth Plan.

7.3.12 About half of the Gram Panchayat Villages do not have a post office of their own, though they are serviced by the nearest office. As per the existing norms, only about 8041 of such villages, including Gram Panchayat Villages, are qualified to have a post office on the basis of two of the existing three norms i.e. distance and population. The present scheme of opening of post office in the rural areas i.e. Extra Departmental Post Offices (EDBOs) is neither capable of ensuring expansion of services at the required pace due to limited public sector funds nor is it financially sustainable over a long period of time due to large quantum of subsidy involved (67% to 85%). The response to the recently formulated scheme of involving Gram Panchayats through the Panchayat Sanchar Sewa Yojana has not been encouraging. Innovative/alternative strategies would have to be adopted with a view to achieving the objective of providing basic counter services in the uncovered areas in order to provide postal connectivity essential for socio-economic development. To make the service at the village level viable, convergence of similar services like post, telecom, fair price shops etc. may have to be explored.

7.3.13 Postal services continue to be a Government monopoly. However, without affecting the predominant role of the Government in this sector, it should be possible to provide self-employment opportunities to the educated youth and to small scale entrepreneurs by involving them in the provision of selected services. The major areas among these are :

- (i) opening of new post office in urban areas through licenced postal agents;
- (ii) printing of postal stationery;
- (iii) sale of stationery through licenced agents on franchise or commission basis and
- (iv) processing of bulk mail.

7.3.14 Till the Eighth Plan, construction of buildings has been the single most important activity of the Department. Even during the Eighth Plan, the expenditure under the building programme has been more than the approved outlay, thus disturbing the Plan priorities. The reliance on budget support for financing this activity would be kept at

the minimum during the Ninth Plan period, keeping in view the more important competing needs of programmes like expansion and modernisation. Alternative ways of financing this activity, including use of Postal Life Insurance (PLI) funds need to be explored and appropriately developed.

Objectives and Targets

7.3.15 Expansion of the postal network, especially in the rural, far-flung and uncovered areas, and modernisation of postal operations would continue to be the thrust areas during the Ninth Plan. The major objectives of the Plan in the postal sector are envisaged to be:

- (i) improving efficiency and quality of services;
- (ii) mechanisation and modernisation of postal operations;
- (iii) human resource development through adequate training and facility for skill upgradation keeping in line with the Department's need for technical expertise;
- (iv) introduction of new and more value-added services and strengthening the existing ones
- (v) financial self-sufficiency;

7.3.16 Technology upgradation and modernisation programme would hold the key to the achievement of the above objectives. This programme would be accorded the highest priority during the Ninth Plan. In the area of expansion of postal network, priority would be accorded to the provision of postal facilities in the rural, hilly, tribal and difficult areas. The major targets/schemes envisaged for the Ninth Plan are :

- (i) opening of 2500 rural post offices (EDBOs) and 250 urban post offices (DSOs);
- (ii) installation of 5000 Multi Purpose Counter Machines;
- (iii) modernisation of 1025 post offices;
- (iv) modernisation of 100 mail offices;
- (v) setting up of satellite-based money transfer system with one hub, 200 VSAT and 2000 ESMOs;
- (vi) setting up of automatic integrated mail sorting systems in three major cities;
- (vii) computerisation of Regional Postal Life Insurance operations in 32 regions with upgradation of computers in 20 circles;
- (viii) construction of postal buildings and staff quarters;

GOALS ENVISAGED BY DOT FOR NINTH FIVE YEAR PLAN

1. Availability :-

- To provide telephone on demand.

(This objective is to be achieved with the private sector participation complementing the efforts of the Government.)

2. Accessibility :-

- To provide telephone facility in all villages by the year 2000.

(This objective is to be achieved with the private sector participation supplementing the efforts of DOT).

- To increase the number of telephones in the villages where only single telephone is working to meet the requirement of increased economic activity.
- Public call offices for every 500 population in urban areas.
- S.T.D. PCOs on National Highways for every 10 kms.

3. Subscriber Trunk Dialling and Connectivity :-

- Provide S.T.D facility to all exchanges by the year 2000.
- All exchanges upto SDCC level to have digital connectivity.

4. Modernisation and upgradation :-

- Replace life expired and technologically obsolete switches with digital switches.
- Manual Trunk Services in SSA Headquarters to be computerised.
- Computerised records of cable network.
- Wireless in local loop, H.D.S.L, A.D.S.L and optical fibre technologies will be gradually introduced in the local network.
- Common Channel Signalling No.7 to be introduced upto DHQ level along with synchronisation of transmission and switching network.
- Introduction of better and reliable technologies for providing Village Public Telephones.

- All life expired and unserviceable analogue systems will be replaced with digital systems.

5. Reliability :-

- All exchanges will have reliable media.
- Diversity in transition network between TAXs.
- Network management system for control and management of network.

6. Data Network :-

- PSPDN (Packet Switched Public Data Network) to cover all DHQs.
- Frame relay network to provide access upto 2 Mbps will be introduced in major cities.
- High speed VSAT network for providing Voice and Data will be expanded.
- ATM network will be introduced.
- Internet network will be expanded.

7. Modernisation of Customer Services :-

- Computerised billing and accounting in all the Divisions.
- Modernise Fault Repair Service.
- Computerised Directory Enquiry Services for all SSAs.
- Completion of National Directory Enquiry service for all SSAs .
- Computerise commercial activities in all the Divisions.
- Provide greater accessibility for payment of bills.
- Provide single window customer service centres.

8. New Services :-

- It is aimed to provide widest permissible range of services with world standard quality to the customers at reasonable prices. The following services are identified to be introduced by DOT.
- ISDN upto all SSA Headquarters.
- IN in all major cities.
- Mobile Satellite Service.
- Personal Communication Service.
- Multi-media Services.

The following services have been identified as Value Added Services by the Department of Telecom for franchise to private/public sector companies on non-exclusive basis.

- Cellular Mobile Telephone Service.
- Radio Paging Service.
- Electronic Mail.
- Voice Mail and Audiotex Service.
- Video Conferencing
- Videotex
- Internet
- Public Mobile Radio Trunked Service.
- 64 Kbps CUG Data Service through VSAT.
- Credit and Authorisation.

9. Telegraph :-

- Ensure delivery of 98% of the telegrams within 12 hrs. and 100% of telegrams within 24 hrs. through Store and Forward Fax facilities and by modernisation of telegraph services by the introduction of micro-processor based technology.

10. Special Focus Areas :-

While providing telecom facilities liberally during the plan period 1997-2002, priority for early completion within this period will be given to the following areas

- Sensitive Border areas.
- Tribal and Hilly areas.
- Industrial Growth Centres.

11. Staff Quarters :-

- Achieve 30% staff satisfaction for all the difficult areas of North-East and other states.
- Achieve a staff satisfaction ration of 20% on the average by 2002.

Annexure 7.2.2

CIRCLE-WISE TELE-DENSITY

<u>Telecom Circle</u>	<u>Tele-density (as on 31.3.97)</u>
Andhra Pradesh	1.43
Assam	0.56
Bihar	0.39
Gujarat	2.60
Haryana	2.18
Himachal Pradesh	2.77
Jammu & Kashmir	0.89
Karnataka	2.17
Kerala	2.94
Madhya Pradesh	1.06
Maharashtra	1.84
North-East	1.03
Orissa	0.63
Punjab	3.48
Rajasthan	1.39
Tamil Nadu	1.73
Uttar Pradesh(E)	0.74
Uttar Pradesh (W)	0.74
West Bengal	0.40
A&N Island	2.24
Mumbai	13.06
Delhi	14.62
Calcutta	4.77
Chennai	7.88
<hr/>	
All India :	1.72
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Annexure 7.2.3

CIRCLE-WISE TELECOM NETWORK (as on 31.3.97)

Circle	DELs (lakh)	Waiting List (lakh)	W/L as % of DELs
Andhra Pradesh	9.50	2.42	25.5
Assam	1.25	0.28	22.7
Bihar	3.32	0.51	15.5
Gujarat	10.78	2.65	24.6
Haryana	3.55	0.85	24.1
Himachal Pradesh	1.41	0.46	33.0
Jammu & Kashmir	0.60	0.33	48.4
Karnataka	9.73	1.65	17.0
Kerala	8.54	6.19	72.6
Madhya Pradesh	6.98	0.48	7.0
Maharashtra	12.41	2.48	20.0
North East	0.93	0.12	2.9
Orissa	1.98	0.44	22.2
Punjab	7.24	1.84	25.5
Rajasthan	6.07	1.56	25.7
Tamil Nadu	8.81	2.85	22.4
Uttar Pradesh(E)	5.05	0.58	11.6
Uttar Pradesh(W)	3.21	0.73	14.1
West Bengal	2.27	0.65	28.7
A&N Island	0.06	0.02	40.7
Mumbai	16.42	0.008	0.05
Calcutta	5.20	0.84	16.3
Delhi	13.70	0.02	0.2
Chennai	4.22	0.80	19.1
Total:	143.23	28.75	19.9

Annexure 7.2.4

Status of Village Public Telephone (VPTs) (as on 31.3.97)

Sl.No. Circle	Total number of Villages	Villages with VPTs	% of villages with VPTs
1.Andhra Pradesh	29460	21272	72
2.Assam	22224	7864	35
3.Bihar	79208	15569	20
4.Gujarat	18125	13923	77
5.Haryana	7018	6510	93
6.Himachal Pradesh	16997	5075	30
7.Jammu & Kashmir	6453	2003	31
8.Karnataka	27024	17481	65
9.Kerala	1530	1530	100
10.Madhya Pradesh	71526	35367	49
11.Maharashtra	40430	26450	65
12.North-East	14197	3136	22
13.Orissa	46989	16173	34
14.Punjab	13252	12007	91
15.Rajasthan	37889	17325	46
16.Tamil Nadu	20196	17038	84
17.Uttar Pradesh(E)	75462	23394	31
18.Uttar Pradesh(W)	37106	13957	38
19. West Bengal	38337	10985	29
20.A&N Island	292	111	38
21.Delhi	191	191	100
22.Calcutta	468	421	90
Total:	604374	267782	44

ANNEXURE- 7.2.5

VALUE ADDED SERVICES IDENTIFIED BY THE WORKING GROUP
FOR THE NINTH FIVE YEAR PLAN

<u>Name of the Service</u>	<u>Projected demand</u>
(I) Existing Value-added Services	
1) Radio Paging	6 million
2) Cellular Mobile Telephone	3 million
3) Public Mobile Radio Trunking	3.5 lakh subscribers
4) Electronic Mail	5 million subscribers
5) Voice Mail/Audiotex	Not much expansion
6) Videotex	Not much expansion
7) Video Conferencing	1000 terminals
8) Closer Users Group (CUG) Domestic Kbps Data Services via INSAT Satellite System	15000-20000
9) INTERNET	16 lakh
10) Credit Card Authorisation	50000
(II) New Value-added Services (to be introduced during Ninth Plan)	
1) Pay Phone Services	7.5 lakh
2) Home Banking/Tele-Banking	3 lakh
3) Automatic Teller Machine (ATM)	5000 terminals
4) Global Positioning Systems (GPS)	2000 ground terminals
5) Multi Media Services	10 lakh
6) Global Mobile Satellite Services	60000
7) Mobile Satellite Phone through INSAT-2C	5000 terminals
8) Services using IN Platform	
9) Services using ISDN Platform	1 lakh terminals
10) Personal Communication Services	15000 subscribers
11) Tele Medicine/Health Information Services	1000 terminals
12) Distance Education Services	5000 terminals
(III) Emerging Value-added Services (Experimental/development stage by the end of Ninth Plan.)	
1) Multi Media Data Bases	
2) Video on Demand	
3) Electronic and On-line Magazines and Newspapers	
4) Video games/virtual reality	
5) Home Shopping/Video Shopping	

Annexure- 7.2.6

Eighth Plan Review

Outlay, Expenditure, and Financing pattern of
Telecom Sector

(Rs. Crore)

Sectors/ Heads of Developments	Outlay 92-97	Approved Expenditure		Year-wise Actual			
		92-97	1992-93	1993-94	1994-95	1995-96	1996-97
I. DOT including C-DOT of which (13225)	23946.00	29644.99	3985.83	4846.00	5882.98	7309.19	7620.99
i) Internal Resources	16556.00	23157.98	2716.02	3056.67	4656.98	6960.19	5768.12
ii) Bonds	7026.00	5695.87	943.00	1600.00	951.00	349.00	1852.87
iii) Others	0.00	675.00	300.00	100.00	275.00	0.00	0.00
iv) Budgetary Support	364.00	116.14	26.81	89.33	0.00	0.00	0.00
II. MTNL (13225)		4407.49	703.80	836.87	997.62	983.69	885.51
i) Internal Resources		4063.36	553.24	643.30	997.62	983.69	885.51
ii) Bonds		193.00	0.00	193.00	0.00	0.00	0.00
iii) Others		151.13	150.56	0.57	0.00	0.00	0.00
Total DOT including MTNL of which (13225)	23946.00	34052.48	4689.63	5682.87	6880.60	8292.88	8506.50
i) Internal Resources	16556.00	27221.34	3269.26	3699.97	5654.60	7943.88	6653.63
ii) Bonds	7026.00	5888.87	943.00	1793.00	951.00	349.00	1852.87
iii) Others	0.00	826.13	450.56	100.57	275.00	0.00	0.00
iv) Budgetary Support	364.00	116.14	26.81	89.33	0.00	0.00	0.00
III. WMO (Budget Support) (13275)	26.00	12.22	1.63	3.05	1.50	1.38	4.66
IV. VSNL (13275)	800.00	1535.75	200.81	246.94	295.94	249.96	542.10
i) Internal Resources*	800.00	1535.75	200.81	246.94	295.94	249.96	542.10
ii) EBR - Others	0.00	0.00	0.00	0.00	0.00	0.00	0.00
iii) Bonds	0.00	0.00	0.00	0.00	0.00	0.00	0.00
V. ITI (12859)	350.00	251.13	48.49	38.14	35.90	59.96	68.64
i) Internal Resources#	350.00	0.00	12.96	0.00	0.00	0.00	17.53
ii) EBR - Others	0.00	223.28	35.53	38.14	35.90	59.96	23.26
iii) Bonds	0.00	27.85	0.00	0.00	0.00	0.00	27.85
iv) Budget Support	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VI. HTL (12859)	15.00	11.88	2.04	1.61	1.00	5.18	2.05
i) Internal Resources	15.00	10.67	2.04	1.61	1.00	5.18	0.84
ii) EBR - Others	0.00	1.21	0.00	0.00	0.00	0.00	1.21
iii) Bonds	0.00	0.00	0.00	0.00	0.00	0.00	0.00
iv) Budget Support		0.00					0.00
G. Total Outlay/Expnd. of which	25137.00	35863.46	4942.60	5972.61	7214.94	8609.36	9123.95
IR	17721.00	28798.25	3485.07	3948.52	5951.54	8199.02	7214.10
Bonds	7026.00	5916.72	943.00	1793.00	951.00	349.00	1880.72
Others	0.00	1020.13	486.09	138.71	310.90	59.96	24.47
Budgetary Support	390.00	128.36	28.44	92.38	1.50	1.38	4.66
Grand Total	25137.00	35863.46	4942.60	5972.61	7214.94	8609.36	9123.95

* : The actual IR for VSNL during 1992-97 is Rs.294.14, Rs.312.93, Rs.343.77, Rs. 252.01 and Rs.587.63 respectively

: The actual IR of ITI during 1993-96 is -Rs.114.11, -Rs.78.37, -Rs.37.42 respectively.

EIGHTH PLAN REVIEW

Outlay, Expenditure and Financing Pattern of
Telecom Sector (1991 -92 prices)

(Rs. Crores)

Sectors/ Heads of Developments	Approved Outlay 1992-97	Actual Expend. 1992-97	Yearwise Actual Expenditure				
			1992-93	1993-94	1994-95	1995-96	1996-97
I. DOT including C-DOT of which (13225)	23946.00	22675.76	3676.96	4086.69	4534.79	5250.85	5126.46
i) Internal Resources	16556.00	17553.24	2505.55	2577.73	3589.75	5000.14	3800.08
ii) Bonds	7026.00	4449.39	869.93	1349.30	733.06	250.72	1246.38
iii) Others	0.00	573.06	276.75	84.33	211.98	0.00	0.00
iv) Budgetary Support	364.00	100.07	24.73	75.33	0.00	0.00	0.00
II. MTNL (13225)		3426.34	649.26	705.74	769.00	706.67	595.66
i) Internal Resources		3124.20	510.37	542.50	769.00	706.67	595.66
ii) Bonds		162.76	0.00	162.76	0.00	0.00	0.00
iii) Others		139.37	138.89	0.48	0.00	0.00	0.00
Total DOT including MTNL of which (13225)	23946.00	26102.09	4326.23	4792.44	5303.78	5957.53	5722.12
i) Internal Resources	16556.00	20677.45	3015.92	3120.23	4358.75	5706.81	4475.74
ii) Bonds	7026.00	4612.15	869.93	1512.06	733.06	250.72	1246.38
iii) Others	0.00	712.44	415.65	84.81	211.98	0.00	0.00
iv) Budgetary Support	364.00	100.07	24.73	75.33	0.00	0.00	0.00
III. Wireless Monitoring Orgn.	26.00	9.36	1.50	2.57	1.16	0.99	3.13
IV. VSNL (13275)	800.00	1165.84	185.25	208.25	228.12	179.57	364.66
i) Internal Resources	800.00	1165.84	185.25	208.25	228.12	179.57	364.66
ii) EBR - Others	0.00	0.00	0.00	0.00	0.00	0.00	0.00
iii) Bonds	0.00	0.00	0.00	0.00	0.00	0.00	0.00
V. ITI (12859)	350.00	193.82	44.73	32.16	27.67	43.07	46.17
i) Internal Resources	350.00	23.75	11.96	0.00	0.00	0.00	11.79
ii) EBR - Others	0.00	151.33	32.78	32.16	27.67	43.07	15.65
iii) Bonds	0.00	18.73	0.00	0.00	0.00	0.00	18.73
VI. HTL (12859)	15.00	9.11	1.88	1.36	0.77	3.72	1.38
i) Internal Resources	15.00	8.30	1.88	1.36	0.77	3.72	0.57
ii) EBR - Others	0.00	0.81	0.00	0.00	0.00	0.00	0.81
iii) Bonds	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G. Total Outlay/Expnd of which	25137.00	27480.22	4559.59	5036.78	5561.50	6184.89	6137.46
IR	17721.00	21875.33	3215.01	3329.84	4587.64	5890.10	4852.75
Bonds	7026.00	4630.88	869.93	1512.06	733.06	250.72	1265.12
Others	0.00	864.59	448.42	116.98	239.65	43.07	16.46
Budgetary Support	390.00	109.42	26.24	77.91	1.16	0.99	3.13
Grand Total	25137.00	27480.22	4559.59	5036.78	5561.50	6184.89	6137.46

NINTH PLAN (1997-2002)

Outlay, Expenditure and Financing Pattern of
Telecom Sector.

(Rs. Crore)				
Organisations/ Head of Development.	9th Plan Approved Outlay *	1997-98 Approved RE Outlay		1998-99 Approved Outlay
I. DOT including C-DOT of which (13225)		10916.00	8725.00	11000.00
i) Internal Resources		8175.00	8171.00	8709.00
ii) Bonds		2741.00	554.00	2291.00
iii) Others		0.00	0.00	0.00
iv) Budgetary Support		0.00	0.00	0.00
II. MTNL (13225)		1518.00	1325.00	2772.00
i) Internal Resources		1070.85	1165.00	2042.00
ii) Bonds		447.15	160.00	730.00
iii) Others		0.00	0.00	0.00
Total DOT including MTNL of which 13225)		12434.00	10050.00	13772.00
i) Internal Resources		9245.85	9336.00	10751.00
ii) Bonds		3188.15	714.00	3021.00
iii) Others		0.00	0.00	0.00
iv) Budgetary Support		0.00	0.00	0.00
III. WMO (Budget Support) (13275)		7.00	4.76	6.10
IV. VSNL (13275)		825.00	1002.65	1004.65
i) Internal Resources		825.00	1002.65	1004.65
ii) EBR - Others		0.00	0.00	0.00
iii) Bonds		0.00	0.00	0.00
V. ITI (12859)		72.00	72.00	94.00
i) Internal Resources		0.00	0.00	0.00
ii) EBR - Others		71.00	71.00	94.00
iii) Bonds		0.00	0.00	0.00
iv) Budget Support		1.00	1.00	0.00
VI. HTL (12859)		16.29	14.75	11.08
i) Internal Resources		5.29	6.40	9.08
ii) EBR - Others		9.00	6.35	0.00
iii) Bonds		0.00	0.00	0.00
iv) Budget Support		2.00	2.00	2.00
Grand Total of which	46442.04#	13354.29	11144.16	14887.83
IR	46398.00@	10076.14	10345.05	11764.73
Bonds	-	3188.15	714.00	3021.00
Others	0.00	80.00	77.35	94.00
Budgetary Support	44.04	10.00	7.76	8.10
Grand Total	46442.04	13354.29	11144.16	14887.83

* Organisational Break-up not finalised. @ Includes Bonds.

The outlay is indicative. It was based upon Internal & Extra Budgetary Resources (IEBR) as assessed at the time of initial formulation of the Plan. As per the estimates of the Department of Telecom, the sector is likely to generate IEBR of much higher order. Keeping the above in view, the Annual Plan outlays would be determined on the basis of assessment of resources from year to year.

Annexure- 7.2.9

EIGHTH PLAN REVIEW

Schemewise Physical Target/Achievements -
Telecommunication Service

Name of Scheme	Eighth Plan 1990-97		Annual Plan Achievement					
	Approved Target	M-term Target	Achievement	92-93	93-94	94-95	95-96	96-97
1. Local Telecom System								
i) Switching Capacity	93	93	109.58	11.84	18.27	22.3	26.02	31.15
(lakhs lines)	(22.70)		(19.17)	(1.71)	(3.41)	(4.73)	(5.22)	(4.2)
ii) Direct Exchange lines	75	75	87.33	9.87	12.29	17.7	21.83	25.64
(lakh lines)	(19.7)		(16.15)	(1.91)	(2.62)	(3.58)	(4.0)	(4.04)
iii) Leasing (DELS)			4					
(lakh lines)								
2. Long Distance Switch System			285	15	31	80	124	35
i) Trunk Auto Exchange (Nos.)								
ii) Trunk capacity (000 lines)	272	700	762.25	36.65	40.6	137.6	197.2	350.2
			(174)			(16)	(28)	(30)
3. Long Distance Trans. System								
i) Coaxial System (000 kms)	3	3	3.641	1.112	0.848	1.239	0.442	0
ii) Microwave System (000 kms)	20	20	16.828	2.578	3.383	4.973	3.05	2.844
iii) UHF System (000 kms)	150	90	39.664	5.71	4.822	5.639	10.124	13.369
iv) Optical Fibre System	20	40	46.058	3.586	6.442	6.915	13.315	15.8
(000 kms)								
v) Earth Stations (Nos.)	50	50	131	4	20	23	41	43
vi) VSAT (Nos.)								
4. Openwire and Telegraph								
i) Village Pub. Telephone	360	338	193.428	30.72	33.001	47.659	25.977	56.719
(000 nos.)								
ii) Telex Capacity								
a) local (000 lines)	31.2	25	7.431	3.274	2.132	1.215	0.81	
b) Transit (-do-)			5.39	1.708	0.648	0.384	2.65	

Note: Figures in brackets indicate MTNL component

NINTH PLAN (1997-2002)

Schemewise Physical Target -
Telecommunication Services

Name of Scheme:	Unit	1997-98		1998-99	
		9th Plan Target	Target	Achvnt.	Target
1. Local Telephone System:					
i) Switching Capacity	Lakh	230.00	36.00	35.19	41.00
	Lines	(29.40)	(5.2)	(5.0)	(5.3)
ii) Direct Exchange Lines	-do-	185.00	29.00	32.59	36.00
		(25.0)	(4.4)	(4.4)	(4.5)
iii) Leasing (DELS)	-do-				
2. Long Distance Switching System:					
i) Trunk Capacity (TAX)	Lakh				
	Lines	18.00	3.25	3.14	4.50
		(2.76)	(0.5)	(1.0)	(0.55)
3. Long Distance Transmission System:					
i) Coaxial Cable System	Route	0	0	0	0
	Kms.				
ii) Microwave System	-do-	90000	18000	17995	19500
iii) UHF System	-do-	0	0		
iv) Optical Fibre System	-do-	140000	22000	23822	35000
v) Earth Stations	Nos.	-	200		
vi) VSAT	Nos.				
4. Openwire & Telegraph:					
i) Village Public Telephones.	Nos.	239155	83000	42855	80500

Note: Figures in brackets indicate MTNL component.

Annexure 7.3.1

**NUMBER OF VILLAGES WITH & WITHOUT POST OFFICES
(POSTAL CIRCLE-WISE) AS ON 30.12.96**

Sl. No.	Name of Circle	Number of villages with Post Offices	Number of villages without Post Offices	Total number of villages
1.	Andhra Pradesh	14753	12296	27049
2.	Assam	3515	22075	25590
3.	Bihar	10995	66702	77697
4.	Delhi	111	88	199
5.	Gujarat	8093	9935	18028
6.	Dadra & Nagar Haveli	33	38	71
7.	Daman & Diu	13	16	29
8.	Haryana	2280	4479	6759
9.	Himachal Pradesh	2633	16755	19388
10.	Jammu & Kashmir	1482	4995	6477
11.	Karnataka	8197	18827	27024
12.	Kerala	1455	-	1455
13.	Lakshdweep	10	-	10
14.	Madhya Pradesh	10087	61439	71526
15.	Maharashtra	11314	29098	40412
16.	Goa	201	159	360
North-East				
17.	Arunachal Pradesh	270	3379	3649
18.	Manipur	636	1399	2035
19.	Meghalaya	449	5042	5491
20.	Mizoram	350	348	698
21.	Nagaland	280	936	1216
22.	Tripurad	651	4076	4727
23.	Orissa	7476	39412	46888
24.	Punjab	3368	9068	12436
25.	Chandigarh	7	17	24
26.	Rajasthan	9485	28404	37889
27.	Tamil Nadu	10346	6434	16780
28.	Pondicherry	59	233	292
29.	Uttar Pradesh	17990	94814	112804
30.	West Bengal	7360	33752	41112
31.	Sikkim	103	244	427
32.	Andaman & Nicobar	97	113	210
TOTAL:		134179	474573	608752

EIGHTH PLAN

Schemewise Outlay/Expenditure - Department of Posts.

(Rs. Crore)

Sl. No.	Name of Scheme	Approved Outlay 92-97	Outlay Allocated 92-97#	Actual Expndr. 92-97	Actual Expenditure				
					92-93	93-94	94-95	95-96	96-97
1.	Expansion of postal network	23.65	27.00	22.70	1.66	2.93	6.88	5.09	6.14
2.	Construction of postal buildings	121.35	140.33	187.89	38.98	50.01	45.85	29.57	23.48
3.	Manpower Development (Training Programme)	5.00	7.41	6.54	1.28	1.36	0.73	1.59	1.58
4.	Machanisiation & Modernisation	132.53	191.37	129.37	15.26	6.87	33.81	39.31	34.12
5.	Mail Motor Services (transport services)	14.80	5.25	7.61	2.98	3.19	1.44	0.00	0.00
6.	R M S Vehicles	2.50	3.13	0.08	0.00	0.00	0.08	0.00	0.00
7.	Speed Post Service	5.50	5.57	3.29	0.23	0.18	1.20	0.77	0.91
8.	Material Management	4.90	4.70	1.80	0.00	0.77	0.77	0.22	0.04
9.	National Savings (POSB)	2.50	2.00	0.98	0.13	0.33	0.52	0.00	0.00
10.	Marketing	6.50	7.27	3.61	0.53	0.45	0.25	1.63	0.75
11.	Postal Life Insurance	5.77	6.97	4.01	0.08	0.19	1.13	1.00	1.61
Total		325.00	401.00	367.88	61.13	66.28	92.66	79.18	68.63

#: Aggregate of outlays approved for the Annual Plans

Annexure-7.3.3

EIGHTH PLAN

Scheme-wise Outlay/Expenditure -
Department of Posts

(1991- 92 prices)

(Rs. Crores)

Sl. No.	Name of Scheme	Approved Outlay 92-97	Outlay Allocated 92-97#	Actual Expndr 92-97	Actual Expenditure				
					92-93	93-94	94-95	95-96	96-97
1.	Expansion of postal network	23.65	20.22	17.09	1.53	2.47	5.30	3.66	4.13
2.	Construction of post buildings	121.35	110.20	148.72	35.60	42.13	34.79	20.78	15.43
3.	Manpower Development (Training Programme)	5.00	5.55	5.02	1.17	1.15	0.55	1.12	1.04
4.	Machanismation & Modernisation	132.53	147.23	95.42	13.94	5.79	25.65	27.62	22.42
5.	Mail Motor Services (transport services)	14.80	4.30	6.50	2.72	2.69	1.09	0.00	0.00
6.	R M S Vehicles	2.50	2.31	0.06	0.00	0.00	0.06	0.00	0.00
7.	Speed Post Service	5.50	4.22	2.41	0.21	0.15	0.91	0.54	0.60
8.	Material Management	4.90	3.67	1.41	0.00	0.65	0.58	0.15	0.03
9.	National Savings (POSB)	2.50	1.71	0.79	0.12	0.28	0.39	0.00	0.00
10.	Marketing	6.50	5.74	2.69	0.48	0.38	0.19	1.15	0.49
11.	Postal Life Insurance	5.77	4.05	2.85	0.07	0.16	0.86	0.70	1.06
Total		325.00	309.20	286.77	56.39	55.89	71.42	56.93	46.14

: Aggregate of outlays approved for the Annual Plans.

Annexure-7.3.4

NINTH PLAN (1997 -2002)

Schemewise Outlay/Expenditure - Department of Posts.

(Rs.Crore)

Sl. No.	Name of Schemes	Ninth Plan Outlay *	1997-98		1998-99	1999-00	2000-01	2001-02
			Approved Outlay	RE	Approved Outlay	Proposed Outlay	Proposed Outlay	Proposed Outlay
1.	Expansion of postal network		3.55	3.55	5.03			
2.	Upgradation of Technology.		29.93	29.96	20.03			
3.	Human Resource Development		2.79	2.79	2.94			
4.	Modernisation of Mail processing.		8.79	4.57	12.72			
5.	Business Development and Marketing		3.85	3.63	4.25			
6.	Computerisation of Saving Scheme in Post Offices.		1.19	1.19	1.25			
7.	Postal Life Insurance		4.00	4.01	4.35			
8.	Philately.		0.50	0.50	0.85			
9.	Postal Buildings and Staff Quarters.		35.00	26.50	39.80			
10.	Streamlining of Adm. and fin. management.		5.40	3.30	3.78			
	Total	507.25	95.00	80.00	95.00			

* : Scheme-wise break-up not finalised.

Annexure-7.3.5

EIGHTH PLAN REVIEW
Physical Targets and Achievements

Name of Schemes	Eighth Plan (92-97)		Year-wise Achievements				
	Target	Achievements	92-93	93-94	94-95	95-96	96-97
1. Expansion of Postal Services							
a. Opening of post offices							
EDBOs	3000*	1546	635	667	4	4	236
DSOs	500**	466	116	115	31	53	151
b. Panchayat Dak Sewa Yojana (New Scheme)	0	670	0	0	0	497	173
c. Planting of Letter Boxes	NA	113046	33661	44921	42125	26000	
- Rural	NA				42125	NA	
- Urban	NA				0	NA	
d. Provision of operational equipment (New Scheme)	0	113	0	0	113	-	
2. Upgradation of Technology							
1) Counter computerisation							
a. Supply of M P C Ms	5000	2660	0	250	1500	550	360
b. Other programme for Modernisation of postal operations (No. of POs)	NA	899	0	0	115	361	431
ii) Mechanisation of Mail handlings							
a. Mechanised Mail Processing (Metros)	3	2	Achvd.	0	0	Madras	0
b. Electronic Money Transfer (at Stations)	75	74	0	0	26	35	13
c. Track & Trace System for Speed Post (at SPCCs)	0	8	0	0	2	6	0
d. Computerisation of accounting & inventory Functions - MIS (at circles)	19	6	0	6	0	0	0
e. Vehicular Support in Rural Areas i.e. cash Vans (New Schemes)	0	0	0	0	0	0	0
f. Introduction of Mechanical Aids							
Hand stamp cancellors	NA	26100	100	6000	14000	6000	0
High/low speed stamp cancelling machine	NA	220	0	0	135	85	0
Electronic franking machine	NA	40	0	0	0	40	0
Enveloping Machines.	-	0	-	-	-	-	0

Annexure 7.3.5 (contd.)

Name of Schemes	Eighth Plan (92-97)		Year-wise Achievements				
	Target	Achievements	92-93	93-94	94-95	95-96	96-97
3. Training Programmes							
In service training to Dept.officials.	32500		6307	5569	5675	5611	5654
Refresher training to EDBPMs	119000		-	-	-	-	-
Computer training (New Scheme)	100		0	0	0	3119	3111
Refresher training in SB.	22500		4564	4108	4277	4000	5151
Management development programme		100				48	52
4. Material management							
House printing machines	30	12	4	3	5	-	0
Paper cutting machines	45	14	1	5	4	4	0
Computerising PSDs.	46+1Dt.	31	-	11+1Dt.	20	0	0
5. Transport Service							
a. R M S Vans							
i) New construction (MG Boggies)	10	0	0	0	0	0	0
ii) Remodelling	50	20	0	15	5	-	0
b. M M S Vans							
	560	284	123	124	37	0	0
6. Speed Post Service (establishment. of Business centre)							
POD centres	25	78	5	-	48	15	15
Lease/purchase of mopeds (New Scheme)	0	8	0	0	8	-	-
	0	0	0	0	NA	-	-
8. Construction of							
a) Postal Buildings							
Commenced	262		181	123	357	251	
Continued			NA	339	15	NA	
Completed		464	141	105	121	40	57
b) Staff Quarters							
Commenced	1000		345	655	991	1176	
Continued			NA	NA	531	NA	
Completed		1173	236	297	346	152	142
9. Postal Life Insurance							
Computerisation of circles	13	11	5	1	2	3	
Upgradation of circles	5	10	2	2	2	-	4
Training	-	153867	-	-	-	139344	14523

Note : The POSBs scheme included in computerisation of postal operations.

* Later revised to 3600 in 1993-94.

** Later revised to 650 in 1993-94.

@ Includes Achv. of 92-93.

\$ Includes In-service, computer training and Refresher training.

**NINTH PLAN (1997-2002)
Physical Targets**

Name of Schemes	Target (Nos.)
1. Expansion of Postal Services	
a. Opening of post offices	
EDBOs	2500
DSOs	250
b. Infrastructural equipment to EDBOs (New Scheme)	24000
2. Upgradation of Technology	
i) Counter computerisation	
a. Supply of M P C Ms	4000
b. Modernisation of Post Offices.	500
ii) Mechanical Equipment.	
a. Hand Cancellors	10000
b. Stamp Cancelling Machines.	100
c. Electronic Franking Machines.	500
d Tying and bunding machines	30
iii) Satellite MO	
a. Setting up of HUB	
b. Installation of VSATs	200
c. Installation of ESMOs	2000
iv) Material Management	
a. Printing & Paper cutting Machines	1
b. Diesel fork lift trolleys	4

Annexure 7.3.6 (contd.)

Name of Schemes	Target (Nos.)
3. Human Resource Development	
In service training to Dept. officials.	16500
Refresher training for SB/SC work	20000
Computer training	12000
Decentralised training to EDBPMs	100000
Distance decentralised training to Grp.C and Postman	50000
4. Modernisation of Mail Processing	
Setting up of AMPCs	3
Mail office Modernisation	100
RMS Vans	28
Purchase of MMS Vehicles	30
5. Business Development and Marketing	
Computerisation of PPCs	40
Business office for Speed Post	5
Computerisation of SPCCs	50
Bagging/containerisation in metros	5
6. Computerisation of Savings in PCs	
SBCO Computerisation	500
SB Computerisation	700
7. Postal Life Insurance	
Computerisation of RPLI in regions	30
Upgradation of computers in circles	20
8. Philately	
Computerisation of Bureaux	200
9. Construction of Buildings	
a) Postal Buildings	400
b) Staff Quarters	950
10. Streamlining of Fin. & Admn. management	
Computerisation of Fin. Management	All Circles

7.4 INFORMATION AND BROADCASTING

7.4.1 The Information and Broadcasting Sector has been witnessing a radical transformation in the past few years. Information technology has broken new frontiers and attained crucial importance. Given the technological advances and instant global reach, communications and the media have become an integral part of life. With the convergence of the communication, broadcasting and electronic technologies, the challenges faced by this sector are equally wide ranging in view of the rapidly changing media scenario and a fiercely competitive environment. The important issues confronting this sector range from regulating this sector for provision of free yet wholesome information and entertainment, to allowing enough freedom to the Government organisations in the field to enable them to perform effectively in the changed scenario. There is a necessity to review the whole gamut of the present system and refix priorities so as to evolve a policy suitable to the needs and interests of the people.

Review of the Eighth Plan

7.4.2 The principal objectives of the Eighth Plan for the broadcasting/telecasting sector were consolidation, technological modernisation and better and more relevant programming. As far as Information and Films Media are concerned the main thrust was on better services to the public.

7.4.3 The outlay for Information and Broadcasting sector for the Eighth Plan (1992-97) was Rs.3634.00 crore. However, owing to shortfall in utilisation in the initial years of the Eighth Plan, allocation for the different Annual Plans during 1992-97 was Rs.2391.00 crore and utilisation was Rs.2089.00 crore i.e. 87.39 per cent. Details of outlay and expenditure are at Annexure-7.4.1 & 7.4.2.

7.4.4 During the Eighth Plan period the broadcast and telecast media namely AIR and Doordarshan served as public broadcasters and contributed significantly to the socio-economic and cultural development of the country. The period 1992-97 witnessed a perceptible increase in reach and coverage by both AIR and Doordarshan. There were 128 Broadcasting Centres and 222 transmitters covering about 95 per cent of the population at the beginning of the Eighth Plan. During the Eighth Plan period, AIR set up 73 Broadcasting Centres (including 8 commissioned after 31.3.97; 2 upgraded Centres and 4 yet to be commissioned) and 167 Transmitters (including 62 replacement transmitters; 8 commissioned after 31.3.97; 12 yet to be commissioned). This excludes 10 transmitters which were de-commissioned. At the end of the Eighth Plan 97 per cent of the population was covered. Similarly, Doordarshan had set up 20 studios and 535 transmitters covering about 77 per cent of the population at the beginning of the Eighth Plan. During the Eighth Plan period, Doordarshan commissioned 21 more studios (including 5 Studios technically ready before the beginning of Eighth Plan but commissioned during 1992-93) and 415 transmitters (HPTs: 25; LPTs : 286; VLPTs/Transposers : 104). Twenty nine transmitters were closed down during this period. Doordarshan thus extended its network to cover 87 per cent of the population of the country at the end of the Eighth Plan. The targets and achievements of the electronic media for the Eighth Plan period are at Annexure – 7.4.3.

7.4.5 During the Eighth Plan the involvement of the Government in the films sector remained important especially in the development of good cinema with socially relevant themes backed by artistic and technical excellence, the development of modern training infrastructure, encouraging the film society movement, providing impetus to the production of films for children and young people, establishing modern archival facilities for preservation of films, supporting the documentary film movement, recognising outstanding films and film makers and providing access to good films in India and abroad through National and International Film Festivals. In addition, the Government has continued to regulate the exhibition of films through the Central Board of Film Certification so that the medium of film remains responsible and sensitive to the values and standards of society without unduly curbing artistic expression and creative freedom.

7.4.6 The Eighth Plan schemes for the information media included introduction of state-of-the-art technology in various areas and large scale expansion of the electronic media. Further, units such as the Song and Drama Division and the Directorate of Field Publicity helped to bridge the information gap in areas which have limited access to electronic and print media.

Thrust Areas for the Ninth Plan

Broadcasting

All India Radio

7.4.7 As a public service broadcaster dedicated to the nation building process of this vast country, AIR has contributed significantly in the socio-economic and cultural development of the nation. The thrust in the Ninth Plan of AIR will be :

- i) To augment the programme content, making radio more attractive and competitive.
- ii) To enhance the technical features and quality of broadcast to make it more attractive.
- iii) To provide wider choice of programme channels to listeners across the country.
- iv) To strengthen the primary channel service to serve as Public Broadcaster.
- v) Human Resource Development in various disciplines.
- vi) Execution of Science and Technology schemes.
- vii) Modernisation and renewal of old and obsolete equipment and addition of new facilities at broadcasting stations enabling better programme production and transmission.

7.4.8 The Ninth Plan physical targets include setting up of 25 fullfledged and three Relay Broadcasting Centres; 10 Community Radio Stations; 28 Medium Wave, nine Short Wave and 28 VHF/FM transmitters; and three Studios. The scheme-wise break up is at Annexure – 7.4.4.

Doordarshan

7.4.9 Though Doordarshan has emerged as the biggest terrestrial broadcasting network in the emerging electronic media scenario, it is no longer the sole provider of TV broadcast service in the country. The foremost task before Doordarshan during the coming years will, therefore, be to take urgent steps not only to consolidate and maintain its primary position as the National Broadcaster responsible for Public Service Broadcasting in the country, but also to broaden its base.

7.4.10 The approach during the Ninth Plan would be:

- a) Concentration on expansion of network to areas into which a private broadcaster, if and when private broadcasting is permitted in the country, would not easily venture, namely, the North-East, J&K, tribal/hill areas, border areas etc.
- b) Continuation of existing schemes for the upgradation and modernisation of its existing infrastructure, especially in the field of news gathering, playback, uplinking and post production to bring about improvement in the quality of signal throughout its network.
- c) Introduction of digital terrestrial transmitters at major kendras and expansion of digital satellite channels and digital studio production in order to progress towards total digitalisation of TV broadcasting.

7.4.11 For the Ninth Plan the physical targets include commissioning of 26 studio projects (23 of which are continuing schemes), 80 HPTs (14 continuing) and 422 LPTs/VLPTs (229 of which are continuing schemes). Details are at Annexure – 7.4.4.

Information Media

7.4.12 In the light of the lessons learnt from the Eighth Plan the micro strategies for the various Media Units falling under the Information Sector are as follows:

Press Information Bureau (PIB)

7.4.13 The thrust will be on activities such as technological upgradation of communication equipment at headquarters and branches; opening of a branch office at Itanagar, Arunachal Pradesh; and schemes to cater to the needs of the language press and to integrate the three news gathering streams of the Ministry in terms of technology and manpower.

Directorate of Advertising and Visual Publicity (DAVP)

7.4.14 In the face of stiff competition from vibrant advertising agencies in the private sector, DAVP envisages strengthening of the audio visual cell for providing better design inputs, strengthening of exhibition facilities; modernisation of DAVP headquarters and regional offices and creation of software for publicising Government policies and developmental efforts.

Publications Division

7.4.15 The Division will continue with the modernisation efforts and take up activities such as upgradation of Desk Top Publishing - hardware and software; putting Publications Division on the Internet; publication of special volumes related to heritage, etc. on the occasion of 50 years of Independence; human resource development and training; modernisation of marketing set-up and exploring areas of income generation on the lines of Employment News.

Song & Drama Division

7.4.16 This Division proposes to concentrate on the following areas: extensive use of traditional modes of media, sound/light shows etc.; modernisation of programme designing facilities; and utilising less popular folk art forms especially those of the North-East and strengthening of headquarters.

Directorate of Field Publicity (DFP)

7.4.17 The strategy of DFP would include strengthening the Organisation and increasing its coverage, replacement of 16 mm projectors with portable video projector systems, computerisation of regional offices and purchase of films and creation of local software for effective communication and streamlining the feedback mechanism and its development as an input in developmental programmes.

Photo Division

7.4.18 Photo Division will continue the modest beginning it made with its modernisation through introduction of digital photography. Archival work will also receive priority.

Indian Institute of Mass Communications (IIMC)

7.4.19 IIMC and its branches will be strengthened to meet the specialised training needs of the media units. Modernisation and expansion of facilities for Radio and TV journalism and video projection are also envisaged.

Films Media

7.4.20 The films sector provides a major source of information, education and entertainment to millions of people both in the rural and urban areas besides providing employment, both directly and indirectly, to lakhs of workers. The industry has also contributed considerably to the development of infrastructure in production, exhibition and other related areas.

7.4.21 The Ministry of Information and Broadcasting provides the necessary interface between the film industry and the Government particularly in the context of promoting meaningful socially relevant films. The direct involvement of the Government has remained important especially in respect of developmental aspects of this sector.

7.4.22 The goals and objectives of the Films sector would primarily relate to:

- a) Production, distribution and exhibition of meaningful films;
- b) Development/augmentation of modern training infrastructure - two training institutes have already been established;
- c) Encouragement to the Film Society movement;
- d) Providing impetus and assistance to the production and exhibition of films for children and young people;
- e) Establishing modern archival facilities for preservation of films;
- f) Supporting the documentary film movement and production of documentary films;
- g) Awarding outstanding films and film makers;
- h) Exposure to good films in India and abroad through national and international film festivals; and
- i) Increasing and modernising essential infrastructure alongwith manpower to ensure effective implementation of the Cinematography Act.

7.4.23 The experiences of the Eighth Five Year Plan have guided the strategies and policies to be adopted for achieving the objectives for the Ninth Five Year Plan. An increasing involvement of the Government in the film industry is envisaged. The regulatory mechanism through the CBFC would be strengthened by increasing manpower. Aggressive marketing of films produced by Films Division is required as their market abroad is very promising. A third important area is augmentation and modernisation of training facilities in the country specially in the fields of film and television production.

7.4.24 The broad strategies to be adopted for various Media Units under the Film sector would be as under:

Films Division

7.4.25 The thrust would be to further augment and modernise the equipment base and create infrastructural facilities for undertaking additional activities in conformity with their objectives. The scientific preservation of films produced by the Division, which practically constitutes a visual record of the history of independent India, is also a priority area. There would be a gradual increase in the production of films in video format which is the requirement of the day keeping in view better exhibition opportunities over television.

National Film Archives of India (NFAI)

7.4.26 The National Film Archives of India would continue with its fundamental objective of conservation, preservation and restoration of films and would act as a repository of the

documented history of Indian cinema. The Archives, would increase storage capacities by construction of additional vaults in addition to acquisition of more films.

Film and Television Institute of India (FTII), Pune

7.4.27 The priority areas in the Ninth Plan would be augmentation and modernisation of the training infrastructure and training methods with a view to increase the output of trained manpower. FTII would also develop the available land with proper infrastructure and facilities for shooting which would be made available to outside producers on hire, thus generating revenue for the Institute. This would be a part of the long term strategy of making the Institute self-supporting.

Satyajit Ray Film and Television Institute (SRFTI), Calcutta

7.4.28 The Institute has been set up basically to provide additional infrastructure to augment trained manpower in the film and television sectors. The Institute would introduce five additional disciplines of curriculum depending upon availability of infrastructure as well as resources. The other important agenda would be construction of hostel accommodation, staff quarters and accommodation for guest faculty.

National Centre for Children and Young People (NC'YP)

7.4.29 The NC'YP would endeavour to increase production of high quality software and ensure a wider and greater reach of their films. One of the important areas which NC'YP would undertake and implement is setting up of a modern complex at Hyderabad with various facilities for production, conservation, and exhibition of children's films. The land for this purpose has already been acquired.

National Film Development Corporation (NFDC)

7.4.30 During the Ninth Plan, the NFDC would continue to be responsible for developing the film sector especially in the area of production of low cost good quality feature films with socially relevant themes. While doing so, it would encourage new talent and would encourage films which are creative and artistic having experimentation in form. The Corporation is primarily engaged in four areas which continue to be its thrust areas, namely, film financing/production, theatre financing, imports and projects. The Corporation would not depend upon budgetary support.

Directorate of Film Festivals (DFF)

7.4.31 The Directorate would continue organising the International Film Festival of India and other events to promote and encourage good cinema in India and abroad. It would also undertake activities of recognising outstanding talent through the institution of National Awards and activities covered under cultural exchange programmes. It is necessary for the Government to undertake organisation of such activities so that the good cinema movement is promoted actively.

Central Board of Film Certification (CBFC)

7.4.32 The CBFC would implement its continuing programmes and schemes which mainly relate to augmenting the infrastructural facilities at headquarters and regional offices. This has become necessary as the number of productions is steadily increasing and consequently the workload of CBFC is increasing as well. CBFC would also create separate video certification units in the regional offices. The production in video format has been increasing steadily.

Film Society Movement: Federation of Film Societies of India (FFSI)

7.4.33 The Federation of Film Societies of India, an apex body of film societies in the country, is given grant-in-aid to propagate film consciousness and development of audience taste in cinema. The FFSI plays a vital role in the spread of the film society movement in the country.

Financial Arrangements

7.4.34 The financing pattern for this sector witnessed a complete change in the Eighth Plan period. The outlay for the Seventh Plan was almost fully financed by budgetary support. As against this, budgetary support comprised only 11.5 per cent of the approved outlay for the Eighth Plan and internal and extra-budgetary resources accounted for 88.5 per cent.

7.4.35 The internal resources of the Ministry are primarily generated from the commercial revenues of Doordarshan and AIR. These, after adjusting the running expenditure on commercial services including payment of commission, are placed in a 'Non Lapsable Fund' (NLF), which was constituted in 1975 to enable AIR and Doordarshan to utilise the commercial revenues for specific developmental needs. Part of these funds are being utilised for meeting Non-Plan expenditure. Due to this as well as the drastic reduction in budgetary support in the Eighth Plan, only limited funds were available to AIR and Doordarshan. Till the time the existing pattern of governmental accounting is continued, it is essential that funding of non-plan expenditure out of NLF be phased out and the additional provision be made available to these two organisations for meeting their plan requirements.

7.4.36 The funding of the Prasar Bharati Corporation will be one of the major issues in the Ninth Plan. The Corporation is likely to incur an expenditure of about Rs.1600-1800 crore a year which is the amount spent on plan and non-plan heads of both AIR and Doordarshan annually. The total commercial revenues of AIR and Doordarshan are likely to be in the range of Rs.700-800 crore per year. The gap of about Rs.1000 crore would have to be bridged. As Doordarshan is a public service broadcaster with substantial part of its programmes aimed at dissemination of news and information on developmental aspects such as education, health, agriculture, rural development, environment protection and so on, which are not likely to earn much revenue for the Corporation, it would be extremely difficult for the Corporation to increase its revenue to meet the gap. Therefore, the funding pattern of the Corporation would have to be worked out keeping in view its objectives and consequent constraints in revenue generation.

7.4.37 In order to enable Doordarshan to achieve nation-wide coverage with emphasis on meaningful programmes, it is essential that the financial support to the Corporation is in keeping with its social objectives. However, within the given circumstances all-out efforts need to be made to explore all available sources of resource generation so as to make the Corporation self-supporting as soon as possible.

7.4.38 The media units in the information sector are dependent entirely on budget support. While budgetary support will have to be provided, as most of these organisations serve public interest, expenditure would need to be curbed by ensuring that there is no duplication of efforts by Central and State level organisations. Improving the quality of services through training and upgradation of technology is also imperative. However, training should be essentially funded through fees and sponsorship by industry with Government providing only basic support, if required, at the inception of a training Institute.

7.4.39 In the film sector, only the National Film Development Corporation will be self-financing during the Ninth Plan while the other media units are dependent solely on budget support. Although it is recognised that films have an important role to play, efforts have to be made to make this sector financially independent through sponsorship by the film industry itself. Units such as Central Board of Film Certification etc. would however continue to require budgetary support.

Issues and Strategies

7.4.40 During the Ninth Plan period two major issues which would have to be addressed are the use of Airwaves and Autonomy to All India Radio and Doordarshan.

(i) Broadcasting Authority of India

7.4.41 As a result of rapid technological developments, the monopoly of Doordarshan and All India Radio in matters of broadcasting have, of late, come under challenge from two angles. On the one hand, Government has allowed the reception of foreign TV channels through dish antennae with some regulations but without effective control. On the other hand, some of the organisers of major sporting events have approached the Apex Court and have been demanding the right to broadcasting as part of the freedom of speech and expression as guaranteed by Article 19 of the Constitution. The Supreme Court of India, in one of their judgements on the airwaves, have observed that the Indian Telegraph Act, 1885 which is the only legal framework available to guide and regulate broadcasting in India, is totally inadequate to govern the modern broadcasting media and have directed the Union of India to set up an independent autonomous body representative of all sections and interests in the society to regulate the use of airwaves.

7.4.42 Keeping in view the directions of the Apex Court, a comprehensive Bill on Broadcast Law was placed before the Parliament in the 11th Lok Sabha. A Joint Parliamentary Committee (JPC) was constituted to examine the same. Before the JPC could submit its report, the 11th Lok Sabha was dissolved. With the dissolution of the 11th Lok Sabha, the proposed bill is required to be re-introduced in the 12th Lok Sabha. Efforts are being made in this direction.

7.4.43 In the proposed Broadcast Law, mandatory uplinking from Indian soil for all Indian and foreign channels was envisaged in due course. In the recent past, Government have permitted various Indian and foreign channels to uplink signals from India on the occasion of General Elections, funeral of Mother Teresa, celebration of certain events pertaining to 50 Years of India's Independence, etc. At present, precious foreign exchange is being expended by Indian satellite channels to provide for uplinking their programmes from foreign soils. In order to save the outflow of foreign exchange on this account and also to monitor the content of the programmes proposed to be uplinked from Indian soil, it has been decided to permit uplinking facilities from India in a phased manner. Towards this direction, it has been decided to permit Indian satellite channels which are presently uplinking from abroad and are taking foreign exchange releases for this purpose to uplink their programmes from India through Videsh Sanchar Nigam Ltd. (Indian Satellite channels being defined as those entities in which the Indian equity is at least 80 per cent and which are effectively managed by resident Indians).

(ii) Prasar Bharati (Broadcasting Corporation of India)

7.4.44 The country requires a strong public broadcasting service. Further, the media

should be free from Government control so that citizens can exercise their fundamental right to freedom of expression and have access to plurality of news, views and information in an unbiased manner. Freedom of media from Government control is also important for an effective and enlightened democracy in so far as it ensures that access to media is not the privilege of the

The Prasar Bharati Corporation :

Doordarshan and AIR have been placed under an autonomous body, namely, the Prasar Bharati (Broadcasting Corporation of India) with effect from 23rd November, 1997.

The main objective is to free the media from Government control so that citizens can exercise their fundamental right to freedom of expression and to ensure that access to media is not the privilege of the political party in power alone.

Prasar Bharati is envisaged to be the Public Service Broadcaster in the country. The main challenges before the Corporation are:

- (i) Providing the ideal mix of infotainment backed by good quality transmission
- (ii) Reaching remote and inaccessible areas
- (iii) Raising financial resources without compromising the main objective of being a public service broadcaster.

political party in power alone. Keeping these important objectives in view, Doordarshan and AIR have been put under an autonomous body, namely the Prasar Bharati with effect from the 23rd November, 1997. The Prasar Bharati is envisaged to be the Public Service Broadcaster in the country. In order to serve this end it cannot be run on commercial lines alone. Therefore, till such time the revenues of the Corporation become buoyant, financial support from the Government will need to be continued.

7.4.45 The Prasar Bharati Act, 1990 was amended by an Ordinance on 29.10.97. These amendments were continued by the Prasar Bharati (Broadcasting Corporation of India) Amendment Second Ordinance, 1997 promulgated on 26.12.97. The Amendment Second Ordinance lapsed on 6.5.98.

7.4.46 The Government had introduced a Bill in the Lok Sabha on 1.6.98 to restore the provisions of the original Prasar Bharati (Broadcasting Corporation of India) Act, 1990 in toto. The Bill was considered and passed by the House on 31st July, 1998. Since the Bill could not be considered in the Rajya Sabha in the same session, the Prasar Bharati (Broadcasting Corporation of India) Amendment Ordinance, 1998 was promulgated on 29.8.98 to give effect to the provisions of the Bill.

Science and Technology Programmes

7.4.47 The focus of the schemes to be undertaken by the Research Department of Doordarshan and All India Radio during the Ninth Plan period will be on the development of systems which are not available in the open market, formulation of plans for introduction of new services and technologies in networks and also development of broadcast related consumer electronic products. Schemes relating to development of studio systems in the field of audio involving introduction of pilot projects relating to model digital studio centres in some AIR FM stations, interactive radio services, development of optomagnetic based editing system for programme production/post production, preparation of 'Code of Practice' on measurement aspects for digital studios and digital chain, development of sub-systems and integration of hardware and software for News Room automation in radio studios and usage of Internet for improving news collection would be taken up. For video systems, development of multi-colour logo generators both for Doordarshan and for multi-purpose requirements is envisaged alongwith software based systems for graphics relating to sports coverage in computer network mode.

7.4.48 Improvements in transmission techniques are proposed to be undertaken for better coverage of radio signals by conducting experiments/field trials and formulating plans on 'Terrestrial Digital Audio Broadcasting' in major centres. Adoption of digital technology for programme distribution through satellite mode, enhancement of quality in the existing AM/FM transmission and data broadcasting through FM sub-carrier and satellite medium by establishing information booths for interactive multi-lingual access of information for both radio and television are also envisaged. Transmission of multi channels through Satellite-Digital Video Compression techniques is to be improved for better television coverage.

7.4.49 During the Ninth Plan, further schemes are proposed for indigenising the Digital Audio Broadcasting (DAB) receiver, developing an integrated receiver decoder conforming to MPEG II standard with multiple video, audio and data output, as well as the development of software for acoustics of studios, interaction with other agencies on Information Super Highway concept in India and introduction of a pilot project on low cost studios.

7.4.50 The R&D schemes of Doordarshan will include News gathering through cellular phones, ghost cancellation, remote monitoring of LPTs/VLPTs etc., Doordarshan Video on Internet, Pilot projects for introduction of Digital Terrestrial Transmission, News Automation for major centres, Archive of Video materials and Video-on-Demand during the Ninth Plan period to improve quality of transmission and better management of television network.

Women's Component

7.4.51 Publicity support and information dissemination pertaining to the developmental programmes undertaken by the Government for the benefit of people in general, including women are undertaken by the various Media Units. Publicity is also being provided to developmental schemes which are women specific in their content and focus. This would continue to be provided during the Ninth Five Year Plan. Programmes on issues of specific interest to women will continue to be produced by associating competent women producers and broadcast/telecast in local dialects at timings convenient for the target audience.

Tribal Sub Plan/Special Component Plan

7.4.52 Special efforts are made by various media units to create awareness and disseminate information using different programme formats keeping in view the special needs of SCs/STs and also to remove the existing socio-economic and political imbalances. Though the reach of the electronic media, namely, All India Radio and Doordarshan includes the entire population in its coverage, including SC & ST groups, special efforts are proposed to improve transmission to areas which have a predominantly tribal population.

7.4.53 A number of radio stations/transmitters and VLPTs/LPTs/HPTs for better coverage are also proposed to be set up in remote, tribal and hilly areas of the country, especially in the North East, during the Ninth Plan. Various welfare schemes of the Central and State Governments relating to SCs/STs are also given publicity from AIR stations. In Employment News, information relating to vacancies reserved for SCs/STs is included. AIR also broadcasts tribal welfare programmes as well as other programmes in tribal dialects. Moreover, replacement of transmitters in tribal areas by those of same or higher power, has also been proposed during the Ninth Plan.

7.4.54 All Tribal Sub Plan districts are covered by TV service fully/partially. Out of 386 transmitters commissioned in the country during the Eighth Plan period, 116 were commissioned in TSP districts. One hundred and twenty four projects are under implementation in TSP districts. Two studios and 50 HPTs, LPTs and VLPTs are proposed (approved locations) in TSP districts.

7.4.55 The Press Information Bureau (PIB) formulated two schemes exclusively for tribals during the Ninth Five Year Plan namely, opening of branch office of PIB in North Eastern region and coordinating and organising Press parties from tribal areas. Under the Scheme 'Opening of Branch Office', it is proposed to set up one branch office of PIB at Itanagar (Arunachal Pradesh). Under the Scheme 'Coordinating and Organising Press Parties from Tribal areas', it is proposed to take small groups of journalists from tribal areas to places where economic and welfare activities are being undertaken and to show them how the Government's social justice programmes help in improving the living standard of the population.

7.4.56 Publications Division disseminates information through books and magazines. Articles on various developmental policies and programmes undertaken by the Government for upliftment of the weaker sections particularly SCs and STs are published in

the journals of the Division. The Ninth Plan schemes include publication of 'Yojana' in Assamese and Mobile bookshops for NE region.

7.4.57 The Directorate of Field Publicity (DFP) is a grass root level organisation through which weaker sections have the opportunity to seek clarifications and pose further queries about various Government schemes affecting them. A large part of the Directorate's activities are aimed at SC/ST population. Of its 260 field units, several are located in tribal areas, covering all 18 TSP states. The publicity activity in these areas is geared towards the specific socio-economic needs of the tribal people. During the Ninth Plan new units are also proposed to be set up in tribal areas. DFP also proposed to undertake conducted tours, purchase of Portable Video Projector systems and computerisation under tribal sub plan.

7.4.58 The Song and Drama Division has also formulated schemes to ensure flow of benefits to SCs and STs through promotion of artistes belonging to these categories during the Ninth Five Year Plan. Schemes which would benefit the SCs and STs include the following:

- (a) A total of 8900 programmes are expected to be presented by the Division under the Tribal/Hilly/Desert area publicity scheme and the Tribal Centre at Ranchi for tribal welfare.
- (b) 30,000 programmes are to be hosted under the 'Sensitive Area and Inner Line Publicity Scheme' and 'Tribal/Hilly/Desert area publicity scheme' as well as by the Sound and Light units at Delhi and Bangalore for the welfare of SCs.
- (c) Under the Sensitive and Inner Line Publicity Scheme for the North Eastern Sector 6300 programmes are to be presented.
- (d) Special publicity will be organised in border and sensitive areas.

7.4.59 In the Films sector, the Film and Television Institutes of India, at Pune and Calcutta, provide and will continue to provide adequate representation to personnel from tribal areas in their training programmes which are proposed to be taken up in the Ninth Five Year Plan. The National Centre of Films for Children and Young People produces films for children. The Centre attaches considerable importance to the exhibition of films in tribal belts. The National Film Development Corporation extends financial assistance to production of films and construction of theatres in the North Eastern Region. The Films Division would also continue to make featurettes and documentaries based on themes from tribal areas and North - Eastern region during the Ninth Plan.

Outlays, Expenditure and Financial Pattern of Information & Broadcasting Sector

Media	Eighth Plan Outlay (1992-97)	(Rs. crore)									
		1992-93		1993-94		1994-95		1995-96		1996-97	
		Outlay	Actual Expend.	Outlay	Actual Expend.	Appvd. Outlay	Actual Expend.	Appvd. Outlay	Actual Expend.	Appvd. Outlay	Actual Expend.
1. Information	75.40	13.00	4.38	10.36	3.95	11.45	11.64	17.79	15.81	11.36	12.27
IR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BS	75.40	13.00	4.38	10.36	3.95	11.45	11.64	17.79	15.81	11.36	12.27
2. Films	123.65	29.84	14.90	21.64	14.02	25.53	23.33	28.93	31.90	41.26	35.56
IR	15.00	2.84	1.33	2.50	5.16	3.80	5.27	4.10	6.49	10.00	6.80
BS	108.65	27.00	13.57	19.14	8.86	21.73	18.06	24.83	25.41	31.26	28.76
3. Akashvani	1134.95	225.00	114.60	203.00	145.43	132.32	126.97	135.00	130.06	140.00	142.24
IR	1058.08	186.00	108.06	178.00	130.78	122.32	121.23	110.00	110.00	115.00	115.00
BS	76.87	39.00	6.54	25.00	14.65	10.00	5.74	25.00	20.06	25.00	27.24
4. Doordarshan	2300.00	265.16	176.25	170.00	168.22	256.00	255.93	313.78	311.70	340.38	350.44
IR	2143.92	230.16	175.34	149.50	149.68	238.18	239.11	280.40	280.40	307.00	307.00
BS	156.08	35.00	0.91	20.50	18.54	17.82	16.82	33.38	31.30	33.38	43.44
Total	3634.00	533.00	310.13	405.00	331.62	425.30	417.87	495.50	489.47	533.00	540.51
IR*	3217.00	419.00	284.73	330.00	285.62	364.30	365.61	394.50	396.89	432.00	428.80
BS	417.00	114.00	25.40	75.00	46.00	61.00	52.26	101.00	92.58	101.00	111.71

* Total IR figure includes Rs.15 crore of NFDC during the Eighth Plan.

Mediawise Expenditure/Outlay of Information and Publicity Sector

ANNEXURE-7.4.2

(Rs. crore)

Media Units	8th Plan (1992-97)	1992-93		1993-94		1994-95		1995-96		1996-97	
	Outlay	Outlay Appvd.	Actual Expend.	Outlay Appvd.	Actual Expend.	Appvd. Outlay	Actual Expend.	Appvd. Outlay	Actual Expend.	Appvd. Outlay	Actual Expend.
(A) Information Media											
1. Press Information Bureau	14.00	2.00	0.36	1.44	0.38	1.50	1.89	7.30	0.85	4.90	0.83
2. Publications Division	2.50	0.64	0.00	0.30	0.08	0.30	0.26	0.30	0.18	0.20	0.17
3. D.A.V.P.	5.00	0.68	0.50	0.30	0.29	0.30	1.19	0.30	0.27	0.30	0.30
4. Song & Drama Division	10.00	1.85	0.77	1.10	1.35	1.40	1.85	1.40	1.34	1.30	1.50
5. Dte. of Field Publicity	11.00	2.35	1.00	0.97	0.84	1.00	1.60	1.35	1.57	1.00	2.00
6. Photo Division	4.00	1.20	0.17	0.57	0.12	1.00	0.56	0.50	0.92	0.63	0.90
7. Registrar of Newspaper	0.50	0.28	0.34	0.05	0.07	0.05	0.06	0.08	0.08	0.00	0.00
8. I.I.M.C.	7.00	0.50	0.50	0.70	0.55	1.10	1.25	4.00	3.87	1.87	1.73
9. Sookhana Bhawan	11.20	3.45	0.72	0.39	0.26	0.80	0.40	2.00	0.18	0.61	1.50
10. Main Secretariat	10.20	0.05	0.02	4.54	0.01	4.00	2.58	0.56	6.55	0.55	3.34
TOTAL (A)	75.40	13.00	4.38	10.36	3.95	11.45	11.64	17.79	15.81	11.36	12.27
(B) Films Media											
1. Films Division	34.00	6.37	2.52	4.32	1.65	3.00	3.58	4.58	5.13	4.13	4.20
2. National Film Archive of India	6.00	1.20	0.78	0.52	0.62	0.90	1.21	2.40	4.54	1.54	1.03
3. Film & TV Instt. of Indi Calcutta	29.50	11.00	0.35	5.68	0.00	5.68	2.04	4.50	4.57	13.76	13.99
4. Film & TV Instt. of Indi Pune	8.00	1.00	0.95	0.65	0.75	5.50	5.50	6.54	6.54	5.54	5.22
5. N.C.F.C.&Y.P.	10.00	1.20	1.17	1.40	1.12	1.50	1.10	1.50	1.60	1.50	1.50
6. NFDC *	20.00	6.84	5.33	6.50	7.16	5.80	7.27	5.60	7.99	10.00	6.80
7. Dte. of Film Festivals	15.00	2.00	3.60	2.44	2.54	3.00	2.49	3.53	1.29	3.33	2.52
8. Film Societies Movement	0.15	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
9. C.B.F.C.	1.00	0.20	0.17	0.10	0.15	0.12	0.11	0.25	0.21	0.35	0.27
10. Jyoti Chitran										1.08	
TOTAL (B)	123.65	29.84	14.90	21.64	14.02	25.53	23.33	28.93	31.90	41.26	35.56
TOTAL OF A&B	199.05	42.84	19.28	32.00	17.97	36.98	34.97	46.72	47.71	52.62	47.83

* : NFDC's outlay/expenditure figures also include its Internal Resource.

EIGHTH PLAN PHYSICAL TARGETS & ACHIEVEMENTS : ALL INDIA RADIO AND DOORDARSHAN

ALL INDIA RADIO			
	TARGETS	ACHIEVEMENTS	REMARKS
1 No. of Broadcasting Centres	93	73	Including 8 commissioned after 31-3-97; 2 upgraded centres and 4 yet to be commissioned
2 Community Radio Stations	19	-	
3 Radio Transmitters	204	167	Including 62 replacement; 8 commissioned after 31-3-97 and 12 transmitters yet to be commissioned
4 Studios	12	12	
DOORDARSHAN			
1 Programme Production Centres (PPCs)	20	21	Including 5 studios technically ready before the beginning of the VIIIth Plan but commissioned during 1992-93.
2 High Power Transmitters (HPTs)	58	21+4 interim	
3 Low Power Transmitters (LPTs)	273	286	
4 Very Low Power Transmitters (VLPTs)/ Transposers	108	104	

STATEMENT SHOWING PHYSICAL TARGETS OF MEDIA UNITS
FOR NINTH PLAN

ALL INDIA RADIO

Sl. No.	NAME OF THE SCHEME	TARGETS
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1 No. of Broadcasting Centres:

Full Fledged	25
Relay Centres	3

2 Community Radio Stations 10

3 No. of Radio Transmitters:

Medium Wave	28
Short Wave	9
VHF/FM	28

4 Studios 3

DOORDARSHAN

1 Continuing Schemes

(a) Studio Projects	23
(b) HPT Projects	14
(c) LPTs & VLPTs	229

2 New Schemes

(a) Studio Projects	3
(b) DD-I Transmitters	
HPTs	28
LPTs & VLPTs	193
(d) DD-II Transmitters	
HPTs	38

7.5 INFORMATION TECHNOLOGY

7.5.1 Information Technology (IT) is increasingly becoming the technological infrastructure for the service sector. Information Technology broadly includes all sub-sectors dealing with the generation, transmission and utilisation of information like informatics, statistics, office automation, data processing, Management Information System (MIS), Decision Support System (DSS), Online and real-time computer applications, telecommunications, broadcasting and computer networking. IT and allied sectors have

NATIONAL TASK FORCE ON IT & SOFTWARE DEVELOPMENT

Govt. of India has resolved to make India a global IT super power and a front runner in the information revolution. Towards achieving this objective, a National Task Force on Information Technology and Software Development was set up in May, 1998 with Shri Jaswant Singh, Dy. Chairman, Planning Commission as Chairperson. The Task Force submitted its first report on IT Action Plan on Development and Export of Software and Data Communication on 25th July, 1998 and the second report on Development, Manufacture and Export of IT Hardware on 3rd November, 1998. The final report concerns the citizens IT interface, content industry, IT RD&D, IT HRD and strategic policies.

The 108 recommendations of first report and 81 recommendations of second report of IT Action Plan cover a wide spectrum of issues relating to Telecom, Finance, Banking, Revenue, Commerce, Electronics, HRD, Defence and Rural Development.

The country should aim at an annual export target in excess of US \$ 50 billion for computer software and a target of US \$ 10 billion for computer and telecom hardware by year 2008. The compound growth rate of more than 55% between 1992-97 is planned to be increased to 80% by 2008.

The IT Action Plan has suggested conscious efforts to spread the IT culture to all walks of economic and social life of the country. An 'Operation Knowledge' campaign has been launched for universalising IT education and IT-based education in the country in a phased manner.

A Policy framework and industrial strategy has been designed for making the Indian IT industry strong enough to meet the demands of a zero duty regime under the WTO-ITA by the year 2003.

A Soft-Bonded IT units (S-BIT) scheme will seamlessly integrate the local and export production for maximizing the economies of scale and substitute a-posteriori controls for the existing a-priori controls so as to maximize the velocity of business.

Every secondary school, polytechnic, College and University library is planned to be given computer and INTERNET access by the year 2003

The IT Action Plan has brought about a new paradigm in setting up IT software and hardware manufacturing units for making them viable for meeting the local demands as well as exports by creating a policy ambience and investment climate in the country comparable to those in Taiwan, Malaysia and Singapore.

immense potential for employment generation. It is expected to emerge as one of the largest employers of work force in the country, providing jobs to about 25% of the labour force in the long run.

7.5.2 Following recommendations of the National Task Force on IT, 1-3% of the budget of all the Ministries/Departments has been earmarked for expenditure on IT applications. It is expected to generate about one million additional jobs every year. It would also lead to increased productivity in various sectors, timeliness of implementation of projects leading to the minimisation of time and cost overruns as well as creation of entirely new enterprises like Software Export, Internet-based enterprises, Electronic Commerce etc. There has now emerged a propensity for IT-led development. The impact of IT will be especially predominant in the social sectors like health, education, judiciary and rural development.

7.5.3 The technological convergence of IT, Telecommunication and Entertainment Electronics have opened new vistas in the life of the common man. A National Information Infrastructure (NII) is evolving as a network of networks including such nation-wide computer networks as NICNET under the Planning Commission, ERNET under the Department of Electronics, HV Net and I-Net under the Department of Telecommunications in addition to an extensive Fibre Optic Telecommunication Backbone being set up by DOT. From the 40,000 route kilometers of fibre optic laid by the end of the Eighth Plan, the backbone is expected to be strengthened to more than 1,00,000 route kilometers through not only the efforts of DOT, but also Railways and the private sector.

7.5.4 The impact of the Global Information Infrastructure(GII) through Internet and low earth orbit satellite constellations will be consolidated during the Plan period with linkages to NII. An addition of over 100 Mbps external gateway capacity for such linkages is expected to spawn an estimated 5000 small and medium scale knowledge-based enterprises.

7.5.5 The Local Area Network (LAN) and Metropolitan Area Network (MAN) segment is estimated to grow to 20,000 nodes per year by the end of the Plan, prodded by the increasing induction of Wireless Data Communication equipment and Cellular Data Communication.

7.5.6 The public investment required for the above growth of Information Technology sector, especially for supporting the social sector, creation of the basic informatics infrastructure with universal access and the consequent creation of employment, is recommended to be realised by allowing every Central, Centrally sponsored and State Plan Projects to utilise up to 3 percent of their total Budget for Information Technology.

7.5.7 In order to enable India to emerge as Information Technology Super Power within the next 10 years a National Task Force on Information Technology and Software Development was set up in May, 1998 with Shri Jaswant Singh, Deputy Chairman, Planning Commission as chairperson.

7.6 TOURISM

7.6.1 Tourism is a major phenomenon of the modern society with significant socio-economic consequences. Over the years, tourism has emerged as a major segment of Indian economy contributing substantially to the foreign exchange earnings which have increased from Rs.4892 crore in 1991-92 to Rs. 10417 crore in 1996-97. The direct employment in the sector during 1995-96 was about 8.5 million persons, accounting for about 2.4 per cent of the total labour force.

7.6.2 An important feature of the tourism sector, which is of particular significance to India, is its contribution to national integration and creation of a harmonious social and cultural environment. Over 100 million domestic tourists visiting different parts of the country every year return with a better understanding of the people living in the different regions of the country and the geographical, biological and cultural diversity of India. Tourism also encourages respect for, and preservation of, monuments and heritage properties and helps the promotion of art forms, crafts and culture.

Review of the Eighth Plan

7.6.3 There has been a gradual increase in the Central Plan outlay for tourism over the Plan periods from Rs.1.58 crore in the Second Plan to Rs.272.00 crore in the Eighth Plan.

7.6.4 The details of the expenditure during the Eighth Plan period for the Department of Tourism and ITDC are given in the Table 7.6.1

Table 7.6.1
Eighth Plan Expenditure- Tourism
(Rs.Crore)

Sub-head	8th Plan Outlay (1991-92 Prices)	1992-93 Exp.	1993-94 Exp.	1994-95 Exp.	1995-96 Exp.	1996-97 Exp.	8th Plan Exp. (Current Prices)
Deptt.of Tourism	236	73.57	86.48	89.11	97.87	89.66	436.59
ITDC	36 (32)	5.84 (0.84)	7.28 (2.28)	8.82 (8.82)	14.20 (14.20)	17.69 (17.69)	53.83 (43.83)
Total	272 (32)	79.41 (0.84)	93.76 (2.28)	97.93 (8.82)	112.07 (14.20)	107.35 (17.69)	490.42 (43.83)

Figure in bracket indicates IEBR.

7.6.5 As against the Eighth Plan outlay of Rs.272 crore (1991-92 prices), the expenditure during the period has been Rs.490.42 crore (current prices). The entire Plan expenditure of ITDC from the year 1994-95 onwards has been met from internal and extra budgetary resources. Bulk of the expenditure of the Department of Tourism was incurred on tourism publicity.

7.6.6 The major schemes of the Department of Tourism relate to Promotion and Publicity, Central Assistance for the Development of Tourist Infrastructure, Human Resource Development and Incentives. The Central Government investment for the improvement and creation of tourist facilities is channelised through State/UT Governments on a cost sharing basis. Under this pattern of funding, the Central Department of Tourism meets almost the entire expenditure, except the cost of land and interior decoration in the case of construction projects.

7.6.7 In order to finance major projects for development of tourist infrastructure, a new pattern of financing was conceived during the Eighth Plan. Apart from the State and the Central Governments contributing towards the funding of projects, the new scheme, known as Equity scheme, envisaged a major role for the financial institutions. As the State Governments could not formulate bankable projects, the scheme could not, however, make much headway in the Eighth Plan.

7.6.8 The Eighth Plan envisaged a growth of 9% to 10% per annum in international tourist arrivals and about 2.75 million tourist arrivals were anticipated by the end of the Eighth Plan. The target, however, could not be achieved due to various reasons such as armed conflict in the Gulf region, reduction in international outbound traffic during the period, law and order problems and health hazards in some parts of the country. The number of tourists who visited India during the Eighth Plan period increased from 1.78 million in 1991-92 to 2.33 million in 1996-97.

7.6.9 The main emphasis in the Eighth Plan for the ITDC was on consolidation rather than on expansion of accommodation. The Corporation, which earned a net profit of Rs.3.11 crore in 1991-92 improved the financial performance during the Eighth Plan period and earned a net profit of Rs. 55.8 crore in 1996-97.

Policy Framework for the Ninth Plan

7.6.10 The policy objective in the Ninth Plan will be to work towards creating a tourism product that provides the persons travelling to various places a pleasant experience on their trips, through an environment of peace, stability, security and an integrated system of physical infrastructure that does not fail. Tourism should become a unifying force nationally and internationally, fostering better understanding through travel. It should also help to preserve, retain and enrich our world-view and life-style, our cultural expressions and heritage in all its manifestations.

7.6.11 It is important to realise that development of tourism has an important indigenous dimension. The number of middle and lower middle class tourists visiting distant places in the country is on the increase. The captive tourism around the places of pilgrimage is also increasing fast. There is a need for creating adequate, hygienic, decent, low-cost facilities for such tourists. The measures for ensuring safety, particularly in difficult places of pilgrimage at high altitudes, should be emphasised. Many of these places of captive tourism are in the regions which are economically poor. Development of tourism in these areas, therefore, will accelerate the economic development of these regions.

7.6.12 The diversity of the tourism product in India makes it imperative that the development of tourism has to be a joint effort of all the infrastructural Departments, public sector undertakings, State Governments and the private sector. The approach to tourism

development in the Ninth Plan will accordingly be on coordinated efforts by the public and private sector and the major thrust will be on selected areas of tourism.

THE APPROACH AND THRUST IN THE NINTH PLAN

The approach in the Ninth Plan will be to concentrate on the development of selected centres and circuits through effective coordination of public and private efforts so as to achieve synergy in the development of this sector. The Government will focus on the development of basic infrastructure such as transport facilities and civic amenities and play a facilitating role in the provision of accommodation and other facilities for all classes of tourists, both domestic and international. A mechanism will be developed for effective coordination of all the relevant agencies concerned with promotion of tourism. In developing tourism, it will be ensured that the sites are conserved and the environment is not degraded. The major thrust areas in the Ninth Plan will be

1. Indigenous and Natural Health Tourism
2. Rural and Village Tourism
3. Pilgrim Tourism
4. Adventure Tourism
5. Heritage Tourism
6. Youth and Senior Citizens Packages.

7.6.13 People's participation in tourism development including Panchayati Raj institutions, local bodies, non-governmental organisations and enterprising local youth will be encouraged to create public awareness and to achieve a wider spread of tourist facilities

7.6.14 The infrastructure projects which are commercially viable, will be funded by the Govt. under the Equity Scheme except in the North Eastern States and selected hill districts in the country. The existing pattern of funding would generally be applicable only to purely promotional and product development projects and in the North East Region and selected hill districts where the equity funding pattern is not insisted upon.

7.6.15 The main schemes of the Department of Tourism, namely Central Assistance for Development of Tourism Infrastructure and Promotion and Marketing would continue in the Ninth Plan. Efforts would be made to make them more effective.

7.6.16 In order to give boost to foreign exchange earnings, employment and income generation through tourism activities, Export House Status will be granted to tourism units.

EXPORT HOUSE STATUS TO TOURISM

The Govt. will grant Export House Status to Tourism units in the Ninth Plan. The threshold limit for eligibility of such status for tourism units will also be revised downwards. The grant of Export House Status will entitle the tourism units to get all the benefits that are available to recognised export houses including the entitlement of

1. Special Import Licence (SIL)
2. Free Trading of these SILs
3. Import of several equipments under these SILs
4. Waiver of Bank guarantee for imports
5. Import of cars against foreign exchange earnings.

7.6.17 ITDC will consolidate its existing activities. The performance of ITDC will be improved through restructuring of the existing properties and improving the quality of service. No project relating to construction of new hotels is envisaged during the Ninth Plan period

Tourism Promotion in North East

7.6.18 The availability of a diverse tourism product in the North East offers tremendous scope for development of tourism in the region. Efforts will be made to exploit the potential through schemes to be specially designed for the purpose during the Ninth Plan period.

7.6.19 In line with the recommendation of a high level Commission which has identified, among other things, the infrastructural needs of the North East Region, the development activities would be selective and aimed at promoting eco-tourism and adventure tourism. The programme of development of tourism of State and Central Government would be co-ordinated. Local residents will be encouraged through suitable schemes to provide low-cost, decent guest room facilities for the tourists. Special emphasis will be laid on production of tourist brochures and other literature and on training of local guides

Intersectoral Coordination

7.6.20 Availability of basic infrastructural components like airports, railways, roads, waterways etc. is a critical requirement for the development of tourism. Inadequate airline capacity and limited passenger handling capacity of airports is a major bottleneck in the expansion of tourism. The development programme of Civil Aviation sector particularly that of Airports Authority of India would aid in promotion of tourism. In order to facilitate movement of tourists, particularly where the road segments are in poor condition, it will be important to develop water transport systems like cruises, catamarans, hydroplanes etc. in the private sector and the necessary berthing facilities at the respective ports.

7.6.21 Foreign tourists have a special fascination for rail transportation. The Ministry of Railways has introduced two Special Tourist Trains and the introduction of more of such trains is being considered with private sector participation. Besides making efforts at providing railway platforms and linkages to all the international airports for boarding a train straight to connect important tourist centres, hygienic conditions, environment and passenger facilities in and around the main railway stations near the identified tourist centres will be improved.

7.6.22 The road segments connecting tourist centres and the road transport system require improvement as about 80% of the foreign and domestic tourists make use of the road transport system for visiting different destinations. It is necessary to produce good quality road maps and provide adequate road signs in all the tourist routes

Manpower

7.6.23 Availability of trained manpower is essential for the development of a service sector like tourism. At present, there are 20 Institutes of Hotel Management and Catering Technology and 13 Foodcraft Institutions functioning in the country. A number of institutes have also started coming up in private sector since it can find adequate number of trainees with the required paying capacity.

7.6.24 During the Ninth Plan period, the Government will consider the setting up of new institutes only at such places where the demand for trained manpower far exceeds the availability and the private sector is not interested or cannot be motivated in providing adequate training facilities to fill the gap. Development of training facilities will be encouraged in the private sector and the Government will gradually withdraw from providing budgetary support for the setting up and running of training institutes.

CHAPTER 8

ENVIRONMENT AND FOREST

OVERVIEW

8.1 There has been an increasing awareness in recent years that protection of the environment is necessary for sustaining the economic and social progress of a country. This awareness was reflected at the Earth Summit in Rio de Janeiro in June 1992, where more than a hundred heads of government adopted a global action plan called Agenda 21 aimed at integrating environmental imperatives with developmental aspirations and reiterated through the U.N. General Assembly Special Session on Environment held in June 1997. It is now accepted that, in terms of natural resources, a country's demand for its sustenance should not exceed its carrying capacity. Over the last few decades, India has evolved legislations, policies and programmes for environmental protection and conservation of natural resources. The Indian Government's policy has been expressed in the form of statements on forestry, on the abatement of pollution, the national conservation strategy and the policy statement on environment and development. The spirit of Agenda 21 principles has already been incorporated in these policies. For instance, with regard to the social and economic dimensions of Agenda 21, India has become a signatory to the Montreal Protocol for phasing out ozone depleting substances, the Basel Convention on trans-boundary hazardous substances, the Convention on biological-diversity and other international treaties. Similarly, poverty alleviation programmes have been launched wherein family planning and welfare is a major focus. Environmental concerns are being integrated with development in decision making through mandatory clearance of projects based on environmental impact assessment. Compliance with the conditions stipulated is being ensured by monitoring the progress of implementation of Environmental Management Plans. Conservation and management of resources for development are sought to be achieved through a combination of regulatory and market-based economic instruments. The role of major groups including the NGOs, farmers and other communities is being strengthened by directly involving them in the process of identification, formulation and implementation of environmental programmes. The important role of capacity building, legal instruments and mass media for promoting public awareness is fully recognised.

Policy on Environment and Forest

The Indian Government's policy towards Environment is guided by the principles of Agenda 21. The Government of India has issued Policy Statements on:

- Forestry
- Abatement of Pollution
- National Conservation Strategy
- Environment and Development

India is already a signatory to the Convention on Biological Diversity, Montreal Protocol and Basel Convention.

8.2 Global environmental issues, such as ozone depletion, climate change due to accumulation of Greenhouse Gases (GHGs), bio-diversity loss etc. are largely due to the rapid industrialisation of the developed nations. India is an insignificant contributor to the GHG emissions as can be seen from the Table 8.1:

Table 8.1: CARBON EMISSIONS LEVELS IN SELECTED COUNTRIES*

(million tonnes)

Country	Share of World Population 1996	Share of Gross World Product 1994	Share of World Carbon Emissions 1995	Emissions per capita
United States	5	26	23	5.3
Russia	3	2	7	2.9
Japan	2	17	5	2.4
Germany	1	8	4	2.9
China	21	2	13	0.7
India	17	1	4	0.3
Indonesia	4	1	1	0.3
Brazil	3	2	1	0.4
Total	56	59	58	0.9

(* Compilation from several international published sources)

8.3 The main environmental problems in India relate to air and water pollution, degradation of common property resources, threat to biological diversity, solid waste disposal and sanitation. Increasing deforestation, industrialisation, urbanisation, transportation and input-intensive agriculture are some of the other major causes of environmental problems being faced by the country. Poverty presents special problems for a heavily populated country with limited resources.

STATUS OF INDIA'S ENVIRONMENT

Air Quality

8.4 The urban areas represent complex environmental problems. The living conditions of millions of urban poor are such that they pose a threat to their health and have potentially catastrophic social consequences. For the urban poor, the living conditions are the worst. If these problems are not addressed to in an adequate and timely manner, serious environmental and associated health consequences will 'follow'. Burgeoning urban population beyond the carrying capacity of the different components of urban eco-systems, coupled with indifferent urban governance, are the root causes for urban environmental problems. Air pollution can cause chronic and acute respiratory diseases, ventilatory malfunction, heart diseases, cancer of the lungs and even death. The blood lead levels of persons in Ahmedabad, Bombay and Calcutta have been reported to be higher than the corresponding levels of persons in lead-free gasoline areas. The details of ambient air quality status in ten large cities/towns are at Annexure I. In most of the cities, while the SPM levels are significantly higher than the CPCB standards, the levels of SO₂ and NO_x are within the CPCB standards.

8.5 The rural population uses substantial quantities of non-commercial fuel i.e. crop residues, animal dung or wood. Although their share in total fuel consumption is decreasing, these still provide 80 per cent of rural energy for cooking. Several adverse health effects are suspected to arise due to indoor pollution especially where conventional 'sigri' has not been replaced with smokeless chulha. Respiratory infection in children, chronic lung diseases, lung cancer in adults and adverse pregnancy outcomes, such as low birth weight and still birth of the child, for women exposed during pregnancy, are some of the diseases associated with indoor pollution.

Water Resources and Water Quality

8.6 India is rich in water resources, being endowed with a network of rivers and vast alluvial basins to hold groundwater. Besides, India is blessed with snow cover in the Himalayan range which can meet a variety of water requirements of the country. However, with the rapid increase in the population of the country and the need to meet the increasing demands of irrigation, human and industrial consumption, the available water resources in many parts of the country are getting depleted and the water quality has deteriorated. In India, water pollution comes from three main sources: domestic sewage, industrial effluents and run-off from agriculture.

8.7 The most significant environmental problem and threat to public health in both rural and urban India is inadequate access to clean drinking water and sanitation facilities. Almost all the surface water sources are contaminated and unfit for human consumption. The diseases commonly caused by contaminated water are diarrhoea, trachoma, intestinal worms, hepatitis etc. Many of the rivers and lakes are getting contaminated from industrial effluents and agricultural run-off, with toxic chemicals and heavy metals which are hard to remove from drinking water with standard purification facilities. Even fish and shellfish in such water get contaminated and their consumption may cause diseases.

8.8 The Constitution of India has assigned the responsibility of protecting the environment to the Union and State Governments. Environmental protection laws have been enacted under the Environment (Protection) Act, 1986; the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974. The Environmental (Protection) Act, 1986 has empowered the Central Pollution Control Board (CPCB) to lay down and maintain the ambient air quality and water quality standards, to demand information regarding effluent emissions, to shut down polluting activities and to prevent discharges of effluent and sewage. Although these regulations give the CPCB and its State-level counterparts broad powers to control the problem of air and water pollution, the enforcement has been weak.

Solid Wastes and Hazardous Chemicals

8.9 There has been a significant increase in the generation of domestic, urban and industrial wastes in the last few decades. This is largely the result of rapid population growth and industrialisation. The per capita solid waste generated is 0.20 tonnes in Mumbai, 0.44 tonnes in Delhi and 0.29 tonnes in Chennai. Although a major part of the waste generated is

non-hazardous, substantial quantities of hazardous waste is also generated. The growth of chemical industries has resulted in the extensive use of chemicals, which release huge quantities of wastes into the environment in the form of solids, liquids and gases. A substantial amount of these wastes are potentially hazardous to the environment. The leaching of hazardous wastes at the dumping sites is a common feature. This results in the contamination of surface and groundwater supply and is a potential risk to human health. Effective control of hazardous wastes is of paramount importance for the maintenance of health, environmental protection and natural resource management.

8.10 Hospital wastes being generated by mushroom growth of nursing homes pose a special risk and has the potential to take epidemic form.

8.11 In view of the proliferation of the chemical industry and the significant increase in the hazardous waste generation, the Government of India framed the Hazardous Wastes (Management and Handling) Rules, 1989. Under these Rules, it is mandatory for the hazardous waste generators to provide information on the quantity and type of hazardous wastes produced.

Land Degradation and Soil Loss

8.12 Soil erosion is the most serious cause of land degradation. Estimates show that around 130 million hectares of land (45% of total geographical area) is affected by serious soil erosion through ravine and gully, cultivated waste lands, waterlogging, shifting cultivation etc. It is also estimated that India loses about 5310 million tonnes of soil annually.

8.13 The accumulation of salts and alkalinity affect the productivity of agricultural lands in arid and semi-arid regions, which are under irrigation. The magnitude of water logging in irrigated command has recently been estimated at 2.46 million hectares. Besides, 3.4 million hectares suffer from surface water stagnation. Injudicious use of canal water causes water logging and a rise in the water table, which, if left uncorrected, eventually leads to salinisation. Although irrigation and drainage should go hand in hand, the drainage aspect has not been given due attention in both major and minor irrigation projects in the country. There has been waterlogging associated with many of the large reservoirs since their inception.

8.14 Fertilisers and pesticides are important inputs for increasing agricultural production. Their use has increased significantly from the mid-60s. Over and unbalanced use of these chemicals is fraught with danger. However, fertilisers and pesticide use are concentrated in certain areas and crops. Suitable agronomic practices will be helpful in this regard. Table 8.2 and Table 8.3 show that our consumption of pesticides and fertilisers is much below than that of the neighbouring countries.

TABLE 8.2
TRENDS IN THE CONSUMPTION OF CHEMICAL FERTILISERS IN SELECTED ASIAN COUNTRIES

Country	Use of Chemical Fertilisers per hectare of arable land (kg/ha)	
	1970-71	1991-92
Bangladesh	15.7	109.8
Bhutan	0.8	0.8
India	13.7	75.2
Nepal	2.7	27.2
Pakistan	14.6	88.9
Sri Lanka	55.5	93.1
Philippines	28.7	54.8
China	41.0	304.3
Rep. of Korea	245.0	451.7
Japan	354.7	387.3

Source: FAO

TABLE 8.3
CONSUMPTION OF PESTICIDES IN DIFFERENT COUNTRIES

S.No.	Country	Level of consumption (kg/ha)
1.	Argentina	0.295
2.	India	0.450
3.	Turkey	0.298
4.	Indonesia	0.575
5.	U.S.A.	0.579
6.	Thailand	1.367
7.	Mexico	1.375
8.	Republic of Korea	6.559
9.	Japan	9.180
10.	Hungary	12.573
11.	Italy	13.355

Source : FAO

Forests, Wildlife and Bio-diversity

8.15 Forests are important for maintaining ecological balance and preserving the life supporting system of the earth. They are essential for food production, health and other aspects of human survival and sustainable development.

8.16 Indian forests constitute 2% of the world's forest area but are forced to support 12% of the world's human population and 14% of world's livestock population. This is sufficient to indicate the tremendous biotic pressure they face.

8.17 Forests in India have been shrinking for several decades owing to the pressure of population on land for competing uses, such as agriculture, irrigation and power projects, industry, roads etc. In India, forests account for about 19.27 per cent of the total land area. On the other hand, in advanced countries, the area under forests is often about a third of the total land area. There is a need to have massive reforestation programmes, control over hacking and grazing and provision of cheap fuel through alternative technologies.

8.18 The National Forest Policy (1988) stipulates that a minimum of one-third of the total land area of the country should be brought under forest or tree cover. It is envisaged that this will be achieved by involving local stakeholders like the farmers, the tribals, the women, the NGOs and the Panchayat Raj Institutions (PRIs)

8.19 Another concern relating to the state of forest resources is that of bio-diversity and extinction of species. India has a rich heritage of species and genetic strains of flora and fauna. Out of the total eighteen bio-diversity hot-spots in the world, India has two, one is the north-east Himalayas and the other is the Western Ghats. At present, India is home to several animal species that are threatened, including over 77 mammal, 22 reptiles and 55 birds and one amphibian species. For in-situ conservation of biological diversity, India has developed a network of protected areas including national parks, sanctuaries and biosphere reserves. This network, which is being progressively expanded, now covers about 4% of the total land area of the country. As a result of the amendments in 1991 to the Wildlife (Protection) Act, hunting of all species of wild life for commerce or for pleasure has been banned.

REVIEW OF THE EIGHTH FIVE YEAR PLAN

8.20 The Ministry of Environment and Forests was allocated an outlay of Rs.1200 crore for its Eighth Plan (1991-92 prices) against which the actual expenditure was Rs. 1631.90 crore (current prices). The sector wise and year wise details of outlays/expenditure is at Annexure II.

Environment

8.21 Environmental protection covers all those activities which relate to the formulation of policies and programmes for prevention and mitigation of pollution through the regulatory framework. Besides, activities which are initiated for the conservation of ecology are also included. An amount of Rs.325.00 crore was allocated for the environment sector in the Eighth Plan. The major highlights of the achievements in the environment sector during the Eighth Plan are as below.

i) Abatement of Pollution

(a) Central Pollution Control Board

8.22 The main functions of the Central Pollution Control Board are to act as regulatory agency for the prevention and control of water and air pollution by invoking, wherever necessary, the Water (Prevention and Control of Pollution) Act - 1974, the Air (Prevention and Control of Pollution) Act - 1981 and the Environmental (Protection) Act - 1986 and to supervise the work of the State Pollution Control Boards.

8.23 The major activities of the Central Pollution Control Board during the Eighth Plan included the development and expansion of laboratory facilities, management and operation of the national air and water quality network, controlling pollution at sources, river basin studies, evaluation and implementation of national standards, hazardous waste management, including preparation of an inventory of hazardous waste generating industries in different States, preparation of Zoning Atlas for siting industries in various districts of the country, development of criteria for eco-labeling of consumer products, remedial measures for vehicular pollution especially for vehicles in use in metro cities, noise pollution survey, training of personnel engaged in preventing and controlling pollution and organising nation-wide awareness programmes for prevention and control of pollution.

(b) Environment Statement (as part of Environmental Audit)

8.24 Submission of an environmental statement by the polluting units to the concerned State Pollution Control Boards has been made mandatory through a gazette notification issued under the Environment (Protection) Act - 1986. The environmental statement enables the units to take a comprehensive look at their industrial operations and facilitates an understanding of material flows and focusing on those areas where waste reduction, and consequently saving in input costs, is possible.

(c) Adoption of Clean Technologies in Small Scale Industries

8.25 This scheme seeks (a) to promote the development and adoption of clean technology, including waste re-use and recycling and (b) to link research and development with dissemination of the R & D outcome and adoption of clean technologies to prevent pollution in small scale industries. Activities relating to demonstration of already proven cleaner technologies/techniques, preparation of sector-specific manuals on waste minimisation, setting up of Waste Minimisation Circles in specific clusters of small scale industries, training and awareness programmes for the personnel in small scale industries and waste minimisation and demonstration studies in selected sectors were undertaken during the Eighth Plan.

8.26 The concept of Waste Minimisation Circles is as follows:

- i) Promotion of the concept of waste minimisation through awareness and training programmes.
- ii) Institutionalisation of waste minimisation circles among the clusters of small scale industries of the same category.
- iii) Sectoral studies on waste minimisation and demonstration in selected sectors.
- iv) Demonstration of improvement in environmental and, in turn, economic performance in a cluster of small units.
- v) Promotion of increased general environment awareness among small scale units by providing training programmes on various environmental issues.
- vi) Preparation of sector-specific manuals on waste minimisation.
- vii) Preparation of training packages on waste minimisation and organisation of training programmes for trainers and trainees.

(d) Environmental Statistics and Mapping

8.27 Under this scheme, activities relating to collection, collation and analysis of environmental data and its depiction on an atlas were carried out. Activities relating to the production of computerised maps and preparation of Zoning Atlas for siting industries in selected districts were also taken up during the Eighth Plan.

(e) World Bank Assisted Industrial Pollution Control Project (Phase-I)

8.28 This project commenced in 1991 and is expected to be completed by the end of March, 1999. It has the following two broad components:

- (i) Investment Component which provides for loan assistance to large and medium scale industries for installing pollution control equipments; establishment of common effluent treatment plants for clusters of small scale units; and establishment of demonstration projects for introducing energy and resource conservation measures in the small and medium scale sectors.
- (ii) Institutional Development Component which is designed to strengthen the monitoring and enforcement abilities of the Pollution Control Boards of four industrialised States of Gujarat, Maharashtra, Tamil Nadu and UttarPradesh. These include activities like acquisition of analytical and monitoring equipments, provision of laboratory facilities and training.

8.29 The medium and large scale industries have utilised the loan amount disbursed to them by the IDBI and ICICI. As many as 35 common effluent treatment plants have been extended financial assistance. About 100 training programmes have been conducted for the personnel of the Central and State Pollution Control Boards. A dozen demonstration projects have been approved for different technologies to be developed in various industries. The equipment for the identified State Pollution Control Boards under Phase-I have been partly procured.

(f) World Bank Assisted Industrial Pollution Prevention Project (Phase - II)

8.30 This project has been operational from 1996-97. The objectives of the project are: (i) to strengthen the capabilities in the States of Rajasthan, Madhya Pradesh, Karnataka and Andhra Pradesh, (ii) to facilitate priority investments to prevent pollution from industrial sources by encouraging the use of clean technologies, waste minimisation and resource recovery, (iii) to provide technical assistance for the adoption of modern tools of information and management, organisation of clean technology institutional network and an extension service on environmentally sound practices for small scale industries. The project has three components, namely, institutional, investment and technical.

(g) Development of Standards

8.31 Development of standards is a continuous process and they are notified as and when they are finalised for specific categories of industries.

(h) Industrial Pollution Control

8.32 The activities under this programme include:-

- Taking priority action to control industrial pollution, for which 17 categories of heavily polluting industries in the country have been identified and a time-bound programme has been given to the industries to instal necessary pollution control facilities and to comply with the prescribed standards. The follow-up action on compliance is being monitored.
- Monitoring of action points relating to restoration of environmental quality in critically polluted areas.
- Preparation of Zoning Atlas for siting industries.
- Implementation of pollution control measures in Agra-Mathura region.

(i) Pollution Monitoring and Review

8.33 The activities under this programme include:-

- Monitoring of coastal water, river water and ground water quality.
- Assessment of coastal pollution to plan for its prevention.
- Ambient air quality monitoring.
- Industrial inventory for large, medium and small scale industries.

(j) Economic Instruments

8.34 In an effort to integrate economic and environmental planning, a variety of incentives to adopt efficiency enhancing and waste minimisation practices are being promoted. This includes enhancing the cess rates on water consumption, duty concessions, accelerated depreciation on pollution abatement equipment etc. To facilitate a wider introduction of such instruments, a study has been sponsored by the Ministry of Environment & Forests to analyse the market-based instruments such as taxes/charges for industrial pollution abatement.

Economic Instruments

Government policies, in addition to regulatory mechanisms, incorporate market based economic instruments in economic and environmental planning. For example:

- Enhancement of cess rates on water consumption.
- Duty concessions on import of certain pollution control equipments.
- Accelerated depreciation on pollution abatement equipment.

ii) Environmental Impact Assessment (EIA)

8.35 The purpose of Environmental Impact Assessment is to appraise developmental projects to ensure that development takes place in harmony with environmental concerns. It also enables the project authorities to integrate environmental concerns in the project portfolio. In a way it is a preventive measure.

8.36 Other related activities carried out during the Eighth Plan included: carrying capacity studies (Doon Valley, National Capital Region), studies on improving the methodology and techniques of environmental impact assessment of development projects, training programmes, promotion of cleaner production programmes, including life cycle studies.

iii) Conservation and Survey

a) Botanical Survey of India (BSI)

8.37 About 65% of the total area of the country has been surveyed and three million herbarium specimens are in possession. During 1987-97, 106 new species were discovered by BSI. Surveys in special/fragile ecosystems like cold deserts, hot deserts, Alpine Himalayas, wetlands, mangroves and coastal areas have been undertaken. The BSI also undertook special projects such as a study on conservation and survey of rare and endangered species, all-India coordinated project on ethnobiology, floristic study of biosphere reserve areas, EIA in developmental project areas, geobotanical studies in Singhbhum and Khetri copper belts etc.

b) Zoological Survey of India (ZSI)

8.38 About 65% of the total area of the country has been surveyed. During 1987-97, 759 new species were recorded. The main activities of ZSI during the Eighth Plan were: exploration and survey of faunal resources, taxonomic and ecological studies, maintenance and development of national zoological collections, status survey of endangered species, environmental impact assessment studies, publication of Fauna of India.

c) National Museum of Natural History (NMNH)

8.39 The NMNH, New Delhi is an institution devoted to environmental education. The highlights of the Eighth Plan performance of NMNH relate to "LEARN" (Lessons on Environmental Awareness and Resources at NMNH) for the students of classes VI to XII of Delhi Schools; 'Environment Essay Competition (in Braille)' and 'Feel, Smell and Tell' for visually handicapped; and 'Know About Dinosaurs' for teenagers.

d) Bio-diversity Conservation

8.40 The scheme on Bio-diversity Conservation was initiated during 1991-92 to ensure proper coordination among various agencies concerned with the issues relating to conservation of biological diversity and to review, monitor and evolve adequate policy instruments for the same. The Convention on Biological Diversity (CBD) was signed by 168 countries, including India, during the Rio meetings. India has since ratified the Convention.

iv) Research and Development

8.41 This is a continuing scheme for the promotion of research in the multi-disciplinary aspects of environmental protection, conservation and development together with the creation of facilities and development of technical capabilities. To achieve these objectives, the research projects in the thrust areas are supported with grants-in-aid.

8.42 Under the scheme, programmes such as Man and the Biosphere Programme, Environmental Research Programme, Action-Oriented Research Programme on Eastern and Western Ghats and research projects in Climate Change are included. During the Eighth Plan, over 190 research projects in multi-disciplinary aspects were initiated. Of these, about 60 have been completed and results disseminated to the potential/interested user agencies. A Status Report on the All India Coordinated Project on Ethnobiology, documenting information of the country-wide survey concerning traditional knowledge system, use of biological resources by the tribal population and their inter-dependence, has also been published. A report on the All India Coordinated Project-III on conservation of endangered plant species has been published. A coordinated research project on 'Aerobio-pollution and Human Health' was launched to collect information, through survey, concerning air borne diseases involving 26 centres throughout the country.

8.43 Attention has also been paid to initiate studies on improving our understanding of the subject of climate change and on preparation of inventories of the greenhouse gases, which would be useful in projecting the scientific inputs for various discussions at the international level, as also to meet the requirements of the general commitments emerging out of the Framework Convention on Climate Change.

8.44 A new scheme on environmental information dissemination was launched during the Eighth Plan to ensure public participation in the programmes of environment awareness generation, control of pollution and conservation of natural resources. The scheme named as 'Paryavaran Vahini' is being implemented from 1992-93. 184 districts in various states of the country have been selected to set up 'Paryavaran Vahinis' during the Eighth Plan period.

v) Environmental Education, Training and Information

8.45 In order to encourage participation of school children in various activities related to ecological conservation and preservation of the environment a scheme namely, Eco-clubs involving school children has been launched. The objective of the Eco-clubs is not limited only to imparting environment education to school children but also includes mobilising them to participate in various environmental preservation efforts in their locality. During Eighth Plan period more than 5,000 such Eco-clubs have been set up in various schools of the country.

8.46 An Environmental Information Systems (ENVIS) was set up by the Ministry of Environment and Forests, to provide information on various subjects related to environment to decision-makers, researchers, academicians, policy planners, environmentalists, engineers and the general public. It is a decentralised system with a network of distributed subject oriented centres, ensuring integration of national efforts in environmental information, collection, collation, storage, retrieval and dissemination to all user groups. A chain of 22 such distribution centres, known as ENVIS centres, has been set up on various priority areas of environment under the scheme, by the end of Eighth Plan.

8.47 Five Centres of Excellence in the field of environmental education, ecological research, mining, environment and ornithology have been set up. These Centres provide various resource materials, training, research facilities etc., to all concerned.

8.48 As per the recommendations of the Standing Committee on Bio-resources and Environment, 37 priority areas were identified for undertaking research projects involving remote sensing technologies under a scheme of National Natural Resource Management System. Projects covering more than 18 areas have been considered by the Bio-resource Committee and sanctioned during the Eighth Plan.

8.49 Financial assistance has also been provided for the organisation of seminars/ symposia/ workshops on environment related topics of scientific interest and to provide a common platform to all professionals for sharing the up-dated knowledge on environmental-related areas.

vi) Policy and Law

8.50 The Government of India has enunciated its policy, in the form of policy statements, on Abatement of Pollution, on Forestry and National Conservation Strategy and on Conservation and Development. In addition, there are laws for protection of environment. These include Wild Life (Protection) Act-1972; Forest (Conservation) Act-1980; Water (Prevention and Control of Pollution) Act-1974; Air (Prevention and Control of Pollution) Act- 1981; Environment (Protection) Act - 1986; Public Liability (Insurance) Act-1991; and National Environment Tribunal Act- 1995. The Environment (Protection) Act - 1986 sets out the parameters under which the Ministry of Environment and Forests operates to formulate and carry out environmental policy at the national level. Underlying the policy statements is the recognition of the principle that effective management and control of natural resources requires the support and participation of the people.

8.51 During the Eighth Plan, considerable attention was given to make the pollution control laws more effective and to bring an umbrella legislation for protection of environment. A number of Central and State executive authorities have been delegated powers for effective implementation of the Environment Protection Act. The Air (Prevention and Control of Pollution) Act - 1981 and the Water (Prevention and Control of Pollution) Act - 1974 have been amended to bring certain provisions of the Acts at par with those of the Environment (Protection) Act - 1986.

8.52 The National Environment Tribunal Act - 1995, provides for strict liability for damages arising out of any accident occurring while handling any hazardous substance and for the establishment of a National Environment Tribunal for effective and expeditious disposal of cases arising from such accidents with a view to granting the relief and compensation for damages to persons, property and the environment and for matters connected therewith or incidental thereto.

vii) International Cooperation

8.53 During the Eighth Plan period, the Government of India participated in the conventions on implementing the Rio Agreements and the AGENDA-21, Montreal Protocol, Commission on Sustainable Development, Global Environment Facility.

8.54 The Indo-Canada Environment Facility, operational since 1993-94, is a commodity grant from the Canadian Government. The grant is in the form of Murate of Potash, which is sold in the Indian market and the proceeds passed on, through the Ministry of Environment and Forests, to a registered society to undertake projects on environmental protection and conservation.

8.55 India became a party to the United Nations Framework Convention on Climate Change (UNFCCC), Convention on Biological-diversity (CBD), Basel Convention on the Control of Trans-boundary Movement of Hazardous Wastes and their Disposal and Montreal Protocol on controlling the substances that deplete the Ozone layer.

viii) National River Conservation Programme

(a) Ganga Action Plan - Phase I

8.56 The Ganga Action Plan (GAP) Phase-I was launched by the Government of India in June, 1986 as a 100% Centrally Sponsored Scheme with the objective of improving the river water quality.

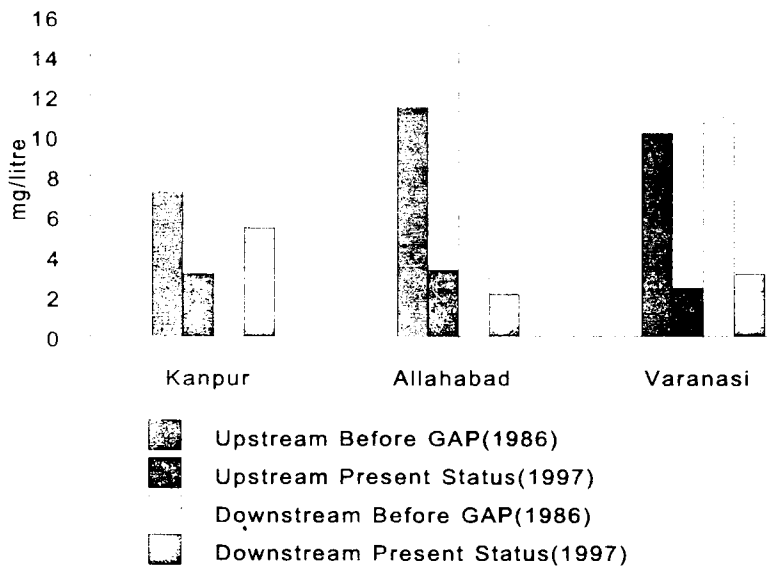
8.57 It was envisaged that industrial pollution would be tackled through the enforcement of existing regulations by municipal authorities under which effluent treatment plants would be set up by industry. Under GAP-I, interception, diversion and treatment of sewage works; electric crematoria; low-cost sanitation, and river front facilities were set up.

8.58 Out of 261 schemes of pollution abatement taken up in 25 Class-I cities along the river Ganga, 254 schemes have been completed till March, 1998 in the States of Uttar Pradesh (105 schemes), Bihar (41 schemes) and West Bengal (107). There are four, three and one schemes which are pending in the states of Bihar, West Bengal and Uttar Pradesh respectively.

8.59 The major reasons identified for the slippages have been problems in land acquisition, related litigation and contractual issues. 683 mld of sewage treatment facilities have been installed against the target of 873/882 (revised).

8.60 The scheme has been subjected to technical evaluation by four universities located on the banks of Ganga. An ex-post evaluation in the 'Benefit Cost Analysis' framework is in progress and the final report is awaited. Achievements of GAP-I are evident from Figure 1. As Biochemical Oxygen Demand (BOD) is a measure of the amount of organic pollution in water, it serves as a useful parameter for assessing water quality. Maximum success in reducing pollution in the river Ganga has been achieved in Allahabad followed by Varanasi and Kanpur.

Figure 1: Water quality under Ganga Action Plan (Phase I) in Allahabad, Varanasi and Kanpur (BOD Levels)



(b) Ganga Action Plan - Phase II

8.61 The GAP Phase II was launched during the Eighth Plan. Works on the major polluted tributaries of Ganga, namely, Yamuna, Gomti and Damodar, were taken up with the objective of improving the river water quality, as per the designated best use criteria. Works in 29 Class-I towns along the Ganga, which could not be included in the first phase were taken up in Phase-II together with works in other smaller towns along the Ganga.

8.62 The Scheme was launched as a Centrally Sponsored Scheme with equal sharing by the Central and State Government, with the operation and maintenance expenses being fully borne by the States. The Yamuna Action Plan and the Gomati Action Plan components were approved in 1993. No work was taken up on Damodar river during the Eighth Plan period. Summer average values for water quality (Dissolved Oxygen, BOD) on main stem of river Ganga under GAP have been shown at Annexure III.

8.63 The approved outlay of GAP Phase II is Rs. 416.36 crore and funds to the tune of Rs. 7.34 crore have been released till 31.03.98.

(c) National River Conservation Plan (NRCP)

8.64 The NRCP, which was approved in July, 1995, envisages the coverage of 18 grossly polluted stretches of rivers in 10 States. As many as 46 towns are to be covered of which 17 are in the Southern, 11 in the Western, 7 in the Eastern and 11 in the Central part, of India. The NRCP was launched as a Centrally Sponsored Scheme with equal sharing between the Centre and the States. The total cost of the scheme has been placed at Rs.772 crore and the time-frame for its completion is 10 years. Till March 1998, a sum of Rs. 40.97 crore has been released by Government of India.

8.65 The towns are proposed to be included in NRCP (Table 8.4).

8.66 The GAP-II and the National River Conservation Plan were approved as Centrally Sponsored Scheme with a sharing cost of 50:50. Through a Government resolution dated 5.12.96, GAP-II was merged with NRCP to cover a total of 141 towns on 22 rivers stretches in 14 States.

8.67 The Operations & Maintenance (O&M) under the NRCP has not been found to be satisfactory. Lack of interest by the local bodies in the maintenance of Sewage system etc. and problems of uninterrupted power supply to Sewage Treatment Plants, Pumping Stations, Electric Crematoria etc. have been found to be the main causes. Unless O&M facilities created are improved, optimum benefits of the project cannot be achieved.

TABLE 8.4 TOWNS TO BE COVERED UNDER NRCP

Sl No	Town	Sl No	Town	Sl No	Town
Andhra Pradesh		Madhya Pradesh		34	Chandbali
1	Mancharial	17	Indore	35	Dharamshala
2	Bhadrachalam	18	Ujjain	Punjab	
3	Rajamundri	19	Burhanpur	36	Ludhiana
4	Ramagundam	20	Mandideep	37	Jallundhar
Bihar		21	Bhopal	38	Phagwara
5	Ranchi	22	Vidisha	39	Phillaur
6	Jamshedpur	23	Jabalpur	Rajasthan	
7	Ghatshila	24	Seoni	40	Kota
Gujarat		25	Chapara	41	Keshoraipatta
8	Ahmedabad	26	Keolari	Tamil Nadu	
Karnataka		27	Nagda	42	Kumarapalayam
9	Shimoga	Maharashtra		43	Bhawani
10	Harihara	28	Karad	44	Erode
11	Bhadravati	29	Sangli	45	Trichy
12	Davanagere	30	Nasik	46	Palli Palayam
13	K R Nagar	31	Nanded		
14	Kollegal	Orissa			
15	Nanjangud	32	Cuttack		
16	Sri Rangapat	33	Talcher		

Forests

8.68 According to the State of Forest Report 1997, which is the sixth assessment of the forest cover of India based on visual and digital interpretation of the satellite data pertaining to the period 1993-95 on a scale of 1:250,000, the forest cover of the country is only 19.27% of the total geographic area. Goa, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Maharashtra, Mizoram, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal have shown an improvement in the forest cover, whereas Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Kerala, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Orissa, and the Union Territories of Andaman & Nicobar Islands have shown a further deterioration of forest cover. In Delhi, Chandigarh, Dadra and Nagar Haveli, and Daman and Diu, there was no change in forest cover during the period of last two assessments. On an aggregate basis, there has been a reduction in the forest cover to the extent of 5,482 sq. km between the two assessments of 1995 and 1997. Of the greatest concern is the picture in the North Eastern States where a reduction to the extent of 783 sq. km in the forest cover was reflected in the 1995 assessment. The 1997 assessment shows a somewhat better situation.

as the loss of forest cover in this region has come down to 316 sq.km. Mizoram and Tripura have, in fact, shown gain in forest cover between two assessments. Extent of state-wise forest cover under different assessments (1987-95) is shown at Annexure IV and that of 1997 assessment at Annexure V.

8.69 Under forest protection and regeneration, the scheme 'Association of Scheduled Tribes and Rural Poor in Regeneration of Degraded Forests' was taken up on pilot basis with 37 projects in nine States namely Andhra Pradesh, Bihar, Gujarat, Madhya Pradesh, Maharashtra, Rajasthan, Orissa, West Bengal and Karnataka.

8.70 During the Eighth Plan, a Centrally Sponsored Scheme, 'Modern Forest Fire Control Methods in India' was continued. The scheme was launched during the Seventh Plan with UNDP assistance as a pilot project in Uttar Pradesh and Maharashtra mainly to protect forests from fire. The Project was implemented in 13 states during Eighth Plan.

Afforestation & Eco-Development

A). Afforestation on degraded forests

8.71 The National Afforestation and Eco-Development Board was created at the time of the bifurcation of the erstwhile National Wasteland Development Board, then under the Ministry of Environment and Forests in July, 1992. Areas adjoining forests and fragile eco-systems were brought under the National Afforestation and Eco-Development Board (NAEB), while other wastelands were covered under the newly created National Wasteland Development Board in the Department of Wasteland Development in the Ministry of Rural Areas and Employment. An outlay of Rs. 461 crore was finally allocated to the NAEB for reclaiming degraded forest area adjoining forests during the Eighth Plan. The schemes of NAEB are:

(i) Integrated Afforestation and Eco-Development Projects (IAEPS) Scheme

8.72 This is intended to promote afforestation and development of degraded forests by adopting an integrated watershed-based approach. This 100% Centrally Sponsored Scheme envisages micro-plan preparation by a multi-disciplinary team in consultation with the local people. During the Eighth Plan period under this scheme an area of about 2,89,917 ha. was covered with a total expenditure of Rs. 203.12 crore.

(ii) Fuelwood and Fodder Project Scheme

8.73 This is meant to augment the production of fuelwood and fodder in 229 identified fuelwood deficient districts of the country to meet the needs of the communities. The cost of raising the plantations of fuelwood and fodder is shared equally between the Central and the State Governments. Under this scheme an area of about 3,87,216 ha. was covered with a total expenditure (central assistance component) of Rs.154.19 crore during the Eighth Plan period.

(iii) Non-Timber Forest Produce Scheme

8.74 The scheme provided for financial assistance to State Governments for increasing the production of Non-Timber Forest Produce (NTFP), including medicinal plants by raising plantations. This 100% Centrally Sponsored Scheme has a focus on creation of NTFP plantation assets in tribal areas. During the Eighth Plan period an area of about 1,06,170 ha. was covered with a total expenditure of Rs. 56.47 crore under this scheme.

(iv) Grants-in-Aid Scheme

8.75 Promotion of people's participation in afforestation activities is a mandate of the NAEB. Under this scheme, non-governmental organisations (NGOs) are assisted financially for taking up afforestation and tree planting in public and private wastelands adjoining forest areas and building upon people's movement for afforestation. A total of 338 projects were sanctioned and Rs. 7.51 crore were released to voluntary agencies during Eighth Plan period.

(v) Seed Development Scheme

8.76 Developing facilities for collection, testing, certification, storage and use of quality seeds for afforestation purposes is the aim of this scheme. The scheme also aims at establishing seed certification protocol in the long-run, which would ultimately increase the productivity of forests. Under this scheme a total amount of Rs. 7.80 crore was released to States/UTs during Eighth Plan period.

(vi) Scheme of Aerial Seeding

8.77 A Centrally Sponsored Scheme of aerial seeding, which was started on a pilot basis in 1988-89 with 100% central assistance, continued during the initial years of Eighth Plan period. The objective of the scheme was to study the effectiveness of aerial seeding technique of afforestation for regenerating/revegetating difficult and inaccessible areas like ravines, hills/mountains, desert areas etc. However, this scheme was discontinued after 1993-94 on the basis of technical report of Indian Council of Forest Research and Education (ICFRE). The ICFRE advised that they were not aware of any technologies which make the seed penetrate in highly degraded and compacted soils on which better results were possible manually. In two years (1992-94) of its implementation during the Eighth Plan, an amount of Rs. 2.49 crore were spent and an area of 37,320 ha. was covered.

Afforestation under 20-Point Programme

8.78 NAEB, in Ministry of Environment and Forests, is the nodal agency for fixing targets and monitoring the achievements for afforestation and tree planting activities under point 16 of the 20-Point Programme. During the Eighth Plan period under 16 (a) (Seedling distribution) 501.07 million seedlings were distributed and under 16 (b) (area coverage) 4.56 million ha. of area was afforested bringing the total national area covered under afforestation to 7.03 million ha. The Targets/achievements of NAEB during the Eighth Plan are at Annexure VI.

8.79 A comprehensive evaluation of the following major afforestation schemes of NAEB was undertaken during the Eighth Five Year Plan by an independent and expert agency : i) Integrated Afforestation and Eco-Development Projects Scheme (IAEPS), ii) Fuelwood and Fodder Project Scheme (FFPS), iii) Non-Timber Forest Produce Scheme (NTFPS).

8.80 The main findings of the evaluation report are as follows :

- (i) Under IAEPS, the overall physical coverage vis-a-vis the area targets has been around 76%. The survival percentage has been in the range of 50-80% in most of the cases. The surviving plants have been found to be in good condition. Soil and moisture conservation measures such as contour bunding, gully plugging, trenches etc. have been given adequate attention. Lack of funds for maintenance has led to ineffective protection through cattle proof trenches, fencing etc. Social fencing has been taken up only in a few cases and found to be effective.
- (ii) Under FFPS, the overall physical coverage vis-a-vis area targets has been approximately 96%. The survival percentage has been in the range of 50-85%. The surviving plants have been found to be in good condition.
- (iii) Under NTFPS, the overall physical coverage vis-a-vis area targets has been approximately 94%. The survival percentage has been in the range of 40-70%. The surviving plants have been found to be in good condition, except in the case of medicinal plants. Lack of funds for maintenance has led to ineffective protection through fencing and cattle proof trenches etc. Hedges of thorny species and social fencing were taken up only in a few cases and found to be effective.

8.81 The main recommendations of the evaluation report are as follows:

- a) Although watershed approach has been found to be difficult to implement, the schemes should have the objectives of saturating an identified watershed.
- b) Projects should be prepared on the basis of Participatory Rural Appraisal (PRA). Formation of 'Van Suraksha Samities' / Forest Protection Committees should be taken up simultaneously.
- c) Technology development needs to be enlarged in scope. Field trials of developed technologies must be made more extensive.
- d) Orientation of the staff and their continuity in projects may be ensured for better results.
- e) Implementing Agencies must consider formation of Joint Forest Management Committees as their first responsibility in implementing the projects and no project should be prepared without taking local communities in confidence.
- f) Choice of species should be made carefully, for AOFFP projects good coppicers suited to the locality should be selected.

8.82 Based upon the above findings and recommendations the guidelines of all schemes of NAEB have been revised with emphasis on the following activities to make afforestation programmes more effective and people-oriented :

a) Joint Forest Management

8.83 People's participation in afforestation activities, popularly known as Joint Forest Management, has been made a central and integral part of all plantation projects. The project authorities will be given adequate leverage by way of 'entry point activities' and more emphasis will be given along with adequate funds for building of awareness etc. amongst communities. In the selection of the project sites, village panchayats or other village level bodies would be associated. Such village bodies and local community will be involved in project preparation, implementation and usufruct sharing.

b) Micro Planning

8.84 Emphasis on micro-planning for project implementation after full consultation with the local communities is being given. In order to involve the local community in afforestation projects, sufficient flexibility to locate sites is being allowed to the field level implementing agencies.

c) Technology Extension

8.85 Sufficient flexibility along with appropriate funds will be provided to the implementing agency for implementing improved and established new technology in the field of nurseries, plantation etc. for getting better results.

d) Monitoring and Evaluation

8.86 In order to ensure the adequacy of the joint forest management efforts and the micro planning exercises, NAEB has proposed to take up three concurrent evaluations of plantation projects instead of the existing system of two evaluations.

B). Wastelands Development

8.87 Realising the gravity of the ecological and socio-economic problems arising out of land degradation and the urgency of evolving and implementing integrated strategies for development of the vast areas of wastelands, the Government of India set up a new Department of Wastelands Development under the Ministry of Rural Development in July, 1992 with the mandate to develop non-forest wastelands. Following schemes/ programmes which are Central Sector Schemes (CS) are being implemented by the department to achieve its objectives:

(I) Integrated Wastelands Development Projects Scheme (IWDP)

8.88 This is the flagship scheme of the Department with about 90% outlay of the Department earmarked for it. The main objective of the Scheme is to take up integrated wasteland development based on village/micro-watershed plans. These plans are prepared after taking into

consideration the land capability, site condition and local needs of the people. Since 1st April, 1995 all the projects of IWDP are implemented on the basis of watershed approach, based on the guidelines of Dr. C.H. Hanumantha Rao Committee. The guidelines envisage the bottom-up approach whereby the User Groups/ Self Help Groups themselves will decide their work programme which is to be integrated at the district level. The people are involved in planning, implementation and monitoring of watershed programme.

8.89 During the Eighth Five Year Plan period, 155 integrated wasteland development projects were sanctioned at total outlay of Rs. 393.68 crore for the development of 2.84 lakh hectare of wastelands involving release of Rs. 216.16 crore.

(ii) Technology Development, Training & Extension Scheme

8.90 The main objectives of the Scheme are to establish technical data base and to provide assistance to such projects, which are required for filling the gaps existing in the present technology. The scheme aims at compilation of important technical data bases, initiated through various institutions, departments, universities, etc. for evolving suitable techniques to fill these gaps. The scheme also envisages the setting up of demonstration centres for the reclamation of problematic lands like saline, ravine, water logged etc. The scheme is implemented through Governmental agencies, Agriculture Universities, established and reputed Non-Government Organisations, public sector undertakings etc. Currently 57 projects are being implemented through various institutions. During the 8th Five Year Plan 66 projects with total investment of Rs. 8.28 crore were sanctioned under the scheme.

(iii) Grant-in-Aid Scheme

8.91 Under this scheme, 100% Central grant is made available to registered voluntary agencies, cooperatives, Mahila Mandals, Yuva Mandals and other similar organisations for undertaking work, directly or indirectly encouraging afforestation and wastelands development. The work could include actual implementation of small programmes like plantation and soil and moisture conservation, awareness raising, training and extension, organisation of the people for protection, maintenance and sharing of usufruct etc.

8.92 During the Eighth Five Year Plan 234 projects were sanctioned in favour of voluntary agencies and a sum of Rs. 13.75 crore was released to VAs for development of about 18,684ha. of degraded land.

(iv) Investment Promotional Scheme

8.93 The principal objective of this scheme is to mobilise resources from financial institutions/ banks, corporate bodies including user industries and other entrepreneurs for development of wastelands belonging to individual farmers, community/ Panchayats, institutions and Government agencies. During the Eighth Five Year Plan, the physical achievement was 91 ha. with expenditure of Rs. 1.08 crore and subsidy released was 0.21 crore.

(v) Wastelands Development Task Force

8.94 Under this scheme, a Wastelands Development Task Force was created in March, 1995 for the development of inaccessible and highly degraded ravines of Morena District in Madhya Pradesh. During the Eighth Five Year Plan an allocation of Rs. 3.5 crore was made for implementation of the scheme.

(vi) Communication

8.95 Publication of literature on Wastelands Development Programmes and preparation and distribution of short-duration films/pamphlets have been undertaken for creating general awareness.

STRATEGY FOR THE NINTH FIVE YEAR PLAN

8.96 One of the objectives of the Ninth Five Year Plan is to ensure environmental sustainability of the development process through social mobilisation and participation of people at all levels. The Ninth Plan is also based on the belief that the principal task of planning in a federal structure is to evolve a shared vision and commitment to the national objectives and development strategy. The Ninth Plan also lays greater stress on reorienting the policies than on direct intervention so as to signal and induce the various economic agents to function in a manner consistent with the national objectives.

8.97 The Ninth Plan strategy for the environment sector has been drawn in accordance with the need to develop the required measures to protect the environment in such a way as to achieve sustainable development. The Ninth Plan recognises the symbiotic relationship between the tribals and the forests and gives a special focus to the tribals and other weaker sections living in and around the forests.

8.98 A number of enabling conditions have been already created for harmonising economic growth and environmental conservation. These include the macro-economic stability, the 73rd and the 74th Constitutional Amendments and the work being undertaken in various ministries.

ENVIRONMENT

8.99 The strategy for the Ninth Plan is based on the belief that macro-economic stability is fundamental not only for economic growth but also for sound environmental management. The Ninth Plan envisages a multi-pronged strategy for sustainable development of the country. The important elements of this strategy are given in Box.

Important Elements of the Ninth Plan Strategy

- Empowering the people through information generation, dissemination and access
- Involving the Industry in both the private and the public sector.
- Integrating environment with decision making through valuation of environmental impacts; evolving market based economic instruments as an alternative to the command and control form of environmental regulation; appropriate pricing of natural resources based on their long-term marginal cost of supply; appropriate fiscal reforms and natural resource accounting.
- Evolving the rights for common property resources.
- Inter-sectoral coordination and cooperation.
- Ensuring scientific and technological inputs.
- Participation of people (particularly women) in the management and sharing of usufruct through Joint Forest Management.
- Involvement of NGOs for awareness building and as an interface between forest department and the people would be encouraged during the Ninth Plan.
- Integrated development of villages in and around forests.

FORESTS

8.100 The discipline of forestry has been traditionally identified with either ecological stability or as a source of industrial raw material, and not with the subsistence of the rural poor. Participation of people in the management and sharing of usufruct will be achieved through Joint Forest Management which will be given priority in the schemes of Ninth Plan.

8.101 Involvement of NGOs in areas of awareness building and community education and as an interface between the Forest Department and the people would be encouraged through various schemes during Ninth Plan.

8.102 Villages in and around the forests are normally with high percentage of tribals and they are crucial for the protection and development of forests. The development of these under developed villages is basic to the well being of the forests. During the Ninth Plan period due importance will be accorded to the all round development of these villages.

8.103 It has been found that many times the land records of revenue and forest departments do not reconcile and they have overlapping areas shown in their maps. Similarly, the forest area on the ground, in many cases, is not demarcated with boundary pillars etc., leading to encroachments. Survey and demarcation of existing forest area would be taken up during the Ninth Plan.

8.104 Protection and management of forests on the inter-state boundaries e.g. continuous forest patches at the tri-junction of a) Karnataka, Tamil Nadu and Kerala; b) Madhya Pradesh Andhra Pradesh and Maharashtra etc. is very important to prevent them from becoming sanctuaries for anti-social elements instead of wild-life and it will be given high priority.

8.105 Lack of training of the staff of the Forest Department in combat methods against smugglers, poachers etc. will be tackled by giving high priority to the training of the staff of the Forest Department.

8.106 Efforts will be made to take advantage of various Employment Generation Schemes of Rural Development Department to supplement funds for plantation activities.

8.107 Research, especially in the areas of seed and tree improvement, non-timber forest produce, agro-forestry, alternatives of timber, value addition to the various forest products etc. is basic to any scientific management of forests. Indian Council of Forestry Research and Education, as an umbrella organisation, will try to concentrate on these areas.

8.108 Despite the fact that the women have greater stake and dependence on forests than men, in day to day life, empowering women has not reached the desired level. During the Ninth Plan period, with its emphasis on Joint Forest Management, efforts will be made to empower the women by ensuring their involvement from micro-planning stage to implementation and usufruct sharing.

8.109 During the Ninth Plan period welfare of staff of forest department will be given due priority.

PROGRAMMES FOR THE NINTH FIVE YEAR PLAN

8.110 Environmental protection requires both preventive and curative measures. The strategy for environmental protection in the Ninth Five Year Plan relies much more on initiatives and interventions through policies and programmes of different sectors, notably, Health and Family Welfare, Transport, Rural Development, Energy, Agriculture, Fertilisers & Chemicals, Urban Development and Education. The underlying logic is that curative treatment should come only as the last resort, the primary emphasis being placed on the preventive approach.

8.111 Energy sector is a major polluter. In order to minimise its adverse impact on environment a number of steps have been taken. All major power projects are subjected to an environmental impact assessment. Environmental clearance is granted to them only after stipulating appropriate environment management plans. These are rigorously monitored for compliance. Relocation and rehabilitation plans are an integral component of hydro electric projects. A separate regulatory agency has been established for the nuclear power plants. In the interest of transparency it is important that the annual reports of the Department of Power, the Department of Coal and the Ministry of Petroleum and Natural Gas should give a Balance Sheet of carbon di-oxide generated by their activities and counterpart sink created by them or through resources contributed by them.

8.112 The Ministry of Petroleum and Natural Gas has laid considerable stress on improving the quality of petroleum products, particularly, automotive fuels like motor spirit and high speed diesel. The important aspects of these efforts are:

(I) Phasing out lead in motor spirit

8.113 Supply of motor spirit with low lead (0.15 gm/lt.) in Delhi, Bombay, Calcutta and Chennai has begun from June 1994, in Taj Trapezium from September, 1995 and in the whole country from January, 1997.

8.114 Supply of unleaded motor spirit for cars fitted with catalytic converters has started from April 1995 in four metropolitan cities and Taj Trapezium. This will be effected in all State and Union Territory capitals from December 1998 and throughout the country from April 2000.

8.115 In order to meet the low lead specifications, Catalytic Reformer Units have already been installed at Barauni and Digboi refineries and are being installed at Mathura Refinery at an estimated cost of about Rs.900 crore.

(II) Improvement in quality of high speed diesel (HSD)

8.116 As regards HSD, a Plan has been prepared to reduce the levels of sulphur from the present 1% to 0.25% in a phased manner as indicated below:-

- Supply of diesel with 0.5% wt. 'S' max. to four metropolitan cities, i.e. Delhi, Mumbai, Calcutta and Chennai and Taj Trapezium from 1-4-1996.
- Supply of diesel with 0.25% 'S' max. in Taj Trapezium from 1-9-1996.
- Supply of diesel with 0.25% 'S' max. throughout the country by 1-4-1999.

8.117 Similarly, improvement in octane number, total sediments, distillation recovery etc. have been proposed. The investment for the product quality improvements in the refineries during the Ninth Plan is projected at about Rs.8000 crore.

8.118 In line with the objectives enshrined in Article 48-A of the Constitution, the new National Mineral Policy, 1993 for non-fuel and non-atomic minerals, prohibits mining operations in identified ecologically fragile and biologically rich areas. The strip mining in forest areas is also to be avoided, as far as possible. The latter could be permitted only when accompanied by a comprehensive time-bound reclamation programme. The policy states further that no mining lease would be granted to any party, private or public, without a proper mining plan, containing the environmental management plan approved and enforced by statutory authorities. The environmental management plan should have adequate measures for minimising the environmental damage, for restoration of mined areas and for planting of trees in accordance with the prescribed norms.

8.119 The Ninth Plan has chalked out issue-specific programmes, area-specific programmes and sector-specific programmes. The core items of these programmes comprise: involvement of people; strengthening of the surveillance and monitoring system; preparation of state of environment reports at the all - India, State and district levels;

graduation from environmental impact assessment to economic impact assessment; introduction of valuation and environmental economics and natural resource accounting.

Issue-Specific Programmes

(i) People's Involvement and Role of Information

8.120 A challenging task is mobilisation and involvement, of the people in environmental protection. Environmental protection is not the sole responsibility of the Government. All sections of the society have to participate in this national endeavour.

8.121 The Ninth Plan has already had an auspicious beginning in this regard in the sense that through an amendment to the notification relating to environment impact assessment, a provision has been made for the process of public hearing. All important developmental activities, covered by the EIA Notification dated 27-1-1994, are covered by this amendment, which provides that only after the issue of a Press Notification regarding the intention to set up such a project and the due process of public hearing, and only after giving sufficient notice, any major activity can be undertaken. It is also significant that even under the delegation of powers to the State Governments under Environmental Protection Act, the provision of public hearing is applicable.

8.122 Citizens Monitoring Committees are being established under the National River Conservation Programme. Specific schemes have been launched for involving people from all cross-sections of life from students to retired soldiers in the vast task of environmental protection. Public is becoming restive and is eager to get involved through information dissemination and 'right to access' and by forcing transparency to the regulatory process.

8.123 People at large and the university system, particularly the science, engineering, and medical faculties, will be involved in monitoring and enforcement work. A lot more needs to be done and perhaps, this could save resources which would otherwise have been spent on creating new assets which remain unutilised/underutilised for several reasons including resource constraints.

8.124 Attitudinal changes are fundamental to protection of environment. Informed citizenry can play an immensely positive role in the area of abatement of pollution. When fully aware of the adverse impact of polluted environment, the citizens can act in such a manner as to minimise the effect of pollution on their health and property. If air and water resources are unfit and do not meet the acceptable standards, the people living in adjoining areas, if adequately informed, will take necessary precautions. If they have an alternative they may not use the polluted resources. Or they may undertake necessary steps, if that is within their capability, to depollute before using them. They may also possibly organise themselves and force the responsible agencies and legislators to take appropriate action. If suitable action is not forthcoming they may, under the laws of the land, even file public interest litigation. Thus, informed citizens can achieve what even regulators and enforcing agencies cannot. Information dissemination, right to access and involvement of enlightened citizenry are fundamental to any democratic process. Given the weaknesses in enforcing environmental standards, perhaps this is the only alternative available.

8.125 Information is also useful for conducting research. For instance, at present there is hardly any epidemiological research linking the levels of pollution to morbidity and mortality. This information is partly generated by several monitoring stations located across the length and breadth of the country. Data gaps need to be identified and filled up. Information is a key resource which people require for getting organised and involved.

(ii) Strengthening of the Surveillance and Monitoring System

8.126 A wide network of air and water quality monitoring stations has been established under National Ambient Air Quality Management, Global Environmental Monitoring System and other programmes. This needs to be meaningfully utilised. Considering the size of the country and the changing nature of the problems, the surveillance system needs to be established at least for each district. Other research and academic institutions and even the industry, already having the capabilities for collection and analysis of data and information, need to be involved in this work. This will not only be the most cost-effective method but also an important step for involving people and institutions. Secondly, the scope of surveillance needs to be broadened by including more technical parameters: toxic chemicals, pesticides, heavy metals etc. Bio-monitoring should also be taken up. Health and environmental surveillance and monitoring system should be integrated with other organisations like Central Ground Water Board.

(iii) State of Environment Report

8.127 The objective of providing an acceptable standard of natural environment is unexceptionable. Unfortunately, in the absence of any aggregate picture in the form of a systematic State of Environment Report State-wise and on an all-India basis, it is difficult to give satisfactory answers on a macro level, to questions such as: Where do we stand today vis-a-vis our objective? In which direction are we heading and at what rate? The Ninth Plan envisages the preparation of such State of Environment Reports by the State Governments.

(iv) Integrating Environmental concerns with Decision Making

8.128 Similarly, the other important lacuna relates to the magnitude of different environmental issues like water pollution, air pollution, soil degradation etc. These have both physical and economic dimensions. In the absence of any idea about these two, especially the latter, any attempt at resource allocation and inter-se prioritisation would appear arbitrary and subjective.

8.129 In order to lend a reasonable degree of rationality to the process of policy formulation and decision making, the Ninth Plan lays specific emphasis on epidemiological studies and environmental economics. It is hoped that this would facilitate integration of environmental concern with the decision making process.

(v) Natural Resource Accounting

8.130 The use of Gross National Product (GNP) or Gross Domestic Product (GDP) alone as an indicator of human welfare and well-being is no longer considered satisfactory. It does not reflect the sustainable income of the country in the sense of the flow of goods and the

services that the economy could generate without reducing its productive capacity. Besides, it does not allow for the cost of damage to environment and the resultant cost/suffering imposed on different sections of the society.

8.131 Other serious limitations of GNP as an indicator arise from the exclusion of non-marketed goods and services from its purview and the treatment of environmentally degrading, undesirable activities and other costs of repairing adverse environmental damages, as income, whereas these should be treated as costs.

8.132 In spite of these shortcomings, if these are used to measure the changes that occur in the economy over time or the relative importance of different sectors at any one point of time or the difference in the economic situation among regions or countries, it is because there is no satisfactory alternative. The current debate is also with regard to the question as to whether a single measure of human development and welfare can be evolved or whether there should be a satellite system of accounts over and above the existing system. A number of attempts have been made for incorporation of natural resource accounts into income accounts. In order to make a beginning, an expert group under the Ministry of Planning and Programme Implementation (Department of Statistics - CSO) has been constituted for giving technical directions including finalisation of the methodology to be followed for the preparation of natural resource accounting both in physical and economic terms to integrate with the State Domestic Product.

Area-Specific Programmes

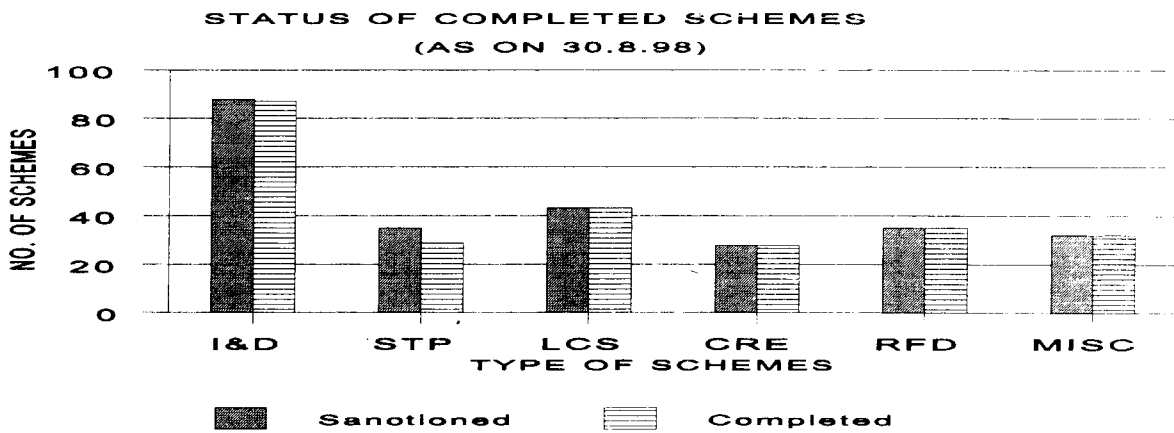
(i) National River Conservation Programme (NRCP)

8.133 The NRCP was started during the Eighth Five Year Plan as a Centrally Sponsored Scheme with 50 percent Central assistance. However, it was realised that many States were not in a position to match it with their own funds to the extent of 50 percent. Therefore, during the Ninth Plan period, it has been decided to make it 100% Centrally Sponsored Scheme. This includes Ganga Action Plan Phase I and Phase II. Besides, 26 towns in ten States will be covered. It is important that the lessons learnt from Ganga Action Plan Phase-I will prevent similar mistakes from recurring. Municipalities and elected bodies in major towns need to be considerably strengthened financially to enable them to implement the schemes of urban sanitation, including underground sewerage, sewage diversion and treatment. It has often been noticed that requirements for operation and maintenance are not provided for sufficiently, as a result of which the entire effort and investment are rendered infructuous. The State Governments need to make adequate provisions for operation and maintenance of these assets. It is important to note that river pollution cannot be tackled unless a minimum flow of water is maintained in the rivers.

National River Conservation Plan (NRCP)

Covers Ganga Action Plan (GAP)- Phase I, Phase II and National River Conservation Plan. GAP-I covers the cleaning of Ganga along 25 class I towns. The total cost of the plan is Rs 462.04 crore. It is to be completed by March 1999.

Under GAP-I specific schemes for improvement in the river water quality are listed below. 97% of the sanctioned schemes have been completed (Sanctioned 261- Completed 254).



I&D: INTERCEPTION & DIVERSION STP: SEWAGE TREATMENT PLANT
 LCS: LOW COST SANITATION CRE: ELECTRIC CREMATORIA
 RFD: RIVER FRONT DEVELOPMENT MISC: MISCELLANEOUS

GAP-II covers cleaning of Ganga along 59 towns of three states viz Bihar, U.P. and West Bengal, cleaning of Yamuna along 21 towns of three states viz Delhi, Haryana and U.P., cleaning of Gomti along 3 towns in one state viz U.P. and cleaning of Damodar along 12 towns in two states viz Bihar and West Bengal. The total cost of the plan is Rs 1328 crore. It is to be completed by March 1999/ Dec 2001 (for West Bengal and Damodar Action Plan).

Under NRCP 46 towns and 18 rivers of 10 states viz Andhra Pradesh, Bihar, Gujarat, Karnataka, Maharashtra, Madhya Pradesh, Orissa, Punjab, Rajasthan and Tamil Nadu are to be covered. The total cost of the plan is Rs 772.09 crore. It is to be completed by March 2005.

ii) National Lake Conservation Programme

8.134 Due to pressure of human activities, a number of lakes are shrinking or getting polluted beyond the point of recovery. Encroachments, siltation, weed infestation, discharge of domestic sewage, industrial effluents and surface run-off carrying pesticides and fertilizers from agricultural fields are among the major threats. The symptoms of pressure due to encroachment and invasion are already being experienced in the form of decrease in migratory bird population, fish and other fauna, poor water quality and prolific growth of obnoxious weeds.

8.135 On the recommendations of a National Committee under the Chairmanship of the Secretary of the Ministry of Environment & Forests, 21 urban lakes considered to be highly degraded were identified for conservation and management in 1993. Later, a committee under the Chairmanship of Shri T.N. Khoshoo prioritised 11 lakes, as shown in the Table 8.5.

TABLE 8.5 LIST OF LAKES UNDER NLCP

S.No.	Name of Lake	State
1.	Dal	J & K
2.	Sukhna	Chandigarh
3.	Sagar	Madhya Pradesh
4.	Bhoj	Madhya Pradesh
5.	Nainital	Uttar Pradesh
6.	Kodai Kanal	Tamil Nadu
7.	Ooty	Tamil Nadu
8.	Udaipur	Rajasthan
9.	Rabindra Sarovar	West Bengal
10.	Powai	Maharashtra
11.	Hussain Sagar	Andhra Pradesh

8.136 Of these 11 lakes, the Bhoj in Bhopal has been covered by the OECF funding and the project is already in progress. The remaining 10 lakes are proposed to be covered for conservation and management under the proposed NLCP. The objective of NLCP is to arrest further degradation of lakes and to revive these water bodies to acceptable environmental standards.

(iii) Taj Trapezium

8.137 In pursuance of the suggestions made by the Honourable Supreme Court of India for a separate Plan allocation for environmental protection of Taj Mahal in the context of a Civil Writ Petition in September 1996, the Central Government has made an allocation of Rs.300crore during the Ninth Plan on a 50:50 matching basis with the State Government to cover the estimated cost of Rs.600 crore to implement various Schemes relating to uninterrupted power supply to the industrial units of Agra, construction of Gokul & Agra Barrage and improvement of drainage and sanitation in Agra city, all in the context of environmental protection of Taj.

8.138 It has been decided to provide Rs.50 crore during 1997-98 from the budget of the Ministry of Environment and Forests for the aforesaid purpose. This amount is to be placed at the disposal of the Mission Management Board, which will implement the above schemes. The Board has been set up in the State of Uttar Pradesh and will be serviced by the State Government.

8.139 The Mission Management Board will consider the schemes prepared by different departments of the U.P Government in accordance with the directions of the Hon'ble Supreme Court. The Mission Management Board will consider the schemes drawn up as above and accord sanction to them within the financial limits of expenditure allowed to them from year to year by matching contributions from the State and the Central Governments. The Mission Management Board will take necessary action for implementation of the schemes sanctioned by them. It will also monitor, review and take corrective action for smooth implementation of the sanctioned schemes.

(iv) Himalayan Region

8.140 In March 1992, an Expert Group was constituted by the Planning Commission to formulate a National Policy for the integrated development of the Himalayas. With a view to operationalising the recommendations of the expert group a Steering Committee has been constituted by the Planning Commission. Six sector-specific sub-committees have been set up under the Chief Secretaries of the States of the Himalayan region. These deal with i) Environment & Forests; ii) Agriculture & Allied Activities; iii) Industry & Industrial Infrastructure; iv) Social Sectors including Health & Family Welfare, Education; v) Transport, Communications and Tourism, and vi) Energy including Non-conventional Energy and Science & Technology. They are expected to formulate and implement appropriate schemes to protect the Himalayan ecosystem and biodiversity.

(v) Islands

8.141 With a view to recommending policies and programmes for the integrated, environmentally sustainable development of Andaman and Nicobar and the Lakshadweep groups of Islands, the Island Development Authority (IDA) has been reconstituted in August 1998. The Authority, which is chaired by the Prime Minister, also reviews periodically the progress of implementation and impact of the programmes of development. Simultaneously, the Standing Committee of the IDA has also been reconstituted under the chairmanship of the Deputy Chairman, Planning Commission.

8.142 It is recognised that the requirements of the islands are very different from those of the main land. New approaches are therefore necessary. The single most important issue with which the IDA is concerned has been : how to strike a balance between development aspirations of the Island people with the need to protect these unique and fragile eco-systems full of genetic wealth and natural beauty. In addition, the far flung and strategic locations of these Islands from defence considerations also need to be kept in mind. The various meetings of the IDA have tried to grapple with these issues in one form or the other. While the Ministry of Environment and Forests as a primary agency for conservation of environmental resources has taken, from time to time, steps such as Coastal Zone Regulation Act and Declaration of Biosphere Reserves a clear view with regard to the developmental aspect has now emerged as a result of fruitful deliberations of the Island Development Authority and its Standing Committee.

8.143 In view of their fragility and distant location, the viability of any purposeful industrial activity appears to have questionable relevance. The thrust areas have accordingly been identified as the Fisheries and the Tourism Sector. Although, other activities based on coconut, rubber, boat building and wood based industries have also been found to be suitable for encouragement, it appears that the developmental thrust on tourism alone, or in conjunction with fisheries, should meet the vital interest of employment generation in harmony with the environmental concerns. The infrastructural needs in the form of shipping services for bringing the Islands into the main-stream of national development, are also being given greater attention.

Sector-Specific Programmes

Environment

8.144 The sub-strategy under this broad head for achieving the wider purpose consists of prevention of pollution at source; encouragement, development and application of the best available feasible technological solutions, application of the "pollutor pays" principle, focus on heavily polluted areas and public participation.

(i) Strengthening the Central Pollution Control Board

8.145 The Central Pollution Control Board is the apex regulatory and enforcement agency. The programme areas for the Ninth Plan are proposed to be environmental monitoring and assessment of pollution; environmental standards and action plans; enforcement of pollution abatement programme and promotion of infrastructure and capacity upgradation programme.

8.146 Some of the highlights of the proposed activities are introduction of bio-monitoring for assessment of pollution and health of aquatic system, water quality monitoring in medium and small rivers, ground water quality monitoring, soil pollution monitoring, epidemiological studies for formulation of standards based on health considerations, environmental audit, promotion of infrastructure and capacity upgradation programme.

(ii) Industrial Pollution Control and Prevention Projects

8.147 There are two projects for industrial pollution control and prevention under the World Bank assistance. The Phase-I Project, started in late 1991, is expected to be completed by the end of March 1999. The Phase-II Project, which commenced in 1995, would be completed by 2001. Whereas the Phase-I project covered the States of U.P., Tamil Nadu, Maharashtra and Gujarat, the Phase II project relates to Andhra Pradesh, Madhya Pradesh, Karnataka and Rajasthan. Under these projects, the State Pollution Control Boards are being strengthened by providing them essential infrastructure such as equipment for laboratories and training of personnel. Other activities include demonstration projects for new technology, Common Effluent Treatment Plants (CETP) for clusters of small scale industrial units and financial assistance to various industries for installing industrial pollution control equipments.

(iii) The Common Effluent Treatment Plants (CETP)

8.148 The CETP would be an important scheme for assisting in the setting up of common facilities for clusters of small scale units for treatment and disposal of solid, liquid and gaseous waste generated by small scale units located in industrial estates/clusters. Under this scheme, the Central Government provides financial assistance to the extent of 25 per cent of the project cost with an equal share coming from the State Government and promoter's contribution of 20 per cent. The remaining 30% is provided as loan by the IDBI at a concessional rate of interest through the World Bank Loan and Credit. Assistance is provided to clusters of tanneries, textile units, chemical units, dye, and dye-intermediate units.

(iv) Adoption of Clean Technologies in Small Scale Industries

8.149 A scheme for promoting the development and adoption of clean technology including waste water re-use and re-cycling, has been formulated for small scale industries. This scheme links research and development with diffusion and adoption of pollution prevention measures. Under this scheme, activities relating to demonstration of already proven clean technologies, preparation of sector-specific manuals on waste minimisation, setting up of waste minimisation circles in specific clusters of small scale industries, training and awareness programmes for personnel in small scale industries would be undertaken.

(v) Environmental Statistics and Mapping

8.150 The Ninth Plan proposes the preparation of statistical data base and reports on the status and the trends in environmental quality with reference to air, water, soil and noise and depicting them on an Atlas. It is also proposed to prepare a Zoning Atlas for locating industries in States. Environmental statistical cells are proposed to be set up in the Central as well as the State Pollution Control Boards.

(vi) Environmental Impact Assessment and Development and Promotion of Clean Technologies

8.151 Studies on the carrying capacity status for Doon Valley, National Capital Territory, Damodar River Basin and Tapti River Estuary, initiated during the Eighth Plan, will be completed in the Ninth Plan. In addition to the work of completing the status report, it is proposed to undertake the study of the carrying capacity for Kochi region. A life cycle assessment study of the steel sector has been formulated in consultation with the steel industry for being undertaken during the Ninth Plan. With regard to development and promotion of cleaner technologies, the Ninth Plan envisages the taking up of demonstration projects for effective transfer of technologies.

(vii) Conservation and Survey

8.152 India is a mega bio-diversity country. With the signing of the Convention on Biological Diversity, India could take advantage of its bio resources, based on the principles of equitable benefit sharing, provided for in this Treaty. It is proposed to consolidate and draw upon the gains made in the past and to formulate more focussed strategies. This strategy comprises such elements as, for instance, modernisation of taxonomic surveys, creation of a national data base on bio-diversity and facilities for characterisation of bio-resources at molecular level to enable the country to lay claims to benefits, creation of capacity for bio-prospecting. Creation of new/strengthening the existing administrative infrastructure to promulgate, administer and implement the regulations governing the use of bio-resources both by the people within and outside the country and gaining access to bio-diversity resources are also envisaged as integral components of this strategy.

8.153 India is also a signatory to the UN Convention to Combat Desertification. This convention is likely to enter its implementation phase during the Ninth Plan. Therefore, steps are proposed to be taken to meet India's obligations by formulating and implementing a National Action Programme.

8.154 The scheme for promoting environmental awareness and providing non-formal environmental education through the medium of Natural History Museums to encourage meaningful public participation is proposed to be continued during the Ninth Plan.

(viii) Biosphere Reserves

8.155 The Biosphere Reserve Management Programme is intended to conserve representative ecosystems. It is aimed at providing in-situ conservation of plants, animals and micro-organisms. This emphasises the need for the conservation of the entire ecosystems of suitable size to ensure self-perpetuation and unhindered evolution of living resources.

(ix) Mangroves

8.156 The scheme on conservation and management of mangroves was initiated in 1986. The main activities under the programme are survey and identification of problems, protection and conservation measures like natural re-generation, afforestation, nursery development, education and awareness programmes and research on various aspects of mangrove ecosystems and coral reef. It is an on-going activity. Review meetings for both research projects and management action plans are periodically held to monitor the progress.

8.157 Four coral reef areas have been identified for intensive conservation and management. These include Gulf of Kutch, Gulf of Mannar, Andaman and Nicobar Islands and Lakshadweep.

(x) Wetlands

8.158 The scheme on conservation and management of wetlands was initiated in 1987 with a view to laying down policy guidelines, taking up priority wetlands for intensive conservation measures, for monitoring the implementation of the programme of conservation, management and research and to prepare an inventory of Indian wetlands.

8.159 The main activities under the programme are data collection and survey, identification of the problems, wetlands mapping, landscape planning, hydrology, control of encroachments, eutrophication abatement, aquatic weed control, wildlife conservation, fisheries development, environmental awareness and research on various aspects of wetlands processes and functioning of these ecosystems. This is an ongoing activity. Reviews are periodically carried out to monitor the progress of work both under the research projects and the management action plans.

(xi) Assistance to Botanical Gardens

8.160 This is an ongoing activity. An expert group screens and examines the proposals. In order to help conserve important representative eco-systems with a view to ensuring self-perpetuation and unhindered resolution of the living resources, 14 potential sites in the country have been identified for being designated as bio-sphere reserves. It is proposed that the Management Action Plans for these bio-spheres would be prepared and put into implementation. Eco-development in the buffer zone area is proposed to be strengthened to ensure people's participation for protection and conservation of the core zone area.

(xii) Bio-diversity Conservation

8.161 With the advent of the Convention on Biological Diversity, the important issues that have emerged are those pertaining to (a) sovereignty of a nation over biological resources; (b) provision of access to genetic resources through prior informed consent based on mutually agreed terms; (c) fair and equitable sharing of benefits arising from the utilisation of genetic resources; (d) access to, and transfer of, technology on concessional and preferential terms, including the technology protected by patents and other intellectual property rights and (e) the rights of the local communities to equitable sharing of benefits, arising from utilisation of their knowledge and practices. These issues have to be viewed from two perspectives - national requirement and actions; and international negotiation needs, commitments and actions. The need for a comprehensive legislation has been fully recognised and the process of drafting the same has commenced. The legislation will need to fully internalise the strengths and opportunities built in the Convention on Biological Diversity by the bio-diversity rich, developing countries. At the international level, the negotiations on this issue are expected to continue for some more time. It is expected that at the end of these negotiations an enabling environment would be created for the countries of origin to derive benefits from the use of their knowledge and resources, as provided for in the Convention. It is essential to safeguard the country's interests in these negotiations for meeting the challenges at the national and international levels. It is proposed to introduce new activities for building institutional capacity for bio-diversity utilisation, characterisation of biological resources at molecular level, protection of sacred groves and conservation of medicinal plants. A separate bio-diversity cell is proposed to be set up in the Ministry of Environment and Forests in the Ninth Plan. In order to realise the potential of India's bio-diversity, the building up of the institutional capacity for bio-diversity utilisation and the establishment of in-situ and ex-situ conservation areas for medicinal plants and endangered species are important pre-requisites.

8.162 The Department of Agriculture & Cooperation is in the process of finalising a legislation relating to sui-generis system for the protection of plant varieties. The objectives of the proposed legislation are:

- To promote the availability of high quality seeds and planting materials with a broad and diverse genetic base, keeping in view our diversified agro-climatic conditions and having regard to food security, protection of human and animal health and safeguarding of environment.

- To stimulate research and development in the formal and informal, public and private, sectors for new varietal development.
- To promote diffusion of new varieties to farmers through the development of seed industry.
- To recognise and provide protection to farmer-varieties, land-races and extant-varieties and ensure adequate returns to the breeders including farmer-breeders and public sector breeders.
- To recognise the rights of farmers as breeders, conservators, cultivators and seed producers.
- To promote the rights of researchers and ensure their access to all biological materials for a strong and effective breeding programme.

(xiii) Research and Eco-generation

8.163 Ecological task forces, comprising ex-servicemen, are deployed in remote and difficult areas to undertake restoration of degraded eco-systems through afforestation, soil conservation and water resource management techniques. The scheme also serves the important purpose of rehabilitation of the ex-servicemen in productive activities. At present, these ecological task forces are operational at Dehradun and Pithoragarh (U.P.); Jaisalmer (Rajasthan); and Sambha (J&K). It is proposed that these battalions will move from one area of operation to another, after achievement of the targets, in consultation with the State Governments.

(xiv) Environmental Education, Training and Information

8.164 Under this broad head, it is proposed to continue to provide grant-in-aid to professional societies and NGOs for developing programmes in the areas of environmental education, wild life and ecology. The Ninth Plan also envisages the strengthening of the ENVIS Centres in the priority areas. A link would also be provided with the Internet. The Centres of Excellence in the field of environmental education, ecological sciences, mining, environment and ornithology and natural history would be continued.

(xv) Policy and Law

8.165 Grants are released to the State Pollution Control Boards and the Department of Environment of the State Governments with the objective of strengthening their technical capabilities. Due to various decisions of the Supreme Court and the High Courts, the responsibilities and commitments of the State Pollution Control Boards are increasing. A comprehensive legislation is proposed during the Ninth Plan by adopting a cross medium approach; removing the multiplicity of legislation and agencies, besides removing the overlapping and ambiguous policies currently in vogue. The labeling of environmental friendly products by granting ECOMARK helps in pollution abatement. This important activity would be considerably supported during the Ninth Plan.

(xvi) **The National Environment Tribunal Act, 1995**

8.166 The National Environment Tribunal Act, 1995 has already come into effect. The Principal Bench of the Tribunal will be located at New Delhi. The supporting infrastructure for this Tribunal will be provided during the Ninth Plan.

(xvii) **International Cooperation**

8.167 In pursuance of the Environment Action Programme 1993, the World Bank has initiated a project for environment management capacity building. The main components of the project are: environmental economics, environmental indicators, environmental law, environmental awareness and strengthening of environmental protection programmes. This project will be implemented through the Ministry of Environment and Forests in cooperation with the Department of Ocean Development and the Government of Gujarat. A special emphasis is being placed on Gujarat because the State is not only one of the fastest growing industrial regions of the country but is also expected to have high levels of pollution, judged by the way the industries are making a headway in the State.

8.168 With the assistance of the Japanese Government, studies are proposed to be carried out in Surat and Delhi for the formulation of a project, specifically addressed to the concerns in the areas of air, water quality and solid waste management. It is also proposed to prepare an Action Plan for regenerating the institutional structures governing urban environmental management and for identification of cost-effective technology options for improving the delivery of environmental services.

Forestry & Wildlife and Afforestation

8.169 The programmes/schemes of Ninth Five Year Plan are generally similar to those taken up during the Eighth Plan, such as Integrated Afforestation and Eco-Development Project, Fuelwood and Fodder Project Scheme, Non-Timber Forest Produce Scheme, Grants-in-Aid Scheme Seed Development Scheme etc. with greater focus and improved implementation on the basis of the experience gained during Eighth Plan. The Planning Commission had set up a Working Group to examine the prospects of leasing out of degraded forest lands to the private entrepreneurs/Forest Corporations. The main term of reference of the Working Group was to assess the economic, social and environmental feasibility of leasing or otherwise making degraded forest land available to the private entrepreneurs/Forest Corporations. The Working Group has submitted its report and has not recommended leasing of forest land to the private entrepreneurs either directly or indirectly through forest corporations. The main reasons for not recommending the use of government forests to private industry are as follows:

- Degraded forest lands leased out to industry would deprive a large populace which is dependant on these lands for their fuelwood and fodder needs
- It will be against the interest of the farmers who wish to supply wood to industry.
- The proposal would be against the National Forest Policy (1988), the Forest Conservation Act (1980), and the Provisions of Panchayats (Extension to the Scheduled Areas) Act, 1996.

- Paper and other industries consume only 10% of the raw material from forests. Leasing of forest lands to these industries will adversely affect other sectors which are dependent on forests for raw materials.
- Industries will prefer to go for plantations of one or two fast growing species in place of multi-layered mixed forest which results from natural regeneration.
- Industries have shown no interest in leasing the non-forest wastelands, and therefore their plan to operate on forest lands needs careful scrutiny.

Wastelands Development

8.170 The Ninth Plan envisages regeneration of wastelands to release pressures on the forests and standardisation of the definition of wastelands, assessment of their magnitude and their development by a reorientation of the policy of “open access” to “common property resources”. Clear, quantified and phased arrangements would be evolved for an equitable sharing of the usufruct. The programmes/schemes for the Wastelands Development of Ninth Five Year Plan are generally similar to those taken up during Eighth Plan such as Integrated Wastelands Development Projects Scheme, Technology Development Scheme, Training & Extension Scheme and Investment Promotional Scheme etc.

8.171 The National Forest Policy 1988 envisages massive afforestation and social forestry programmes on all denuded, degraded and unproductive lands. Approximately, 30 mha of non-forest wastelands are to be brought under tree cover. This can be done by promoting farm-forestry, community forestry and agro-forestry by government agencies, NGOs and by individuals through institutional financing. The Working Group on the prospects of leasing out degraded Forest Lands to the Private Entrepreneurs has recommended that :

- Private entrepreneurs may consider reclamation of non-forest wastelands which are far from habitation.
- Industries should establish direct contact with the farmers as provided in the new Forest Policy.
- Laws regarding ceiling of land should be liberalised to attract private entrepreneurs to take forestry projects.

STATEWISE ALLOCATIONS

8.172 The statewise approved outlays and actual expenditure for ecology & environment and for forestry sector during Eighth Plan (yearwise) are given at Annexure VII and VIII respectively.

AMBIENT AIR QUALITY STATUS IN SOME CITIES/TOWNS DURING 1998

CITY	SPM			SO ₂			NO _x		
	R	C	I	R	C	I	R	C	I
CPCB Standards	140	140	360	60.0	60.0	80.0	60.0	60.0	80.0
Delhi	284	272	305	15.2	17.4	18.6	22.4	37.3	37.5
Mumbai	340	NA	308	40.7	NA	39.1	24.9	NA	30.4
Howarah	469	570	835	12.1	53.4	46.7	37.6	64.7	67.7
Chennai	60	156	85	9.2	10.0	11.0	8.1	16.9	6.8
Hyderabad	129	187	100	6.5	7.1	6.0	23.3	48.0	15.7
Ahmedabad	293	550	305	9.0	19.3	27.9	17.7	30.9	29.4
Cochin	133	131	116	8.8	9.8	10.5	13.8	19.9	9.9
Nagpur	236	157	162	4.7	5.7	4.0	20.0	15.5	9.2
Jaipur	207	226	302	6.8	6.4	7.5	10.6	9.9	11.7
Kanpur	433	495	451	15.9	18.6	17.1	15.6	18.3	17.1

Source: Central Pollution Control Board & National Environmental Engineering Research Institute.

R = Residential
C = Commercial/Residential
I = Industrial
SPM = Suspended Particulate Matter
SO₂ = Sulphur Dioxide
NO_x = Nitrogen Oxides (as NO₂)
Unit = mg/m³

ANNEXURE 8.2

EIGHTH PLAN OUTLAY AND YEARWISE EXPENDITURE

(Rs. crore)

Sector	8th Plan Outlay Original	Total Outlay Revised	Outlay 1992-93	Expdt. 1992-93	Outlay 1993-94	Expdt. 1993- 94	Outlay 1994-95	Expdt. 1994-95	Outlay 1995-96	Expdt. 1995- 96	Outlay 1996-97	Expdt. 1996-97	Total Expdt.
Enviro nment	325.00	402.00	48.00	45.09	70.00	71.15	79.00	103.52	80.00	63.00	125.00	124.18	406.95
NRCD	350.00	55.00	383.00	54.19	65.00	64.91	78.00	31.34	79.00	42.09	106.00	121.53	314.07
NAEB	275.00	510.00	115.00	114.45	98.00	90.33	103.00	103.13	104.00	93.18	90.00	87.55	488.64
Forests and Wildlife	250.00	502.90	62.00	60.92	85.00	77.13	100.00	90.26	107.50	98.37	148.40	95.58	422.24
TOTAL	1200.00	1797.90	280.00	274.67	318.00	303.52	360.00	328.25	370.50	296.64	469.40	428.84	1631.90

ANNEXURE 8.3

SUMMER AVERAGE VALUES FOR WATER QUALITY ON MAIN STEM OF RIVER GANGA UNDER GANGA ACTION PLAN (GAP)

Station Name	Distance in Kms	Dissolved Oxygen (DO) [mg/l] {Acceptable limit 5 mg/l or more}											
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Rishikesh	0	8.1	8.1	7.6	6.2	7.1	6.8	8.5	9.0	9.6	9.0	8.9	8.9
Hardwar D/S	30	8.1	7.7	7.6	6.3	6.9	7.1	7.7	7.2	8.8	8.4	8.4	8.3
Garhmuktes hwar	175	7.8	4.7	7.4	7.5	6.1	7.2	-	8.5	8.0	7.9	7.7	8.1
Kannuj U/S	430	7.2	7.7	6.9	7.5	7.1	7.3	7.7	7.2	8.8	8.0	8.0	7.3
Kannuj D/S	433	NA	6.5	6.7	7.5	6.1	7.1	7.1	8.4	7.2	7.8	7.9	7.5
Kanpur U/S	530	7.2	7.8	7.3	7.6	7.9	7.8	7.5	7.5	7.0	8.1	7.8	7.5
Kanpur D/S	548	6.7	6.2	3.2	5.0	4.4	5.1	5.6	5.2	4.6	6.8	6.4	5.6
Allahabad U/S	733	6.4	7.8	7.8	8.9	8.0	7.1	6.8	6.9	8.2	8.2	8.9	7.4
Allahabad D/S	743	6.6	6.7	7.4	7.9	6.9	6.4	7.6	7.2	7.4	8.2	8.5	7.6
Varanasi U/S	908	5.6	8.4	8.6	7.7	7.8	7.6	7.3	8.2	7.2	8.5	8.0	8.8

ANNEXURE 8.3 (Contd.)

SUMMER AVERAGE VALUES FOR WATER QUALITY ON MAIN STEM OF RIVER GANGA UNDER GANGA ACTION PLAN (GAP)

Varanasi D/S	916	5.9	8.6	8.1	7.5	7.2	6.8	7.1	7.6	6.8	8.0	7.7	8.7
Patna U/S	1188	8.4	8.5	7.9	8.0	7.7	8.1	8.1	8.2	7.0	6.8	7.3	7.5
Patna D/S	1198	8.1	8.7	7.5	8.1	7.5	7.4	8.0	8.0	7.2	6.9	7.0	7.1
Rajmahal	1508	7.8	8.1	7.7	8.0	7.8	7.5	8.1	8.5	7.6	7.6	7.3	7.2
Palta	2050	NA	7.3	6.5	7.2	6.8	7.3	7.4	7.1	6.8	7.6	6.6	6.5
Uluberia	2500	NA	5.8	5.8	6.3	6.4	5.9	6.9	6.1	6.8	6.7	5.5	5.1

Station Name	Distance in Kms	Biochemical Oxygen Demand (BOD) [mg/l] {Acceptable limit less than 3 mg/l}											
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Rishikesh	0	1.7	2.8	3.4	1.8	1.5	1.1	1.2	1.3	2.0	1.5	1.0	1.1
Hardwar D/S	30	1.8	3.9	3.5	1.9	1.8	1.1	2.0	1.4	2.1	1.7	1.1	1.8
Garhmuktes hwar	175	2.2	2.7	4.9	4.5	3.4	1.6	NA	1.6	2.5	2.4	1.5	1.5

Annexure 8.3 (Concl.)

Kannuj U/S	430	5.5	2.7	2.2	1.0	2.6	NA	2.1	2.3	2.7	2.4	2.9	3.4
Kannuj D/S	433	NA	5.1	5.6	1.1	3.0	3.0	2.7	2.5	3.0	3.2	3.2	3.7
Kanpur U/S	530	7.2	2.9	1.8	1.1	2.7	1.5	1.7	1.9	5.0	2.0	2.8	3.1
Kanpur D/S	548	8.6	9.7	13.4	3.5	3.5	65.8	25.0	24.5	8.5	5.5	4.1	5.4
Allahabad U/S	733	11.4	7.0	2.8	2.6	2.6	2.3	2.0	1.8	2.3	4.5	2.5	3.3
Allahabad D/S	743	15.5	8.2	3.1	2.3	2.0	1.7	1.9	1.9	3.6	3.2	3.3	2.4
Varanasi U/S	908	10.1	4.1	3.3	3.0	2.6	1.2	0.9	0.8	1.8	2.6	2.2	3.1
Varanasi D/S	916	10.6	4.8	4.3	4.0	5.9	1.9	1.3	1.0	2.9	1.4	2.3	2.0
Patna U/S	1188	2.0	1.9	2.0	0.4	0.3	1.4	1.2	1.2	1.6	1.5	2.0	1.3
Patna D/S	1198	2.2	2.1	2.2	0.4	0.3	0.9	1.6	1.5	1.6	1.4	1.6	1.4
Rajmahal	1508	1.8	1.6	2.0	0.2	0.3	1.0	0.6	0.7	1.9	1.7	1.3	2.1
Palta	2050	NA	1.0	1.3	1.0	0.9	0.8	1.0	0.9	2.5	2.1	1.6	2.4
Uluberia	2500	NA	1.1	1.1	0.9	1.0	0.8	1.0	0.9	3.2	2.8	2.0	NA

Mean Value for the months of March to June when the temperatures are high and flows are low.

ANNEXURE 8.4

Revised forest cover in different assessment (1987 to 1995) after incorporating interpretational corrections (Sq. km)

	1987 Assessment		1989 Assessment		1991 Assessment		1993 Assessment		1995 Assessment	
	Original estimate	Revised estimate	Original estimate	Revised estimate	Original estimate	Revised estimate	Original estimate	Revised estimate	Original estimate	Revised estimate
Andhra Pradesh	50,194	49,573	47,911	47,290	47,911	47,290	47,256	47,256	47,112	47,112
Arunachal Pradesh	60,500	64,132	68,763	69,002	68,518	68,757	68,661	68,661	68,621	68,621
Assam	26,388	25,160	26,058	24,832	25,977	24,751	24,508	24,508	24,061	24,061
Bihar	28,748	28,482	26,934	26,668	26,934	26,668	26,587	26,587	26,561	26,561
Delhi	15	15	22	22	22	22	22	22	26	26
Goa, Daman & Diu	1,285	1,240	1,302	1,255	1,302	1,255	1,250	1,250	1,250	1,250
Gujarat	13,570	11,991	11,670	11,921	11,656	11,907	12,044	12,044	12,320	12,320
Haryana	644	513	563	513	563	513	513	513	603	603
Himachal Pradesh	12,882	12,480	13,377	12,480	13,377	12,480	12,502	12,502	12,501	12,501
Jammu & Kashmir	20,880	20,905	20,424	20,449	20,424	20,449	20,443	20,443	20,433	20,433
Karnataka	32,264	32,268	32,100	32,104	32,195	32,199	32,343	32,343	32,382	32,382
Kerala	10,402	10,292	10,149	10,292	10,149	10,292	10,336	10,336	10,336	10,336
Madhya Pradesh	127,749	830,099	133,191	135,541	133,191	135,541	135,396	135,396	135,164	135,164
Maharashtra	47,416	45,616	44,058	44,044	44,058	44,044	43,859	43,859	43,843	43,843
Manipur	17,679	17,475	17,885	17,685	17,885	17,685	17,621	17,621	17,558	17,558

Annexure 8.4 (Concl.)

Meghalaya	16,511	16,466	15,690	15,645	15,920	15,875	15,769	15,769	15,714	15,717
Mizoram	19,092	19,084	18,178	18,170	18,861	18,853	18,697	18,697	18,576	18,576
Nagaland	14,351	14,394	14,356	14,399	14,278	14,321	14,348	14,348	14,291	14,291
Orissa	53,163	53,253	47,137	47,227	47,115	47,205	47,145	47,145	47,107	47,107
Punjab	766	943	1,161	1,338	1,161	1,343	1,343	1,343	1,342	1,342
Rajasthan	12,478	12,758	12,966	12,884	12,971	12,889	13,099	13,099	13,280	13,280
Sikkim	2,839	2,756	3,124	3,041	3,124	3,041	3,119	3,119	3,127	3,127
Tamil Nadu	18,380	17,472	17,715	16,992	17,715	16,992	17,726	17,005	17,766	17,045
Tripura	5,743	5,953	5,325	5,535	5,325	5,535	5,538	5,538	5,538	5,538
Uttar Pradesh	31,443	31,226	33,844	33,627	33,826	33,609	33,961	33,961	33,986	33,986
West Bengal	8,811	8,432	8,394	8,015	8,394	8,015	8,186	8,186	8,276	8,276
A&N Islands	7,603	7,601	7,624	7,622	7,624	7,622	7,624	7,624	7,615	7,615
Chandigarh	2	2	8	5	8	5	5	5	7	7
Dadra & N. Haveli	237	238	205	206	205	206	206	206	204	204
Pondicherry	8	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL
Grand Total	642,041	640,819	640,134	638,804	640,694	639,364	640,107	639,386	639,600	638,879

ANNEXURE 8.5

EXTENT OF DENSE FOREST, OPEN FOREST AND MANGROVE IN 1997 ASSESSMENT (sq.km)

State/UT	Dense Forest	Open Forest	Mangrove	Total Forest	Per capita (ha)
Andhra Pradesh	23,048	19,859	383	43,290	0.07
Arunachal Pradesh	54,155	14,447	--	68,602	7.93
Assam	15,548	8,276	--	23,824	0.11
Bihar	13,300	13,224	--	26,524	0.03
Delhi	16	10	--	26	NIL
Goa	995	252	5	1,252	0.11
Gujarat	6,337	5,250	991	12,578	0.03
Haryana	370	234	--	604	NIL
Himachal Pradesh	9,560	2,961	--	12,521	0.24
Jammu and Kashmir	11,020	9,420	--	20,440	0.26
Karnataka	24,854	7,546	3	32,403	0.07
Kerala	8,454	1,880	--	10,334	0.04
Madhya Pradesh	82,745	48,450	--	1,31,195	0.20
Maharashtra	23,622	22,397	124	46,143	0.06
Manipur	4,937	12,481	--	17,418	0.95
Meghalaya	4,044	11,613	--	15,657	0.88
Mizoram	4,348	14,427	--	18,775	2.72
Nagaland	3,487	10,734	--	14,221	1.18
Orissa	26,101	20,629	211	46,941	0.15
Punjab	511	876	--	1,387	0.01
Rajasthan	3,690	9,663	--	13,353	0.03
Sikkim	2,423	706	--	3,129	0.77
Tamil Nadu	8,676	8,367	21	17,064	0.03
Tripura	1,819	3,727	--	5,546	0.20
Uttar Pradesh	22,958	11,036	--	33,994	0.02
West Bengal	3,557	2,669	2,123	8,349	0.01
A&N Islands	6,520	127	966	7,613	2.71
Chandigarh	6	1	--	7	NIL
Dadar & Nagar Haveli	159	45	--	204	0.15
Daman & Diu	--	3	--	3	NIL
Lakashdweep	--	--	--	--	NIL
Pondicherry	--	--	--	--	NIL
TOTAL	3,67,260	2,61,310	4,827	6,33,397	0.07

ANNEXURE 8.6

**PHYSICAL AND FINANCIAL ACHIEVEMENT OF NAEB DURING
EIGHTH FIVE YEAR PLAN**

Sl. No.	Scheme/activity	8th Plan Outlay (Rs. crore)	Financial Achievement	Physical Targets (In hectare)	Physical Achievements
1.	Integrated afforestation and Eco-development projects	200.00	203.12	2,65,000	2,98,981
2.	Fuelwood and fodder projects scheme	158.00	154.19	3,06,000	4,01,648
3.	Non-timber forest produce Scheme	55.00	56.47	1,00,000	1,08,000
4.	Grant-in-aid to voluntary agencies	9.50	7.51	---	338 projects sanctioned
5.	Seed development scheme	9.00	7.81	---	25 States assisted
6.	Aerial Seeding Scheme	6.00	2.49	This scheme is in abeyance since 1994-95	

ANNEXURE 8.7

**APPROVED OUT LAYS AND ACTUAL EXPENDITURE FOR ECOLOGY &
ENVIRONMENT OF DIFFERENT STATES**

(Rs. Lakh)

	APPROVED OUT LAYS EIGHTH PLAN	ACTUAL EXPENDITURE				
		92-93	93-94	94-95	95-96	96-97*
ANDAMAN & NICOBAR	25	0	1.21	0	4.06	0
ANDHRA PRADESH	100	38	36	108	32	50
ARUNACHAL	24	4	6	6	9	9
ASSAM	439	57	71	60	65	50
BIHAR	669	13	10	13	14	16
CHANDIGARH	142	5.98	22.95	15.29	29.37	43.65
DADRA & NAGAR HAVELI	10	3	0	0	0	0
DAMAN & DIU	5	8.47	0	0	0	0
DELHI	720	20	34.79	115.65	55.45	114.44
GOA	100	22	8	19	14	20
GUJARAT	950	58	52	58	104	426
HARYANA	600	59	50	61	76	83
HIMACHAL PRADESH	185	34	38	41	67	0
JAMMU & KASHMIR	880	170	123	136	176	0
KARNATAKA	300	60	75	85	213	347
KERALA	730	NA	NA	NA	0	0
LAKSHADWEEP	40	9.44	9.03	8.15	22.1	0
MADHYA PRADESH	2476	813	517	692	1072	1890
MAHARASHTRA	243	0	23	23	26	250
MANIPUR	100	17	19	20	24	35
MEGHALAYA	213	37	37	37	69	50
MIZORAM	25	5	3	2	2	12
NAGALAND	40	0	4	0	5	3
ORISSA	666	98	403	320	284	493
PONDICHERRY	9	6.4	11.85	16.4	14.97	12.5
PUNJAB	435	53	13	6	8	14
RAJASTHAN	1296	197	218	254	195	175
TAMILNADU	2000	24	1	11	120	393
TRIPURA	25	18	21	30	18	20
UTTAR PRADESH	1500	107	196	223	275	350
WEST BENGAL	754	15	35	12	27	275
TOTAL	15451	1979.29	2065.83	2402.49	3059.95	5161.59

* Revised Estimate

ANNEXURE 8.8

APPROVED OUTLAYS AND ACTUAL EXPENDITURE FOR FORESTRY OF
DIFFERENT STATES

(Rs . Lakh)

	APPROVED OUT LAYS EIGHTH PLAN	ACTUAL EXPENDITURE				
		92-93	93-94	94-95	95-96	96-97*
ANDAMAN & NICOBAR	2500.00	392.03	444.45	636.15	514.29	790.00
ANDHRA PRADESH	6842.00	927.00	781.00	931.00	2459.00	1252.00
ARUNACHAL	4710.00	944.00	984.00	1135.00	1358.00	1262.00
ASSAM	11260.00	1727.00	2242.00	2447.00	2490.00	2325.00
BIHAR	18391.00	1730.00	1055.00	899.00	1030.00	1447.00
CHANDIGARH	718.10	201.95	223.70	111.77	185.03	85.50
DADRA & NAGAR HAVELI	790.00	198.62	264.25	264.99	247.71	260.00
DAMAN & DIU	105.00	26.91	21.96	27.65	29.93	35.50
DELHI	715.00	220.63	312.61	430.20	NA	1925.00
GOA	1030.00	194.00	208.00	211.00	209.00	254.00
GUJARAT	30000.00	5770.00	4954.00	5350.00	7219.00	12482.00
HARYANA	11770.00	2980.00	3240.00	3166.00	3512.00	3398.00
HIMACHAL PRADESH	21000.00	4090.00	3491.00	3950.00	4760.00	5373.00
JAMMU & KASHMIR	9880.00	1472.00	1508.00	2125.00	2627.00	2854.00
KARNATAKA	20676.00	3471.00	5162.00	5407.00	5179.00	4433.00
KERALA	9075.00	3274.00	2219.00	2400.00	2826.00	2735.00
LAKSHADWEEP	85.00	16.00	19.35	22.43	38.75	23.04
MADHYA PRADESH	18782.00	3628.00	4256.00	4197.00	5356.00	7438.00
MAHARASHTRA	50221.00	2812.00	5446.00	8074.00	8741.00	13389.00
MANIPUR	2300.00	495.00	379.00	487.00	545.00	530.00
MEGHALAYA	5978.00	1213.00	775.00	453.00	570.00	600.00
MIZORAM	3105.00	614.00	597.00	574.00	600.00	600.00
NAGALAND	2850.00	124.00	350.00	110.00	385.00	337.00
ORISSA	10535.00	3844.00	3168.00	2916.00	2518.00	1945.00
PONDICHERRY	258.00	58.17	1.00	98.97	95.49	111.31
PUNJAB	5593.00	725.00	809.00	725.00	1075.00	1080.00
RAJASTHAN	32655.00	3846.00	4393.00	6978.00	8830.00	8687.00
SIKKIM	1750.00	316.00	308.00	292.00	410.00	425.00
TAMILNADU	19500.00	4559.00	4561.00	4537.00	4724.00	4808.00
TRIPURA	2600.00	530.00	415.00	360.00	470.00	471.00
UTTAR PRADESH	36454.00	5966.00	4735.00	4139.00	5146.00	7405.00
WEST BENGAL	13559.00	1570.00	2168.00	2633.00	3320.00	3980.00
TOTAL	355687.10	57935.31	59562.32	66088.16	77470.20	92740.35

* Revised Estimates

CHAPTER 9

SPECIAL AREA PROGRAMMES

9.1 Special Area Programmes have been formulated to deal with the special problems faced by certain areas arising out of their distinct geo-physical structure and concomitant socio-economic development. Planning and Development of an area within the state is primarily the responsibility of the concerned State Governments. However, the Central Government is supplementing the efforts of the State Governments in this direction through Special Central Assistance under the programmes such as Hill Area Development Programme (HADP) and Western Ghats Development Programme (WGDP), North Eastern Council (NEC), Border Area Development Programme (BADP), Desert Development Programme (DDP) and Drought Prone Area Programme (DPAP). Funds under Special Area Programmes are meant to deal with the specific problems of these areas. Hence Special Plan strategies are formulated and schemes drawn up by the State Governments keeping in view the basic needs of the people and existing environmental considerations.

I. Hill Areas Development Programme (HADP) :

A. Historical Background:

9.2 The hill areas of the country particularly the Himalayan and the Western Ghats regions support the basic life giving natural resources but they have very fragile and sensitive eco-systems. The need to conserve natural resources and the environment, particularly to prevent damage to fragile and irreplaceable eco-systems necessitated the inception of Hill Area Development Programme (HADP) during the Fifth Five Year Plan. It was also aimed at balanced regional development.

9.3 The approach and the strategy of the HADP has been evolving over time. The programmes implemented during the Fifth Plan period were mainly beneficiary oriented. While the emphasis shifted to eco-development in the Sixth Plan, the general tenor of HADP remained substantially the same as that of the normal State Plan following the same sectoral approach. The Seventh Plan laid particular emphasis on the development of ecology and environment as summed up in three phrases, namely, eco-restoration, eco-preservation, and eco-development. It aimed at evolving plans and programmes to take care of socio-economic growth, development of infrastructure and promotion of ecology of the areas covered by the HADP. During the Eighth Plan attention was focussed on productive sectors of the hill economies specially in modernising agricultural practices and small scale industries at household, cottage, and village levels. For this involvement of people was considered of paramount importance. The aim was to meet the actual basic needs of the people through improved management of the land and water resources.

B. Problems of Hill Areas :

9.4 Major environmental problems being faced by Hills are deforestation and soil-erosion, which are leading to the drying up of water resources, flash floods and decline in the yield of food and cash crops, fodder, fuel and other minor forest produce. Similarly, poverty in the hills is another problem area which is directly related to the shortages of

materials for basic subsistence, especially where under the traditional land and water management system, the capacity of land to support the population has already been exceeded. Intensive human and livestock pressures along with indiscriminate felling of trees for commercial purposes in many hill areas have already led to loss of soil and rapid depletion and destruction of forest cover. Besides, water retention capacity and productivity of land have been adversely affected. These factors have impaired the ecology significantly and also resulted in deterioration in the economic condition for the hill people. Traditional agricultural practices, especially shifting cultivation, have also contributed to destruction of forests and soil erosion. Seemingly harmless activity such as prolonged grazing by livestock, especially goats and sheep, have further exposed many hill areas to serious ecological degradation. Development activities like construction of buildings, roads, dams, large and medium industries and mining etc., have aggravated environmental problems. Consequently, perennial sources of water such as springs and small streams have dried up in many areas. The major challenge, therefore, is to devise suitable location-specific solutions, so as to reverse the process and ensure sustainable development of the growing population and ecology of the hill areas.

C. Classification of Hill Areas

9.5 The responsibility for balanced social and economic development of the hill areas rests primarily with the concerned State Governments.

9.6 The hill areas of the country fall broadly into the following two categories :

- (i) Areas which are co-terminus with the boundaries of the State of Union Territory, i.e., Hill States / Union Territories, namely, Jammu & Kashmir, Himachal Pradesh, Sikkim, Manipur, Meghalaya, Nagaland, Tripura, Arunachal Pradesh and Mizoram.
- (ii) Areas which form part of a State (which are termed as Designated Hill Areas) covered under the HADP, are the areas identified in 1965 by a Committee of the National Development Council (NDC) and those recommended by the High Level Committee for Western Ghats in 1972. HADP would continue to be implemented during the Ninth Plan, only in those areas where it is already under operation namely:
 - (a) Two hill districts of Assam - North Cachar and Karbi Anglong.
 - (b) Nine districts of Uttar Pradesh - Dehradun, Pauri Garhwal, Tehri Garhwal, Chamoli, Uttarakashi, Nainital, Almora, Pithoragarh and Udham Singh Nagar.
 - (c) Major part of Darjeeling District of West Bengal.
 - (d) Nilgiris District of Tamil Nadu.
 - (e) 159 talukas of Western Ghats area comprising parts of Maharashtra (62 talukas), Karnataka (40 talukas), Tamilnadu (25 talukas) Kerala (29 talukas) and Goa (3 talukas).

9.7 The area and population of the Hill States and the Designated Hill Areas are detailed in Table 9.1.

D. Pattern of Funding

9.8 The Hill States mentioned in para 9.6 (i) above are called 'Special Category States'. The Central Assistance for their development plans is pre-empted from the divisible pool before making allocations from it to the other States categorised as 'Non-Special Category States'. The Central Assistance is also given on liberal basis with 90% as grant and 10% as loan to Special Category States compared to 30% grant and 70% loan for other states.

9.9 In order to benefit the hill areas which form parts of states, Special Central Assistance (SCA) is given under HADP. SCA provided for HADP is additive to normal State Plan funds and not meant to be utilised for normal State Plan activities. The schemes under HADP are to be properly dovetailed and integrated with the State Plan schemes. The schemes undertaken under this programme also need to be conceived of and designed to achieve the specific objectives of the programme and should not be merely conventional State Plan schemes.

E. Objectives Approaches and Strategies for the Ninth Five Year Plan:

9.10 During the last four Five Year Plans, substantial effort and resources were channelised for the development of infrastructure. However, the corresponding growth in the productive sectors of most of the hill economies has not kept pace with the extent of efforts and resources channelised. Considering the ecological degradation of hill areas and subsequent impact on the economy and ecology of not only the hill areas, but the plain areas as well the main objectives of the programme in the Ninth Plan would be eco-preservation and eco-restoration. All development schemes would be planned in this framework with emphasis on preservation of bio-diversity and rejuvenation of the hill ecology. Traditional practices would be dovetailed with appropriate technology to serve the needs of the people of these areas. Traditional knowledge would be starting point for introduction of modern science and technology. All schemes would be rooted in the existing cultural system so that they are easily acceptable and can help to provide maximum benefit to the people. The basic objective of the Hill Areas Development Programme has been socio-economic development of the hills and the people living there in harmony with ecological development. The schemes implemented under HADP are, therefore, aimed at promoting the basic life support systems with sustainable use of the natural resources of the area covered by the programme. The strategy for the programme will be based on a two-pronged approach :

(i) Sub-Plan Approach: For the Hill areas covered by HADP the sub-plan approach has been adopted since the beginning of the Fifth Five Year Plan, under which a separate Sub-Plan for the hill areas in the concerned State is prepared indicating the flow of funds from the State Plan and Special Central Assistance (SCA). In the case of the WGDP, only the schematic approach is being followed, since the 'taluka' (which is the territorial unit of planning in the WGDP) is a unit of demarcation in respect of which the flow of funds from State Plan are difficult to quantify. Efforts are being made to follow the sub-plan approach in WGDP also.

(ii) Integrated Watershed Approach: Since the smallest viable geographical unit is the watershed, it is imperative that the integrated watershed approach be followed in HADP areas. The watershed is a geo-hydrological natural unit which has evolved through interaction of rain water with the topography. The large majority of inhabitants of hill areas depend on agriculture and allied activities for their livelihood and the level of production is dependant on the health and vitality of the concerned watershed. Although this approach is being followed in Niligris district and WGDP areas emphasis needs to be given to this approach in other HADP areas also. The approach followed by the National Watershed Development Project for Rainfed Areas (NWDPA) is pertinent in this regard. Under this programme micro-watersheds with area between 500 to 1000 hectares are developed by measures such as conserving rain water, through treatment of drainage lines in the micro-watersheds and promoting in-situ moisture conservation by eco-friendly agricultural production systems on arable land. This includes a 3-tier appropriate vegetation consisting of grasses, shrubs and trees for fodder, fuel, timber and fruit in a topo sequence which is in consonance with soil depth and moisture.

9.11 The evaluation study on impact of Watershed Development in Western Ghats Region of Kerala has shown that the programme is beneficial as it has improved the lean flow in streams, resulted in higher recharge of ground water and helped in control of soil erosion. The evaluation also shows that better coordination between various development departments would be beneficial. It is also clear that it is important to create awareness about the programme amongst the beneficiaries.

- | HADP : Ninth Plan : Thrust Areas | |
|--|--|
| <ul style="list-style-type: none"> • Eco-restoration and Eco-preservation • Involvement of the local population • Gender sensitive planning • Use of appropriate technology • Redevelopment of traditional agro-eco-systems based on traditional knowledge and technology • Scientific approach to agriculture, animal husbandry and horticulture in order to raise productivity • Development of ecologically sustainable industries and tourism | |

Sectoral Approaches And Strategies

9.12 The following will be the approach and strategy in respect of hill areas development planning during the Ninth Five Year Plan:

1. Agriculture And Allied Sectors

9.13 The large majority of the population in the hill areas depends on agriculture and allied activities. The important consideration in the approach to agriculture is the fact that in many areas particularly in U.P. hills there has been out-migration of male population as a result of which many of the agricultural operations hitherto carried out by men have to be done by women, hence it is very important to look at the gender element in agricultural practices.

9.14 Appointment of women functionaries should be encouraged and extension work should be conducted through women as far as possible. The other problems which hamper agricultural production in hill areas are small and fragmented land holdings, lack of transport and marketing facilities, and inadequacy in availability of appropriate technology.

9.15 Application of scientific inputs to agriculture and allied sectors, including identification of crops suitable for the agro-climatic zones and multi-purpose species of trees and bushes to meet requirements of the people from a well-developed small land area are of special importance. This approach is expected to spare considerable areas for permanent greening programmes, like social forestry or horticulture and serve the long-term objectives of enhancing production on sustainable basis. Appropriate technologies to bring about localised self-sufficiency and generate alternative means of livelihood, as opposed to heavy dependence on forests, and livestock rearing, can be encouraged. Use of appropriate technologies to upgrade the traditional productive systems such as agricultural operations, livestock rearing, arts and crafts, household and cottage industries, etc., and to reduce drudgery of women in fetching water, fuel-wood, fodder and other demanding daily domestic chores needs to be encouraged on priority. The technologies have to be need-based, more productive, efficient, low-cost, and ecologically sustainable.

9.16 Extension services should enlighten and educate people on how to enhance productivity of both cultivated and community land on a sustainable basis in the context of increasing human and livestock pressures. Consolidation of small and scattered land holdings would help in improving water and land management and ultimately, productivity of the limited land assets of the hills.

9.17 In order to reduce pressure on land, quality of livestock, including goats, sheep, pigs and poultry birds has to be improved and their numbers reduced. There is an urgent need for relating livestock population to the bearing capacity of available land. Scrub animals could be systematically culled out. The livestock and cattle improvement programmes need to be integrated with fodder and cattle-feed development, stall feeding and scientific grazing. The land and livestock management systems have to improve rapidly. This would imply creation of suitable extension services, veterinary care, and other infrastructure for propagating high yielding variety of animals so as to enrich the local stock. The productivity of pastures and grazing areas needs to be restored and enhanced. The effort should be to meet the requirements of food, fuel-wood, timber and fodder through scientific utilisation of scarce hill resources on sustainable basis from the least land area. Food security has to be ensured on top most priority. Development of horticulture, sericulture and plantation, especially cash crops having low volume, light weight, high value and long shelf-life, could play an important role in generating employment opportunities, higher incomes and ecologically sound development in hilly areas.

9.18 Organic residue management would be encouraged to reduce emphasis on inorganic fertilizers. Earthworm technology, particularly in tea cultivation which has been successfully implemented may be introduced on a wider basis. Similarly, it would be appropriate to arrange for supply of fertilizers in smaller convenient bags.

9.19 Horticulture is an important area which needs to be buttressed with adequate infrastructure facilities such as cold storage, food processing units and transport facilities. In addition to fruits, floriculture, mushroom cultivation, vegetable cultivation and production of non-traditional types of foods, such as olives, hazel nuts, strawberry, etc. would be encouraged. Care would also be taken to ensure economic viability of the schemes. Area specific marketing infrastructure, especially for perishable produce and its processing, storage and packaging may be set up where such surpluses are imminent or evident.

9.20 Wherever transport linkages have been established and local cultivation of food-grains is not advantageous, strong Public Distribution System could be extended.

9.21 To reduce the use of wood for packaging of horticultural produce, suitable non-wood based packaging materials could be increasingly used on a viable basis.

9.22 Development of sericulture can provide employment to educated and skilled workers and generate value-adding activities and bring in foreign exchange while maintaining the ecological sustainability of the area.

9.23 The practice of jhum cultivation in Assam hill areas needs to be controlled. For this a holistic approach is needed which would link up agriculture, animal husbandry and domestic sub-systems of the village eco-system in the overall context of forest management using traditional technology and knowledge as its base. The recently initiated NEC project for control of shifting cultivation in upland areas should be dovetailed with HADP schemes and the existing Special Area Programme for Jhum, so as to wean the population of these areas away from this practice.

2. Irrigation

9.24 The system of irrigation in hill areas requires systematic research so that water harvesting techniques can be used to efficiently provide water to the farmers. Sprinklers and drip irrigation can be encouraged along with small dams and lift irrigation schemes. Wherever possible catchment dams and community tanks may be provided. Development of watersheds that can meet water requirements of the people and conserve water and soil resources of the area can be taken up for integrated development. For this, a multi-disciplinary approach is considered most appropriate for creating conditions conducive to development of natural and human resources.

3. Industry

9.25 Many hill areas seem to be especially suited to industries that require pollution-free atmosphere, cool climate and precision skills such as electronics, watch-making; optical glasses, sericulture, etc. Traditional industries such as handloom products, etc. could be made economically viable by introduction of material patterns and designs which have a large market. This may be done through cooperative societies, NGOs, or research institutions which can help the local weaver communities to make products which have a wide market. This applies also to other traditional crafts such as cane products, etc. In addition, high value industry may also be introduced such as watch making, electronics, etc. It is also important to develop agro-based industries which would enable processing of local raw materials which have a ready local market. Sustainable forest plant and herb-based industries are other activities which can be environment friendly. Although, programmes are being implemented in these areas, it is essential to chalk out a detailed strategy for coordinated development of economically viable industries which would use appropriate technology, improve productivity and enhance income generation without disturbing ecological balance. Due to higher transportation costs in these areas, industries which reduce weight and volume, but add value and increase shelf-life of the locally available raw materials will be advantageous. Large and medium industries may not generally be considered suitable except under exceptionally favourable circumstances.

9.26 Mining can be carried out but with adequate ecological safeguards during and after the mining operations.

4. Tourism

9.27 Tourism can be organised as an industry, with due care taken to avoid exploitative use of scarce local resources, especially water and fuel-wood, so that ecology of the hills is preserved and benefits are reaped by the local population of the area. Location specific suitable code of conduct for tourists may be evolved so as to maintain clean and disease-free surroundings, protect local ecology and respect local traditions, culture and heritage.

5. Energy

9.28 Since the hill areas have immense hydroelectric potential micro-hydel projects would be encouraged. However, construction of dams would be considered very carefully clearly taking into account consideration of the geo-seismic condition of the area. Since provision of electricity facility to widely spaced hamlets is a major problem in hill areas, appropriate solar energy technology would be very effective in many hill areas and these should be encouraged in areas covered under HADP / WGDP also. It is imperative that dependence on fire-wood be reduced. Non-conventional sources including bio-gas, wind turbines, etc. should be harnessed to provide for the cooking, lighting and heating needs of the people of the hill areas.

6. Ecology & Forests

9.29 Regeneration and development of the hill environment cannot be achieved without willing and active cooperation of the people which will be forthcoming only if the benefits from improved land, water and forests resources reach directly and equitably to the people.

9.30 The hill areas prone to intense tectonic and seismic activities, need to be identified; activities such as indiscriminate road and building construction and creation of artificial large water bodies need to be minimised and earthquake-proof construction designs should be used. Large projects etc. which might endanger the ecological balance and displace large number of people, should be very carefully considered before investment decisions are taken. Families whose agricultural land is acquired should be settled with productive assets.

9.31 Emphasis should be on (a) sustainable re-development of traditional agro-eco-systems of hill communities building upon traditional knowledge and technology. For this purpose a sharp departure from the conventional approach of the traditionally trained agricultural scientists is required; (b) Further elaboration and refinement of "Joint Forest Management Plan". One of the important elements of these two activities should be conserving bio-diversity and their sustainable use by local communities. Species selection for forestry would be based on sustainable maintenance of soil-fertility, soil, water management and the socio-economic needs of the local communities. The policy of reservation of forest would also need review because population pressure on de-reserved hill slopes has been increasing leading to ecological imbalances.

7. Medical & Health Facilities

9.32 Innovative approaches to family planning and welfare to contain population growth at sustainable levels, have to be adopted. The national programmes for fighting diseases endemic to hill areas such as Goitre, Malaria, Respiratory diseases, etc. would be strengthened. The problems of lack of trained medical personnel and lack of proper facility would be mitigated to a certain extent by educating traditional para-medical practitioners and equipping them with necessary skills and equipments.

8. Infrastructure

9.33 Special care needs to be taken to ensure that hill roads are constructed as per traffic needs, scientific design and specifications suited to hill areas, so that loose soil is contained, proper drainage system is developed and chances of land slides minimised. In such hill areas where the population density is low and the villages are small and scattered over long distances, building connectivity through appropriate types of roads including link roads, bridle paths, foot bridges, etc. is a better strategy than concentration on motorable roads. Road construction should be completed in all respects without delays and roads should also be properly maintained.

9. Education

9.34 People have to be made aware of the far reaching implications of environmental degradation and their active participation has to be sought in eco-restoration. Environmental aspects can be suitably woven into the curriculum of primary and high school classes. Emphasis should be on effective use of traditional technology, and to develop appropriate technology at the scale required for the hill areas.

10. Involvement of local people & NGOs

9.35 Efforts would be made to involve local population and to understand traditional systems. For this purpose, help would be taken from Panchayati Raj Institutions (PRIs). NGOs also would be approached for reaching the people. Afforestation programmes may be popularised through village Panchayats or village authorities, schools and other local organisations, groups and clubs.

11. Choice of Sectors / Activities / Schemes

9.36 Although it would not be appropriate to list water-tight compartments of sectors / schemes which could be taken up under HADP / WGDP but the sectors chosen should conform to the major objectives of the programme and lead to development with minimum disturbance to ecology. However, areas such as forest management, soil and water conservation and appropriate technology for agricultural and related sectors would receive priority. Resources should not be thinly spread on a large number of projects and schemes.

12. Implementation Measures

9.37 Intensive efforts would be necessary at the implementation level to halt the process of degradation of the hills and improve productivity of land. Financial and physical monitoring of HADP by the State Governments would help improve implementation of various programmes.

G. Allocation Of Special Central Assistance

9.38 In the Eighth Plan, the allocation of SCA was based on the extant formula under which 86.61% of the outlay is given to HADP areas and 13.39% to WGDP areas. The actual amount given to each area depends on its population and area (1981 census). Under HADP

Allocation of Special Central Assistance for the Designated Hill Areas during the Seventh and Eighth Five Year Plans. (Rs. in Crore)				
	Seventh Plan		Eighth Plan	Allocation
	Outlay	Allocation on yearly basis	Outlay	on Yearly basis
A. Designated Hill Districts of :	753.50	924.03	1235.62	1418.33
Assam	118.20	144.34	194.34	215.61
Tamil Nadu	33.75	41.53	55.49	85.95
Uttar Pradesh	533.50	679.19	910.04	1010.27
West Bengal	44.55	55.04	73.25+	105.00
Surveys & Studies	3.50	3.93	2.50	1.50
B. Designated Talukas of Western Ghats Region	116.50	143.77	191.03	215.68

equal weightage is given to these criteria while under WGDP area is given a weightage of 75% and population of 25% (Details of the Allocations are in Table 9.2).

9.39 As against Rs. 1450 crore of agreed outlay for the Eighth Plan, the allocation on year-to-year basis aggregated to Rs. 1634.01 crore.

H. Western Ghats Development Programme (WGDP)

9.40 The Western Ghats hill ranges run to a length of about 1600 kms. more or less parallel to the west coast starting from the mouth of river Tapti in Dhule district of Maharashtra and ending at Kanyakumari, the southern-most tip of India in Tamil Nadu. The region covers an area of 1.60 lakh sq.kms. supporting a population of 442 lakh (1991 Census). For delineation of the area for coverage by the WGDP, the criteria of elevation (600 metres above MSL) and contiguity with taluka (a territorial administrative unit) have been adopted.

9.41 The region generally receives 2000 mm to 7000 mm of rainfall. Most of the rivers in peninsular India have their origin in Western Ghats of which Godavari, Krishna, Kaveri, Kali Nadi and Periyar are of inter-State importance. These water resources have

been harnessed for irrigation and power. About thirty per cent of the area of the Western Ghats region is under forest. The region is also a treasure house of plant and animal life. The traditional horticulture crops in the region are arecanut in the hills, and coconut in the coast along with mango and jack fruit. Tea, coffee, rubber, cashew and tapioca are the other important plantations / crops of the region.

9.42 The ecological and environmental problems of the area include increasing pressure of population on land and vegetation; submergence of forest areas under river valley projects, encroachment on forest lands; clear felling of forests for raising tea, coffee, rubber and other plantations; mining operations, soil erosion, land slides; shifting cultivation; and declining wildlife population.

9.43 A separate Western Ghats Development Programme (WGDP) was launched in 1974-75 as a part of the programme for the development of hill areas.

Western Ghats Development Programme (WGDP)

- The Western Ghats region has about 30 per cent of the area under forest; receives moderate to heavy rainfall and is a treasure house of many endangered species of plant and animals.
- The Western Ghats Development Programme covers 159 talukas spread over an area of 1.60 lakh sq. kms. And is under implementation since the beginning of the Fifth Five Year Plan with the aim of eco-development, eco-restoration and eco-preservation of the areas.
- The present approach from the Eighth Five Year Plan onwards has been to take up developmental activities in an integrated manner on the compact watershed basis. The same approach is to be continued during the Ninth Five Year Plan.

9.44 The approach and strategy of the programme has evolved through the Plans. During the Fifth Five Year Plan WGDP laid emphasis on economic well-being of the population in hill areas and exploitation of the resources of the hilly region. The main programmes during the Fifth Five Year Plan consisted of activities in the areas of horticulture, plantation, afforestation, minor irrigation, animal husbandry and tourism.

9.45 The Sixth Plan stressed the need for a balance in emphasis between beneficiary oriented and infrastructural development schemes, keeping in view the vital importance of ecological restoration and conservation. During the Sixth Plan the Watershed Development Programme was taken up on a pilot basis.

9.46 Apart from the shift in the emphasis from beneficiary oriented schemes to eco-conservation and eco-development, a notable step initiated by the Planning Commission during the Sixth Plan was the involvement of universities and research institutions located in the Western Ghats region in the programme.

9.47 The thrust of the WGDP has been on sustainable development of the areas covered under the programme since the last two Five Year Plans i.e. the Seventh and the Eighth Five Year Plans. In its present form, WGDP operates on the following principles:

- i) Maintenance of ecological balance essential for the life support system.
- ii) Preservation of genetic diversity.
- iii) Restoration of ecological damage caused by human interaction.
- iv) Creation of awareness among the people and educating them on the far-reaching implications of ecological degradation and securing their active participation for the eco-development schemes.

9.48 The general approach under WGDP during the Eighth Five Year Plan was continuance of the strategy adopted in the Seventh Five Year Plan which was to take up integrated development on compact watershed basis keeping in view the over-riding priorities of eco-development and eco-restoration as well as the basic needs of the people like food, fodder, fuel and safe drinking water. In operational terms, integrated development of watershed approach envisages the following sequence of actions:

- a) Identification and delineation of macro and micro watersheds in the entire WGDP area in the State by a competent research organisation.
- b) Prioritisation of all the identified and delineated watersheds on the basis of suitable criteria adopted by the State Government.
- c) A preliminary or base-line survey of the watersheds taken up for development to determine the micro or mini watersheds to be taken up for development in each macro or major watershed, and the nature of development programmes which need to be undertaken in each such area, keeping in view its development potential, the needs of the local people and the financial allocations available.
- d) Preparation of an integrated development plan for each macro / micro watershed covering all relevant activities, such as, soil-conservation, agriculture, afforestation, fuel and fodder development, minor irrigation, animal husbandry and sericulture.
- e) Making necessary administrative and institutional arrangements for the implementation, monitoring and review of the integrated development programme for each watershed taken up for development.

9.49 The basic idea is that all development activity in the Western Ghats Region should be undertaken in an integrated manner in all selected watersheds on the lines indicated above. The concept of integrated watershed development thus implies not just a development programme, but a general approach to all development programmes.

9.50 The approach to the WGDP during the Ninth Five Year Plan would continue to be the same as for the last two five year plans.

Evaluation Studies and Perspective Plans:

9.51 At the instance of the Planning Commission, joint evaluation studies were carried out by the P.E.O. and the concerned State Governments. The evaluation reports are available for Tamil Nadu and Maharashtra. The reports indicate that the impact of the Western Ghats Development Programme has been encouraging.

9.52 Perspective Plans for WGD areas are available for Maharashtra, Karnataka, Kerala and Tamil Nadu. Necessary steps would be taken to operationalise these perspective plans during the Ninth Five Year Plan.

High Level Commission for the North-Eastern Region

9.53 A High Level Commission was appointed by the Prime Minister as part of his announcement of New Initiatives for the North-Eastern Region in October, 1996. The Commission was required to examine the backlog in respect of Basic Minimum Services in the seven North-Eastern States. It was also required to look into the gaps in important sectors of infrastructure development in the North Eastern Region. In their report titled "Transforming the Northeast", which was submitted to the Prime Minister in March, 1997, the Commission furnished a detailed assessment of the funds required to tackle the backlogs in Basic Minimum Services and infrastructural needs and made several specific

High Level Commission for the North Eastern Region

A High Level Commission (HLC) was set up following the announcement of "New Initiatives for the North-Eastern Region" in late 1996. The HLC, in its Report entitled "Transforming the North-East" have assessed the requirement of funds for tackling the backlog in Basic Minimum Services and infrastructural needs and recommended Policy initiatives and programmes to bridge these gaps and rejuvenate the local economy alongwith measures for institutional reforms and effecting public participation in the development activities of the Region.

2. The HLC have estimated that:

- a) Rs.9395.54 crore would be required for tackling backlog in Basic Minimum Services in the seven States of the North Eastern Region.
- b) Rs.93619 crore - of which Rs.17995 crore are estimated for the Ninth Five Year Plan - is the indicative requirement of funds for meeting the gaps in the infrastructural needs of the Region.

recommendations was internalised in the formulation of the Ninth Five Year Plan proposals of the seven States as well as those of the Central Ministries/ Departments. The Government also required the Central Ministries/ Departments to set apart 10% of their budget allocations for the purpose of the development programmes of the North-East. Since the requirements of the States in the North-Eastern Region could not be accommodated in the Plan proposals, it was decided to provide additional funds for the purpose through the mechanism of a Central Pool created out of the likely savings from the funds earmarked for the North-East in the budgets of the Central Ministries/ Departments. The administrative steps required to

operationalise the Central Pool are being finalised. *Action is also in hand to include Sikkim in the North Eastern Council.*

II. North Eastern Council (NEC):

Highlights of Ninth Plan of the NEC

- (i) Development of productive infrastructure;
- (ii) Completion of on-going projects on priority basis;
- (iii) Development of hydro electric and gas based power;
- (iv) Development of agriculture and allied sector;
- (v) Industrial development;
- (vi) Emphasis on survey and investigation;
- (vii) Timely completion of projects covered under the PM's New Initiatives announced for the NE Region.

9.54 The NEC was set up in August, 1972 under the NEC Act, 1971 (with its secretariat at Shillong) as an experiment of regional planning and development. As per provisions of the statute under which it was constituted, the Council is envisaged as an advisory body

empowered to discuss matters of common interest to the Union and the NE States, and recommend to the Central/State Governments any matter of common interest, inter-alia, in the fields of economic and social planning, Inter-state transport and communications, power and flood control, etc. For securing balanced development, the NEC may formulate, for the Member States, a regional plan in regard to matters of common importance to more than one State of the Region, priorities of the projects / schemes included in the plan and their location. However, over the years, the Council's role has been transformed largely into an organisation providing funds for financing important Inter-State development projects.

9.55 The projects financed by the NEC are implemented either by the State agencies or by the Central public sector undertakings / organisations. The NEC plan funds consist of Central assistance, loan from LIC and SLR borrowings.

9.56 The functions of the NEC can be grouped into three categories:-

- a) Regional Planning;
- b) Zonal Council;
- c) Reviewing the measures for maintenance of security and law & order.

9.57 By the end of the Seventh Five Year Plan, the NEC had incurred an expenditure of Rs. 1284.68 crore since its inception. Another Rs. 411.45 crore were spent during 1990-91 and 1991-92. The approved outlay for the Eighth Plan was Rs. 1160 crore at 1991-92 prices. The total of year-wise approved outlays worked out to Rs. 1648 crore. Against this, the NEC has incurred an expenditure of Rs. 1581.28 crore.

9.58 The main emphasis of the Council has been on the development of infrastructure in the NE Region, especially on projects with Inter-State ramifications. The Council has been concentrating on enlarging transport and communications and development of power and technical institutions. The year-wise position of outlay and expenditure under different sectors during the various years of the Eighth Plan have been given in Table 9.3.

Ninth Plan

9.59 The NEC will continue its efforts for the development of infrastructure during the Ninth Plan. Priority would be given to projects for the development of transport and communication including roads and bridges, airports, waterways, etc. The effort of the Council in the development of the transport and communications system would be so directed that all the States have at least two points of access to the neighbouring States. The existing roads and other infrastructure would be improved in a cost effective manner. The spill-over works of the earlier Plan periods would also be completed. The Council will take up improvement of selected airports in the Region to facilitate air travel in financial collaboration with Airports Authority of India.

9.60 Keeping in view the vast potential for the development of hydro-electric power in the Region, the Council would make efforts to harness the same. Hydro-electric and gas-based power projects would be taken up during the Ninth Plan to meet the power requirements of the NE Region and, if feasible, to generate surplus for supply to other parts of the country. The two hydro-electric projects, viz. Ranganadi and Doyang which are presently being implemented, would be completed and the Rokhia gas-based power project in Tripura would also be commissioned.

9.61 The Council would strengthen various technical and professional institutions to enhance the capacity and improve the quality of education and training imparted by them. Support to RIMS, Imphal, BB Cancer Institute, Guwahati, Forensic Science Laboratory, Assam, etc. would be provided to improve their facilities. The Council may also take up development of new institutions for improved health care in this region.

9.62 With regard to agriculture and allied services, the Council would focus on introduction of improved technology, empowerment of farmers through training and demonstration and improving technical infrastructure for imparting technical advice and inputs; development of market linkages and innovative projects in areas like horticulture, spices, aromatic and medicinal plants would be taken up. The possibility of setting up joint ventures with private sector for processing of various produce would be explored. The Council will also facilitate establishment of infrastructure for production of high quality seeds, in respect of local crops, improved breeds of poultry, piggery, other livestock and development of fishery, etc.

9.63 In the area of industrial development, the Council would play a catalytic role by organising seminars/workshops, etc. in collaboration with various Chambers of Trade and Industry to create awareness about the industrial potential of the Region and to attract foreign and domestic investment in this area as also establishment of institutes/facilities to provide raw materials of desired specification, advice on technology input design, quality control, market information, etc. It would also strive to develop common approaches to expansion of institutional credit and recovery mechanisms.

9.64 The Council will continue its efforts in sponsoring surveys and studies to explore the prospects in the North Eastern Region. It will take various steps to build up adequate data base to facilitate preparation of suitable regional plans and projects. The Council would also develop suitable systems for the monitoring and evaluation of various projects so that these projects are implemented in a timely and cost-effective manner.

9.65 The NEC is part-funding certain projects covered under the PM's New Initiatives announced for the NE Region. Efforts will be made to complete these projects as early as possible.

9.66 In order to make the Council a more effective organ for the development of the Region, the restructuring of the NEC has been receiving attention. Suitable legislative action to amend the NEC Act is under consideration. The sectoral distribution of NEC approved outlay for the Ninth Plan (1997-2002) is given in Table 9.4.

III. Border Area Development Programme (BADP)

9.67 Border Area Development Programme was started during the Seventh Plan and was entirely funded by the Central Government. Its objective was balanced development of the sensitive border areas in the Western Region through provision of infrastructure facilities and promotion of a sense of security among the local population. To start with the programme covered the States bordering Pakistan, i.e. Punjab, Rajasthan, Gujarat and Jammu & Kashmir (Details of Allocations in Table 9.5). After a review in 1993-94, the programme was also extended to States which have international border with Bangladesh. During the Ninth Plan it is being extended to States which have a border with Myanmar. With this the programme would now cover twelve States, i.e. Jammu & Kashmir, Punjab, Gujarat, Rajasthan, West Bengal, Assam, Meghalaya, Mizoram, Tripura, Arunachal Pradesh, Nagaland, and Manipur.

Objectives

9.68 Initially, the main objective of the programme was development of human resources, particularly education - school, technical and vocational in the Community Development Blocks adjoining the border. After being revamped in 1993-94, while its objective continues to be balanced development in remote inaccessible areas situated near the border for ensuring effective administration, its scope has been reoriented to give a sharper focus for tackling special problems which arise in areas contiguous to international border.

Funding:

9.69 The Border Area Development Programme is a 100 % Centrally Funded Programme. The outlay for the programme in the 8th Plan was Rs. 640 crore at 1991-92 prices (Details of Allocation in Table 9.6). However, total releases from 1992-93 to 1996-97 have been Rs. 736 crore. Funds are provided as Special Central Assistance on a 100% grant basis for execution of approved schemes. The block is the basic unit of the programme. Funds are divided among the States by giving equal weightage the following parameters:

BADP

Changes in Approach

- Prior to 1993-94
Schematic Programme with emphasis on education
- After 1993-94
State level programme with emphasis on balanced development of border blocks

Territorial Extension

- Prior to 7th Plan: Border blocks bordering Pakistan
- Eighth Plan: border blocks bordering Pakistan & Bangladesh
- Ninth Plan: border blocks bordering Pakistan, Bangladesh and Myanmar.

1. Population of Border blocks (as per 1981 census)
2. Area of Border blocks
3. Length of the International border.

Eligible Schemes

9.70 Area specific schemes which address difficult problems of the border areas only are eligible for implementation under the Programme. These are to be drawn up keeping in view factors such as remoteness, accessibility, perception of threat from across the border, problems like smuggling, infiltration, subversion etc. and inadequacies relating to provision of essential needs. Activities such as supply of drinking water, communication facilities, strengthening/creation of administrative machinery, improving Public Distribution System etc. can be taken up under the Programme. Since promotion of sense of security among the people in the Border Areas is an important aspect of the Programme, schemes designed for public participation in crisis management, information and motivation of the people including their involvement in prevention of subversive activities, smuggling, infiltration etc. can be funded. Development of community centres to cater to social and cultural needs of the people of these areas can also be taken up. Creation of durable assets is to be preferred over revenue expenditure under the Programme.

9.71 As per the guidelines for the programme, the funds under the programme will not be used to finance schemes, which are to be accommodated in the State Plan. An exception can only be made when it is necessary to do so to augment facilities and services or to make up for deficiencies, consistent with the objectives of the Programme.

9.72 With the setting up of two Committees, i.e. Empowered Committee at the Central level and Screening Committee at the State level, considerable flexibility has been given to States to formulate and implement schemes to meet the programme objectives. The Empowered Committee deals with the policy matters relating to the scope of the programme, prescription of the geographical limits of the area in the State and allocation of funds to the States. The Screening Committee at State level has to function within the directions of the Empowered Committee. Individual schemes for each State are approved by the Screening Committee, chaired by the Chief Secretary of the State. The Committee has complete freedom to execute the schemes through any of the four agencies mentioned below :

- (a) State Governments; (b) Central Government; (c) Central Paramilitary Organisations located in the States, and (d) Non Government Organizations.

9.73 Although the voluntary organisations and agencies are to be selected with care, having regard to security of sensitive areas due emphasis is also given to effective involvement of local people / democratic institutions / voluntary agencies in order to inspire mutual trust and confidence between the Government and the people.

9.74 Indira Gandhi Nahar Project (IGNP) in Rajasthan has also been partially funded through BADP funds. The outlay in 8th Five Year Plan was Rs. 250 crore. However, total release of Rs. 284 crore has been made during the 8th Five Year Plan. However, from 1997-98 the project is also being funded under another Centrally Sponsored Scheme viz.

Accelerated Irrigation Benefit Programme (AIBP). Hence, funding of IGNP from BADP may be phased out as there have been pressing demands from various states to extend BADP to other international borders.

IV. Drought Prone Areas Programme (DPAP) / Desert Development Programme (DDP)

9.75 Depletion of environment particularly in the tribal areas is largely attributable to the increasing biotic pressure on the fragile eco-system in the absence of adequate investments and appropriate practices to augment and conserve the land and water resources. Over time tree coverage has been depleted, soil erosion has increased, water level has gone down and consequently the severity of drought has increased leading to ecological degeneration. The DPAP and DDP programmes were launched specifically to assess these problems with the objective of arresting the process of ecological degeneration and desertification. Since inception and upto 1994-95 Rs. 1742 crore have been spent under the DPAP programme and several thousand hectares of land have been treated. However, in terms of coverage, 10% of the total geographical area identified as drought prone has been treated; under the DDP only 1% of the total area has been covered.

9.76 In 1994-95, a High Level Committee was set up to review the DPAP and DDP programmes and to suggest measures for improving the content and implementation of these programmes. The Committee observed that despite the fact that the programmes had been in operation for almost two decades they had made very little impact on the ground. Of the factors responsible for this, it was identified, that a wide range of activities were taken up despite the fact that they were not related to the core objectives of land development and soil conservation, water conservation and afforestation and pasture development. Further, DPAP funds were not dovetailed with those under other programmes related to land and water conservation. Consequently, planning was continued on an ad-hoc basis along sectoral lines though planning along watershed lines had been recommended as a strategy. In most States very little effort had been made in this regard; though in some States the process of implementing the programmes on a watershed basis had been initiated. People's participation was conspicuous by its absence. In many cases the funds from these programmes did not constitute an additionality to the existing sectoral schemes but were used to substitute for them. For instance, the PEO evaluation of the DDP in 1994 found that in Gujarat and Rajasthan over 70% of the expenditure in animal husbandry, 90% of the expenditure under soil and water conservation and 96% of the expenditure under forestry and pastures was from DDP. However, the success of experiments at Ralegaon Sidhi and Adgaon, in Maharashtra, Kabbalnala and Mittermari in Karnataka and Jhabua in Madhya Pradesh, show that the adverse impact of droughts can be contained, by concerted efforts based on the concept of micro-watershed with a dedicated leadership whether from the government or an NGO and with people's participation.

9.77 The High Level Committee evolved a new set of criteria for identification of drought prone and desert areas of the country and recommended a strategy which involved a holistic approach to the development of drought prone / desert blocks via the development of micro watersheds of about 500 hectares as a unit. Watershed development plans were to be drawn up involving the people in the planning and prioritisation. Technical assistance was to be provided by a multi-disciplinary technical team comprising officers from various line departments associated with different activities related to watershed development.

Watershed Development

- New strategy with comprehensive common guidelines for watershed development under Drought Prone Areas Programme (DPAP), Desert Development Programme (DDP), Integrated Wasteland Development Programme (IWDP) and the Employment Assurance Scheme (EAS), introduced in 1995-96.
- The main features of this strategy are:
 - @ Area development programme to be implemented exclusively on watershed basis.
 - @ Programme activities to be confined to the identified watershed of about 500 hectares and to be executed on a project basis over a period of four years
 - @ Comprehensive treatment plans to be prepared including soil and moisture conservation measures, water harvesting structures, afforestation, horticulture and pasture development and upgradation of existing common property resources.
 - @ Greater participation of people ensured through a Watershed Association comprising all adult members of the Gram Panchayat.

9.78 As per the recommendations of the High Level Committee, common guidelines have been issued for DPAP / DDP and watershed programmes of the Integrated Watershed Development Programme. In addition upto 50% of the resources under the Employment Assurance Scheme have been earmarked for watershed related activities. Hence, the programmes do not suffer from lack of financial resources. Yet, the progress has been slow and very uneven across States. During 1995-96 and 1996-97, the expenditure under DPAP and DDP was 42.5% and 56.8% respectively. Part of the problem has been in operationalisation of the new guidelines, particularly the creation of the prescribed institutional arrangements from the village level to the State level. Also, as the DPAP is funded on an equal sharing basis between Centre and States, several States have used the EAS funds for watershed projects as in this case the State governments are required to provide only 20%, with the Centre contributing 80%. Hence, the funding patterns would be rationalised in the Ninth Plan with all schemes of poverty alleviation and area development being funded on a uniform pattern of 75:25 sharing between the Centre and the States.

9.79 One of the major constraints identified in the implementation of the watershed programmes is the lack of trained technical expertise for the preparation of plans. Data on topography including soil and water endowments, location of slopes for building of water harvesting structures, details of land use pattern etc. are required before a micro watershed plan can be prepared. Towards this end, training has to be given top priority, which has to include both panchayati raj functionaries as well as the administrative officers. To facilitate this process training of trainers has to be taken up by various national and State level training institutes, agricultural universities and NGOs.

9.80 In the Ninth Plan this programme will be implemented through the PRIs. All adult members residing in a watershed area will be members of the Watershed Association and they will nominate 10 - 12 members on the Watershed Committee. The funds will be received by Zilla Parishads and the DPCs will appoint the project implementing agency. At the block level there will be a review Committee under the Block Pramukh and all village

pradhans will be members. However, at the village level the panchayats and the Watershed Association / Committee would have to evolve a system of working in close cooperation with each other. The assets created would have to be maintained by the panchayats.

9.81 In the development of rainfed agriculture, the issue of research and adoption of appropriate technologies is crucial. These need to be location specific, low cost indigenous technologies, agricultural diversification, changes in cropping patterns and an effective extension system to reach the technologies / information to the people is critical in determining the effectiveness of the programme. In addition, as these programmes of area development are biased in favour of those who own land, the question of equity is a moot one. Land reforms with rights of cultivation vested in tenants and share croppers, pattas to groups of landless on common property resources and wastelands can go a long way in redressing the existing inequities in the system. Still the interests of landless have to be protected.

9.82 In so far as the DDP is concerned, a somewhat different strategy would be required, with a concentration on livestock and fodder / pastures and other non-farm activities. Felling of trees for fuelwood has to be restricted and non-conventional sources of energy developed. Use of scarce water has to be optimised, particularly when there is a failure of even the minimal normal rains. In so far as the cold desert eco-system is concerned, it is limited to Ladakh and Kargil in J&K and Lahaul and Spiti and Kinnaur districts of Himachal Pradesh. With regard to these areas the research support is inadequate. But it is urgently required for development of vegetables, horticultural plants and production of vegetables seeds. Plants with medicinal value can be developed, mountain animals need to be given attention, and better ways of water management developed.

9.83 It cannot be gainsaid that despite the limited success of the DPAP / DDP programmes, development of rainfed areas encompassing soil and water conservation along watershed lines has to be the strategy for sustainable development in the future. The problems of low agricultural productivity, poverty and backwardness, in areas suffering from degradation of natural resources, need to be addressed in a holistic manner. A number of government departments both at the Centre and in the States as well as NGOs and external agencies are funding watershed development projects. But there is a great deal of variation in the norms, procedures, and institutional arrangements as between the programmes. Hence, there is a need to evolve a common set of guidelines, so that the implementation at the ground level is on a uniform pattern. A single coordinating agency at the district level under the supervision of the Zilla Parishads should be identified and at the State level, the State Planning Boards / Departments should be responsible for coordination. At the Central Level, a common set of guidelines need to be evolved by the Planning Commission with concerned departments of the Central Government.

Table 9.1

HILL AREAS

States	Area (000) Sq. Kms.	Population (1981) Lakhs
I. Hill States: (Special Category States)@		
1. Himachal Pradesh	55.67	42.81
2. Jammu & Kashmir	222.24	59.87
3. Manipur	22.36	14.21
4. Meghalaya	22.49	13.36
5. Nagaland	16.53	7.75
6. Tripura	10.48	20.53
7. Sikkim	7.30	3.16
8. Arunachal Pradesh	83.58	6.32
9. Mizoram	21.09	4.94
Sub-Total (I)	461.74	172.95
II. Designated Hill Areas (Covered under HADP)		
a) Hill Districts		
i) Uttar Pradesh		
Dehradun	3.09	7.62
Pauri Garhwal	5.44	6.38
Tehri Garhwal	4.42	4.98
Chamoli	9.12	3.64
Uttar Kashi	8.02	1.91
Nainital	6.79	11.37
Almora	7.02	7.57
Pithorgarh	7.22	4.89
ii) Assam		
North Cachar	4.88!	6.30
Karbi Anglong	10.33!	
iii) Tamil Nadu		
Nilgiris	2.54	6.29
iv) West Bengal		
Darjeeling (Most part of the (district))	2.47	5.59
Sub-total (a)	71.34	66.54

Table 9.1 (Contd.)

HILL AREAS

States	Area (000) Sq.Kms.	Population (1981) Lakhs
b) Designated Talukas of Western Ghats Areas #		
i) Maharashtra		
Dhule (2)	3.32	4.30
Nasik (8)	9.52	17.28
Thane (5)	4.71	5.56
Raigad (7)	4.30	7.33
Ratangiri (5)	5.43	8.33
Sindudurg (5)	3.66	5.29
Kolhapur (10)	7.09	18.26
Sangli (1)	0.64	1.11
Satara (8)	6.75	12.87
Pune (9)	9.81	16.09
Ahmednagar (2)	3.17	4.56
ii) Karnataka		
Belgaum (5)	6.45	14.88
Chikmagalur (5)	4.41	4.08
Kodagu (3)	4.08	4.60
Dharwar (1)	1.08	1.60
Hassan (4)	3.14	5.94
Mysore (2)	2.79	3.40
North Kanara (9)	8.64	8.81
Shimoga (5)	6.59	8.32
South Kanara (6) (Kanmeda)	7.07	15.03
iii) Kerala		
Cannanore (3)	3.53	17.56
Wynad (3)	2.12	5.54
Kozhikode (3) (Calicut)	2.33	22.45
Malapuram (1)	2.26	9.44
Palaghat (3)	2.98	10.68
Trichur (1)	1.32	6.74
Ernakulam (3) (Cochin)	1.68	7.91
Idukki (4)	5.13	9.71
Kottayam (2)	1.07	9.60
Quillon (4)	4.15	16.24
Trivandrum (2)	1.50	11.68
iv) Tamil Nadu		
Nilgiris* (4)	*	*
Coimbatore (5)	5.92	24.65
Periyar (1)	2.21	4.12
Madurai (6)	8.22	22.27
Triunavelli (6)	5.41	15.81
Ramenathapuram (3)	2.05	8.01
Kanya Kumari (4)	1.67	14.24
v) Goa		
Goa (3)	1.72	1.33
Sub-total 1(b)	160.49	388.38
Total (HADP) II(a+b)	229.29	448.63
Grand Total (I+II)	691.03	621.58

@ It excludes Assam, which is also a Special Category State.

In the case of Western Ghats Region Taluka is the unit of demarcation. The figure indicated in the brackets denote the number of Talukas in the District under the HADP in the Designated Talukas of Western Ghats Areas.

* Also included in Designated Hill Districts.

Table 9.2
ALLOCATION OF SPECIAL CENTRAL ASSISTANCE UNDER HILL AREAS
DEVELOPMENT PROGRAMME (HADP)

State / Area	Five Year Plans (Outlay)				Annual Plans (Allocation)				(Rs. Crore)			
	1974-79	1980-85	1985-90	1992-97	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	
1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
(A) Hill Areas in the State of												
Assam	24.00	71.58	118.20	194.34	38.87	38.87	38.87	42.05	42.05	46.32	46.32	
Tamil Nadu	7.00	21.81	33.75	55.49	11.09	11.09	11.09	17.81	17.81	19.62	19.62	
Uttar Pradesh	104.00	350.00	553.50	910.04	182.01	182.01	182.01	197.06	197.06	217.07	217.07	
West Bengal	15.00	29.85	44.55	96.60	16.32	19.32	19.32	20.61	20.61	22.23	22.23	
Survey & Studies	-	11.76	3.50	2.50	0.50	0.50	0.50	0.25	0.25	0.25	0.25	
Sub-Total (A)	150.00	485.00	753.50	1258.97	248.79	251.79	251.79	277.78	277.78	305.49	305.49	
(B) Western Ghats Region:												
Kerala	4.88	17.80	23.80	39.09	6.05	6.05	6.11	8.63	8.61	9.52	9.46	
Maharashtra	6.45	23.08	38.10	62.69	13.50	13.50	13.62	13.84	13.81	15.28	15.17	
Tamil Nadu	3.55	13.02	19.90	32.72	7.18	7.18	7.25	7.22	7.20	7.97	7.91	
Karnataka	4.04	14.25	28.20	46.35	9.47	9.47	9.56	10.24	10.22	11.30	11.22	
Goa	1.00	3.65	6.00	9.55	1.61	1.61	1.62	2.12	2.12	2.34	2.32	
Survey & Studies and Western Ghats Secretariat	0.08	3.00	0.50	0.63	0.40	0.40	0.06	0.17	0.26	0.10	0.43	
Sub-Total (B)	20.00	75.00	116.50	191.03	38.21	38.21	38.22	42.22	42.22	46.51	46.51	
Grand Total (A + B)	170.00	560.00	870.00	1450.00	287.00	290.00	290.01	320.00	320.00	352.00	352.00	

Table 9.3

NEC's 8th Five Year Plan Outlay & Expenditure

(Rs. crore)

Year	Budgetary Support	Loans etc	Total Plan Size	Expenditure
1992-93	222.00	10.00	232.00	231.63
1993-94	255.00	10.00 (LIC)	265.00	264.71
1994-95	297.00	10.00 (LIC)	307.00	306.58
1995-96	324.00	124.00 (LIC=22, SLR=50, Market=52)	448.00	384.80*
1996-97	324.00	72.00 (LIC=22, SLR=50)	396.00	393.00
Total:	1422.00	226.00	1648.00	1581.28

* Note : Rs. 72 crore (LIC = 22 & SLR = 50) only was raised by NEEPCO during 1995-96.

Sectorwise outlay and expenditure

during Eighth Plan

(Rs crore)

Sector	Outlay	% of Total Outlay	Expenditure	% of Total Expenditure
Agriculture & Allied	12.69	0.77	10.19	0.64
Water & Power Dev.	894.16	54.26	863.53	54.61
Industries & Minerals	0.51	0.03	1.44	0.09
Transport & Communication	637.99	38.71	612.02	38.71
Manpower Dev.	73.18	4.44	71.22	4.50
Social & Community Services	18.97	1.15	16.88	1.07
General & Scientific Services	9.95	0.60	6.00	0.38
Externally Aided Projects	0.55	0.03	---	---
	1648.00	100%	1581.28	100%

Table 9.4

Approved Outlay for the Ninth Plan of NEC

(Rs. Crore)

Sectors Total	Schemes		Total	% of Outlay
	On-going	New		
Agriculture & Allied Services	22.99	11.31	34.30	1.40
Water, Power development and RRE	838.01	174.52	1012.53	41.30
Industries & Minerals	0.97	17.03	18.00	0.70
Transport & Communication	639.25	388.50	1027.75	41.90
Manpower Development	152.06	19.22	171.28	7.00
Social & Community Services	40.89	49.95	90.84	3.70
General & Scientific Services	11.68	10.12	21.80	1.00
Externally aided projects	73.50	-	73.50	3.00
Grand Total:	1779.35	670.65	2450.00	100

Table 9.5

**EXPENDITURE ON VARIOUS SCHEMES UNDER BADP
(BEFORE REVAMPING)**

Programme	Rs. Crore						
	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
1. Department of Education	0.00	25.00	45.00	50.00	49.50	55.00	30.93
2. Indira Gandhi Nahar Project	0.00	15.00	21.00	26.00	28.60	27.80	52.00
3. Ministry of Home Affairs	40.00	1.10	0.00	0.17	1.19	0.88	1.99
4. Research Studies (Planning Commission)	0.04	0.11	0.12	0.08	0.02	0.11	0.00
Total	40.04	41.21	66.62	76.25	80.03	83.79	84.92

Table 9.6

**Releases made to States under BADP
during Eighth Plan**

(Rs. lakh)

States	RELEASES			
	1993-94	1994-95	1995-96	1996-97
Assam	391.57	437.33	412.00	412.00
Gujarat	698.14	793.33	858.00	858.00
J & K	1400.00	1750.00	2068.00	2068.00
Meghalaya	389.28	423.34	395.00	395.00
Mizoram	283.57	325.34	273.00	273.00
Punjab	644.62	788.33	854.00	854.00
Rajasthan	1905.74	2044.00	2563.00	2563.00
Tripura	803.86	981.33	1096.00	1096.00
West Bengal	2183.22	2457.00	3081.00	3081.00
Total	8700.00	10000.00	11600.00	11600.00

Note :

1993-94 : In addition, Rs. 52.00 crore was released to Rajasthan for Indira Gandhi Nahar Project & Rs. 1.00 crore to Bihar for the Scheme for issue of photo identity cards in three districts. Thus the total amount released during 1993-94 is Rs. 140.00 crore.

1994-95 : In addition, Rs. 60.00 crore has been released to the Indira Gandhi Nahar Project in Rajasthan. Thus total amount released is Rs.160.00 crore.

1995-96 : In addition, Rs. 60.00 crore has been released for Indira Gandhi Nahar Project. Thus total amount released is Rs. 176.00 crore.

1996-97 : In addition, Rs. 60.00 crore has been released for Indira Gandhi Nahar Project. Thus the total amount released is Rs. 176.00 crore.

CHAPTER 10

SCIENCE AND TECHNOLOGY

10.1 The importance of developing S&T in a major way has been recognised since independence. The whole-hearted support provided to science and technology since then, has resulted in many accomplishments in a wide variety of disciplines. Moreover, these activities have played a dominant role in the socio-economic development of the country. At the time of independence, the scientific and the technological base of the country was very small. But, today it consists of a wide spectrum of infrastructure in terms of laboratories, R&D institutions, in-house R&D establishments' etc. covering several disciplines. There has been a significant growth in the capabilities and achievements in several high technology areas, namely nuclear and space sciences, electronics, defence etc. In addition to the growth in these and other strategic vital sectors, determined by sectoral needs, there have been spin-offs and technology transfers to other sectors, especially the broader production sectors, having large societal implications. Efforts have been mounted for developing the newly emerging areas viz. microelectronics; informatics/ telematics; biotechnology; new materials; renewable energy sources; ocean sciences; and several areas of basic research. Indian scientists and technologists have risen to the occasion to fulfil the national needs, whenever needed. Nevertheless, there is still much more to be done in the years ahead by evolving alternative strategies utilising the infrastructure and technical manpower created over the years to emerge as a global technical power. Science and technology efforts have to under-pin the growth of agriculture, industry, infrastructure and services so that the per capita incomes rise across the board and the economy becomes globally competitive.

10.2 India has been moving in a balanced manner leading to an economy which, while working towards fulfilling the expectations of its large population, is also globally relevant. The S&T policy and the approach that should be adopted for the Ninth Plan must, therefore, reflect the reality of the present day world in which nations progress along their own chosen paths but in a much more closely interconnected and interdependent manner.

10.3 In the context of exploring new horizons and new vistas of economic prosperity, S&T has to remain the main focal point and meet the economic, industrial, trade and societal challenges. The technology policy must go beyond technology import, absorption, adaptation and assimilation. More importantly, the benefits emerging from S&T must reach all sections of the community, including the weakest section of the society. While many of the earlier S&T inputs have been very useful for building up a viable S&T infrastructure, the new challenges require considerable modifications in the existing policies, especially with regard to the mechanisms of implementation.

10.4 It must be borne in mind that scientific explorations and widening the frontiers of knowledge are important activities of all civilised societies. India has had its own treasure house of traditional sciences. India has produced many giants in a variety of disciplines of science during the twentieth century. It must be ensured that creativity and excellence are nurtured amongst the younger generation and India contributes to future discoveries and inventions on a scale that is appropriate for its size and history.

S&T Policy and Approach during the Ninth Plan

10.5 India has made a substantial progress in a number of areas related to the economy viz. food security, average life expectancy, literacy and higher education. But, one cannot be complacent about these achievements, as growth towards excellence is a

- Need for mounting efforts to control population and improve the levels of food security, economic growth, literacy, health and so on, apart from realising the technological strengths in the emerging global industrial/economic environment by optimal utilisation of the S&T Systems in India.
- Scientists with exceptional capabilities should be nurtured and supported fully by offering them, within the country facilities comparable with international standards.
- To be in the forefront in some of the chosen fields, the research programmes should be taken up on a mission mode through appropriate re-structuring and re-orientation.

continuous process and there is need to mount efforts to control population and improve the levels of food security, economic

growth, literacy, health and so on, apart from realising the technological strengths in the emerging global industrial/ economic environment by optimal utilisation of the S&T system in the country, which provides immense opportunities and offers great challenges. There is need to sensitise the policy makers in the government about the significance of Science and Technology especially in tackling these national priorities. Since a strong science base is a prerequisite for achieving technological competence, efforts will be continued to build and maintain the same. In this endeavour, scientists with exceptional capabilities should be nurtured and supported fully by offering them, within the country, facilities comparable with international standards; by creating more Centres of Excellence in institutions of higher learning for supply of future S&T manpower; and by utilising the existing infrastructure in terms of facilities and manpower for planning and development of S&T programmes.

10.6 To be in the forefront in some of the chosen fields of agriculture, exports and industry, the research programmes should be taken up on a mission mode through appropriate restructuring and reorientation of many of the scientific institutions and laboratories.

10.7 In order to minimise the hierarchical bureaucracy in the R&D institutions, there is a need for radical change in the mindset of our science administrators. Efforts should be made to create a conducive environment through measures such as professionalisation of science auditing with the concepts of time accountability on decision makers and administrators as well as evaluation of achievement of goals/targets; decentralisation of decision making powers and authority for implementation; introduction of participative decision making processes in the S&T institution; etc. The Science and practitioners science need to be made central to all our planning and operations. The ultimate aim is to ensure that, by and large, the activities pertaining to scientific management, promotion and development are performed by scientists and technologists. For Indian Science to flourish, the administrators and government officials should act as facilitators of science and not masters of scientists. They should create conditions that encourage young scientists.

10.8 For the development and marketing of technology, there is a need, not only to upgrade, modernise and expand the existing S&T infrastructure but also to establish linkages between the industry and the research institutions/ laboratories and encourage venture capital funds for this purpose. In the process, the industry should emerge as the prime investor. While making any new investment, efforts must be made to avoid needless duplication and new centres/institutions should be set up on the basis of careful selection, preferably around academic institutions/research scientists with a high degree of freedom and flexibility. The major focus of the S&T programmes should be to encourage and strengthen interaction among R&D institutions and the users.

10.9 For the evaluation of S&T proposals, the criteria could be: the outputs/results, quality and timeliness (instead of quantities in terms of number of projects, expenditure incurred etc); ability to face global competition and to meet national needs; and ability to attract services or funds from the industry and the financial institutions.

10.10 One of the key elements in the modern global interaction is to have core technological strengths not only in strategic areas but in most of the key sectors of economy and trade as well. But, with limited resources, all-round excellence in all facets of technologies cannot be aimed at. Therefore, there is a need to develop the core strengths and concentrate on areas where competitive strengths can be built so that the technological capabilities can be converted into commercial strengths. In this context, various government departments could prepare

- The science and practitioners of science should be made central to all our planning and operations.
- For Indian science to flourish, the administrators and government officials should act as facilitators of science and not masters of scientists.
- There is need to establish linkages between the industry and research institutions/labs and encourage venture capital funds for development and marketing of technology.
- There is need to develop core strengths and concentrate on areas where competitive strength can be built so that technological capabilities can be converted into commercial strengths.

long-term S&T profiles, keeping in view the Technology Vision 2020 document, prepared by the Technology Information Forecasting and Assessment Council (TIFAC) with the ultimate objective of integrating their plans with the productivity and efficiency factors envisaged within the concerned socio-economic departments vis-a-vis improving the existing infrastructure in them (including facilities for evaluation and certification of new products and processes). This would help accelerate the economic growth and derive maximum societal benefits. For this purpose, it is essential to promote and strengthen the interaction between the S&T system and the socio-economic ministries. To achieve this, there is a need in each ministry to set aside a specified percentage of its total budget for S&T promotion in such a way that no diversion of funds, earmarked for the S&T programmes, takes place. In consonance with the principles of Agenda-21, adopted by member countries at the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in June, 1992, there should be greater emphasis on clean and eco-friendly technologies with zero toxicity and zero environmental impact for sustainable development. Focus should be on the concept that one industry's pollutant is another industry's raw material and systematic efforts must be made to establish this nexus so that the industries could be developed in a sustainable manner without damaging the environment.

For such a technology development process to take place, various organisations must set their machinery and management techniques appropriately.

10.11 For a qualitative growth, as distinct from the quantitative, human resource development and motivation must be regarded as key issues. This calls for several measures. The scientific and technical education needs to be oriented towards developing creative skills and innovative capabilities by creating conducive environment in our educational institutions, with greater emphasis on training of scientists in

- There should be greater emphasis on clean and eco-friendly technologies and focus should be on the concept that one industry's pollutant is another industry's raw material.
- There is need to create conducive environment in our educational institutions for developing creative skills and innovative capabilities with greater emphasis on modern management techniques, technology marketing and IPR related issues.
- Intensive efforts should be made to generate maximum resources for R&D from the production and service sectors.

modern management techniques, including technology marketing and Intellectual Property Rights (IPR) related issues. In addition, creativity should also be encouraged in industry by a constant quest for productivity and quality so that the human resource could be tapped

effectively, irrespective of their level. The S&T manpower must be given greater responsibilities to develop new energy efficient and environment-friendly processes based on automation and artificial intelligence, in addition to those concerning fiscal and material resources. Mobility of the S&T personnel among various R&D organisations, academic institutions and industries needs to be encouraged. Young scientists should be attracted through appropriate incentives to the scientific and technological research careers.

10.12 Science and technology activities in the States and Union Territories should be geared up to take up location-specific R&D programmes for providing S&T inputs in the key sectors of socio-economic development by increasing the demands from State Governments for the S&T inputs, through promotion of joint innovative programmes with industry, NGOs etc.

10.13 The process of planning the programmes/projects in various S&T sectors involves giving policy directions from time to time, setting priorities among the various S&T sectors and restructuring the S&T system to suit the changing needs. In all these aspects, efforts should be made to utilise the 3-tier national apex level S&T mechanism comprising of Cabinet Committee on S&T (CCST), Science Advisory Committee to the Cabinet (SACC) and the Committee of Secretaries for S&T (COS S&T).

10.14 While the role of the Government in supporting basic research, technology development and its application as well as the promotion of S&T infrastructure would continue at an accelerated scale, intensive efforts should be made to generate maximum resources for R&D from the production and service sectors.

PRIORITISATION IN S&T AND THRUST AREAS

(A) Prioritisation

10.15 India is one of the top ranking countries in the field of basic research and her success in technology development has been very significant. India's capability in building nuclear reactors, communication and remote sensing satellites and guided

missiles, just to mention a few, has been clearly demonstrated. The industries also handle a wide range of technologies. With these capabilities, Indian S&T has come to be

- Strategic sectors such as Atomic Energy and Space should continue to receive increasing investments.
- Injection of technology in the fields of agriculture and related products can make a significant impact on production.
- The Department of Biotechnology and other Scientific Departments should make a mark in the light of the international control regimes pertaining to IPR and TRIPS for protecting the interest of the country.

regarded as one of the powerful instruments of growth and development, specially in the emerging scenario of globalisation and competitive economy. In the wake of recent developments and the new demands that are being placed

on the S&T system, it is charged with significantly new responsibilities and has a major role to play in the country's development. The IPR system has to be in tune with the rest of the world for providing the requisite framework for India to emerge as global R&D platform.

10.16 During the earlier Plan periods, support to basic research has been receiving a rather high priority. Though this may continue to a considerable extent, a proper balance should be maintained between fundamental research and applied research in scientific fields. Recent developments have brought home the need to accord high priority to technology related areas, particularly the process technologies, which may be characterised as core technologies, which need to be strengthened with particular emphasis on ensuring partnership with the concerned socio-economic activities and industry wherever possible. In this process, the Indian industry and the users of technology have a crucial role to play. They should be made aware that industrial R&D requires not merely continuous upgradation but generation of technology as well, which would be able to sustain a competitive technological edge. Funding of R&D by industry and formation of consortia for technology development will be essential in the new scenario. The industry initiatives ought to constitute the driving force not only for generating innovative industrial technologies which should be built on a wide and strong S&T base created so far, but also for bringing the same into rapid and wide-spread use through up-scaling at pilot level, market surveys and bench marking. In this context, it is necessary that, during the 9th Plan, emphasis is placed on clearly defined criteria for prioritisation and identification of thrust areas.

10.17 To determine science and technology priorities at any point of time for a country's development is a daunting task. Several demands compete with each other and the resources invariably limited. Evolving an optimal programme of action calls for a detailed analysis of the past developments, available strengths and visions of the future. The criteria for prioritisation in the S&T sector can be based on several aspects such as academic excellence, strength in a particular activity, strong domestic market base, trends in world trade and world production, industry orientation, economic benefits, employment opportunities, commercially relevant technologies, strategically (security-related as well as industry-related) significant technologies, capability to address national needs and national competence vis-a-vis global status. In addition, the following considerations have to be kept in mind:

- (i) Strategic sectors such as Atomic Energy and Space should continue to receive increasing investments. This is inevitable in the context of several export control regimes which appear to target particularly India.

- (ii) Injection of technology in the fields of agriculture and related products can make a significant impact on production.
- (iii) The trends observed in the 8th Plan in linking institutional S&T capability to domestic needs (e.g. water) and economic requirements (e.g. energy, materials, information and communication) should gain in range and in depth.
- (iv) The commendable self-reliance achieved by the country in the field of Nuclear Science and Space Sciences should be encouraged and further strengthened.
- (v) The new areas of biotechnology and environmentally significant technologies are rapidly growing world-wide. The developed countries

- The challenge posed by the new global regime has been compounded by unilateral and arbitrary restrictions being placed by the industrial countries on transfer of technology on the suspicious ground of preventing proliferation of "dual use". This situation will have to be faced in a concerted manner both at the national and international levels.
- Exploration and exploitation of the vast living and non-living resources of the oceans for sustained socio-economic development of the society and judicious management and conservation programme of the marine environment should be pursued
- Joint R&D ventures between Indian institutions and those abroad should multiply in mutually beneficial technology areas

have been putting greater and greater emphasis on patenting of living organisms in the light of the international control regimes pertaining to IPR and TRIPS. The Department of Biotechnology and other Scientific Departments should also make a mark in this endeavour for protecting the interests of the country.

There is also a need to create much greater awareness amongst the scientists and technologists regarding the patents and IPR-related issues.

- (vi) The global regime represented by TRIPs severely restricts national autonomy. By enhancing the protection of intellectual property rights across-the-board, this regime has tilted the balance between the public interest, on the one hand, and the private interest of the inventor, on the other, excessively in favour of the latter. The challenge posed by the new global regime has been compounded by unilateral and arbitrary restrictions being placed by industrial countries on transfer of technology on the suspicious ground of preventing proliferation of "dual use". This situation will have to be faced in concerted manner both at the national and international levels. National laws will have to be suitably strengthened to withstand such unilateral restrictions. Gaps and ambiguities in the international regime will have to be availed of creatively to seek more favourable interpretations of its provisions. At the international level, a

new initiative will have to be launched in consultation with developing countries to mitigate the rigour of the international regime and to secure a more favourable deal at the impending review of the TRIPs Agreement in the WTO.

- (vii) The oceans are known to be the last frontier of natural resources. Exploration and exploitation of the vast living and non-living resources of the oceans for sustained socio-economic development of the society and judicious management and conservation programme of the marine environment should be pursued.
- (viii) The investment in R&D from private industry should be stimulated to grow.
- (ix) Joint R&D ventures between Indian institutions and those abroad should multiply in mutually beneficial technology areas.
- (x) Attracting creative scientific talent to the frontier areas of research and basic sciences should continue.

(B) Thrust Areas for Technology Promotion

10.18 Determination of the thrust areas for technology promotion requires far wider consultation. The TIFAC has recently gone through an innovative exercise with the help of several task forces to identify the thrust areas in various sectors of economy, as part of Vision 2020 programme. This should guide the efforts in selecting the areas of thrust. For effective identification of the priorities and the thrust areas, it is also essential to restructure the present S&T systems with a focus on greater autonomy in S&T with flexibility and accountability; strong monitoring and peer review system; support to basic research on a long-term basis; human resource development in specialised areas; spin-offs from high-tech/strategic S&T fields (Atomic Energy, Space, Defence) for use in civilian sectors and bringing in professionals to the S&T system/services through the creation of a pool of science and technology managers for efficient management and administration of scientific activities.

SCIENCE, TECHNOLOGY AND EDUCATION INCLUDING PROMOTION OF BASIC RESEARCH AND EXCELLENCE

10.19 Starting from the early 1970's, there has been a significant increase in the Government support for science and technology. India today has a wide base of infrastructure for R&D. There are 200 universities, about 400 national laboratories and 1300 in-house R&D units of industries. As a result of this and other endowments, India has become internationally competitive in a number of areas. This progress must be maintained and improved upon through appropriate training of manpower in the emerging technologies with infrastructural development as the basic input and earmarking of funds for higher education by the scientific departments in the form of direct support to identified Centres in the universities.

10.20 The problems in bringing about improvements in S&T education pertain to the unavoidable socio-political influences on education, besides inadequacy of laboratory

facilities in universities for research and teaching work at the M.Sc. and Ph.D levels. The academic community should try and isolate higher education from the negative external influences and build up the infrastructure and, where necessary, gradually motivate the faculty to do research by giving them a sense of empowerment and autonomy of functioning within the university system and through the revival of the teacher training programmes of the 1960's.

10.21 The Inter-University Centres, which are providing very valuable services to the university research community, should be encouraged by earmarked support through the UGC for running the existing Centres and for establishing new ones in other areas after appropriate assessment by a national body. The possibility of supporting these Centres from scientific departments and socio-economic ministries should also be explored. With a view to promoting a coordinated approach in the utilisation of

- The academic community should gradually motivate the faculty to do research by giving them a sense of empowerment and autonomy of functioning with in the university system.
- The inter-university centres, which are providing very valuable services to the university research community should be encouraged by earmarked support through the UGC.
- The operation of research funds both at the level of the individual research worker and at the institutional level, needs to be reviewed so that sub-critical support is avoided.

instruments and equipment facilities, the possibility of establishing Regional Sophisticated Instrumentation Centres (RSIC) in the universities and setting up advanced research Centres/ Groups in certain specialised fields such as optical materials, condensed matter physics, low energy accelerator research,

molecular electronics, laser instrumentation, colloides & surfactants, astronomy, astrophysics, plasma physics etc. may be explored.

10.22 The operation of research funds both at the level of the individual research worker and the institutional level needs to be reviewed so that subcritical support is avoided. At the level of individual scientific worker, the research support should be based on the proven track record with maximum flexibility and autonomy in controlling the research funds. In this regard, the funding agencies may evolve common guidelines. At the institutional level, there should be greater provision for long-range programmes and infrastructural support, involving, wherever necessary, several related departments. Efforts should also be made to set up Centres of Excellence around outstanding scientists or group of scientists following a peer review system.

10.23 One of the mechanisms for funding basic research is through the Extra Mural Research (EMR) budgets of several scientific agencies like DAE, DOS, DST, CSIR, DBT etc. and of the socio-economic departments such as DOE, DNES, DARE etc. The EMR funding should be enhanced by carefully

- The extra-mural research funding should be enhanced by carefully building up rigorous, objective, constructive and credible peer review system.
- Efforts would also be made to provide financial support to the universities and related institutions for improving S&T infrastructure.
- Establishment of some regional science and engineering research libraries in chosen institutions with net-working facilities

building up rigorous, objective, constructive and credible peer review systems. There is also a need to provide autonomy in the use of such funds. In building up such a

system of scrutiny, guidance can be taken from the All India Council for Technical Education (AICTE), which has taken steps to strengthen technical education and support the R&D in engineering and technical institutions in the country.

10.24 Another source of guidance is the Science and Engineering Research Council (SERC) which is the major EMR funding source for basic research in all areas of science and engineering and across all institutions. During the 9th Plan, the possibility of upgrading the SERC mechanism to a significantly higher level with greater autonomy can be explored for the formulation of broad R&D policies and providing direction regarding the setting up of national facilities, coordinated R&D programmes etc.

10.25 In order to improve the facilities for basic research in the universities and research institutions, comparable to those in the developed countries, several measures are called for. These, inter-alia, include revival of the UGC programme of the Committee for Strengthening Infrastructure in S&T (COSIST) as an independent programme. In addition, strengthening of programmes relating to Centres for Advanced Studies (CAS) and Special Assistance Programmes (SAP)/Department Special Assistance (DSA) programme should be taken up to make them much more responsive and stricter in their assessment and evaluation aspects. Efforts would also be made to provide financial support to universities and related institutions for improving S&T infrastructure. The efforts of the National Board for Higher Mathematics (NBHM) of the DAE, in supporting selected libraries to serve as regional resource centres in mathematics, may be expanded by establishing some regional science and engineering research libraries in chosen institutions with networking facilities.

10.26 Communication facilities are needed for the vast majority of our research and teaching community to escape from intellectual isolation. Information technology needs to be deployed appropriately to ensure greater dissemination of knowledge in various fields of industrial and agricultural development. This can be achieved through full Internet connectivity with broad-band channels for multi media facility, networking of libraries, computers etc. This will be a major information resource not only for basic research in science and engineering, but in all academic fields including health, medicine and humanities. It must be done in a well coordinated manner.

10.27 Another important area where the creation of infrastructure is called for, relates to the accelerator based research facilities in the academic institutions/ universities in collaboration with UGC/Department of Education. It will play a major role in keeping the country in the forefront of modern technology. Various institutions are having plans to have different types of accelerators and to develop experimental facilities such as detector arrays. There is a need to pool the technical and financial resources and build national facilities in this area. A national committee needs to be set up for defining the priorities and drawing up national plans so that the available funds are most optimally deployed and duplication is avoided.

10.28 A major problem today is to find ways and means to attract the most talented youngsters to basic science at a young age. For this obviously, both the image of a career in science and the available educational opportunities must be attractive enough as compared to other more lucrative options. This calls for a multi-pronged approach

like revival of the National Science Talent (NST) Scheme in its original form, meant exclusively for science students; giving awards to outstanding science students after the 12th standard by the scientific agencies and socio-economic departments similar to the DBT's

- Need for building up national facilities in the area of accelerators by pooling of technical and financial resources.
- Need for revival of the National Science Talent Scheme in its original form and introduction of some high quality under graduate science programmes at selected institutions.
- In order to raise the national R&D expenditure to the desired level of 2% of GNP, the industry should be made to come forward in a big way by putting in demands on the existing R&D infrastructure and by supporting innovative programmes of technology development and refinement

programme; introduction of some high quality undergraduate science programmes at selected institutions in addition to the ongoing programmes to attract the talented students to the science streams; introduction of scholarship schemes for M.Sc level students and providing support to specialised courses at the universities by science agencies like DAE, DRDO, DOS etc. similar to the manpower development programme of DBT/DOD; increased financial support at the doctoral/post doctoral level; revision of the recruitment and staffing patterns in the scientific institutions by offering specialised posts to Ph.Ds as in the developed countries etc. With these and similar such measures, the science education and careers in science can be made more attractive and even internationally competitive.

10.29 The industry can also play an active role in the process of promoting S&T education and basic research. There are some good quality research centres run by the industry in some areas like pharmaceuticals. At the faculty level, greater intellectual exchange between the industry and the academic institutions can be brought about with possibilities of adjunct appointments, sabbatical programmes, etc.

10.30 At the national level in high technology programmes, scientific agencies, universities and industry naturally come together, as in the case of Technology Development Missions. Since the industry, like the scientific agencies, need and use trained manpower, sooner they enter the training process, the better. The industry can sponsor students with scholarships in special disciplines, co-sponsor research programmes, provide assistance for laboratory work at the postgraduate and doctoral levels etc. These steps would naturally lead to greater synergy between industrial R&D and research activity in academic institutions.

10.31 There is no denying the fact that for the basic sciences sustained support has to come from the Government sources. While providing such support an academic group should, as far as possible, be identified for organising joint collaboration development programmes in a time-bound manner. Applied research should be supported by the industry in a major way, as the industry will be the direct beneficiary of this. In the new economic scenario, the technological levels of many industries in India need significant upgradation. Compared to developed countries, the contribution of Indian industry to the total R&D expenditure, at about 23%, is much less than desired. Therefore, in order to raise the national R&D expenditure to the desired level of 2% of GNP, the industry should be made to come forward in a big way by putting in demands on the existing R&D infrastructure and supporting innovative programmes of technology development and refinement. The in-house R&D set up should also be suitably strengthened as this will strengthen the competitiveness of the industry.

10.32 Thus, while formulating the 9th Five Year Plan, the goals in the sphere of basic research and associated higher education have to be determined not only by the infrastructure available for R&D, but also by several other major considerations. These include: fierce technological competition during the transition to a liberalised economic environment; strengthening of the range and depth of scientific and technological capabilities which can be achieved through high quality basic research and responsive education system; sound scientific and technological base to fulfill societal needs and the need for recognition of the interconnection of research in basic sciences with applied work, technology, engineering and production vis-a-vis national development.

MECHANISMS FOR HARNESSING S&T FOR NATIONAL DEVELOPMENT

10.33 For harnessing S&T for national development, the Government has been adopting several methods. Technology transfer to industry is one of them. Under this, the S&T capability is being transferred to the open market in the form of products of

- There is need to strengthen further the mechanism of transfer of technology to industry during the Ninth Plan.
- Technology export is an important channel for enhancing the exports
- In order to improve the technological competitiveness in the global market and enhance the technology export potential, attention has to be focussed on areas such as university-corporate R&D spending, lab to industry conversion, indigenous innovation, IPR protection etc.
- A novel experiment for harnessing S&T has been the consortia approach' in which one of the laboratories acting as a nodal institution, forms a consortium with the industry or other departments.

acceptable quality in a cost-effective manner. Several national laboratories have been doing this, either directly or through the National Research & Development Corporation (NRDC), which is a government agency for 'transfer and commercialisation of technology'. The Department of Space (DOS) has been doing so directly until the "Antrix Corporation", was set up for this

purpose. The Department of Atomic Energy (DAE) has also been doing so for quite some time. There is a need to strengthen further this mechanism of transfer of technology to industry during the Ninth Plan.

10.34 Technology export is an important channel for enhancing the exports. The industrial experience gained in the process of technology acquisition, absorption and adaptation and the strong capabilities built in R&D and academic institutions can be shared with other countries for mutual benefits. In order to improve the technological competitiveness in the global market and enhance the technology export potential, attention has to be focussed on areas such as university-corporate R&D spending, lab to industry conversion, indigenous innovation, IPR protection etc. There is also a need to create institutional mechanism to promote technology exports and sensitise the export promotion agencies like the Export Promotion Councils (EPCs) about the role of technology exports in catalysing overall exports. The Transfer and Trading in Technology (TATT) scheme of DSIR could be further strengthened to promote export of technologies, projects and services. NRDC can also play an important role by undertaking activities like pre-feasibility studies, market potential studies, awareness building among the Indian companies about technology transfer negotiations, organising seminars on matters such as those relating to WTO, providing assistance in filing foreign patents etc.

10.35 A novel experiment for harnessing S&T has been the 'consortia approach' in which one of the laboratories acting as a nodal institution, forms a consortium with the industry or other departments. The Non-ferrous Materials Technology Development Centre (NFTDC) is an example of this consortium approach with the Defence Metallurgical Research Laboratory (DMRL) acting as a nodal laboratory and four leading public sector enterprises, namely, National Aluminium Co. (NALCO), Bharat Aluminium Co. (BALCO), Hindustan Zinc Ltd. (HZL) and Hindustan Copper Ltd. (HCL), functioning as industry members of the consortium. While the nodal laboratory, DMRL, provides extensive facilities and R&D support, the industry members contribute by way of corpus fund, deputation of industry personnel and, most importantly, defining the market-oriented product development. Other examples of such a consortium approach are: the Composite Product Development Centre, (COMPROC) of the Defence Research & Development Laboratory; the Society for Biomedical Technology (SBMT) for the promotion of bio-medical devices, a joint effort of DRDO and DST and supported by the Ministry of Welfare as well as the Ministry of Rural Areas and Employment; the Centre for Laser Processing of Materials (CLPM), recently set up jointly by DRDO, the Department of Mines and the DST in Hyderabad, in association with the industry, for the purpose of developing and demonstrating the capability in a new technology area.

10.36 Another mechanism, being adopted, has been through a kind of 'Government-Industry Interface' under the Programme Aimed At Technological Self Reliance (PATSER), in which assistance is provided to the industry, in the public as well as the private sectors in the area of technology development and its transfer. A number of multi-institutional projects have been recently developed, involving several departments and socio-economic ministries in the fields of building materials, wood substitutes; mini-micro hydel power; CFC substitutes; high energy magnets; and laser processing of materials. More such projects need to be taken up and a method may be evolved to ensure that the industrial links already established are further strengthened.

- A network of testing and evaluation facilities. The National Accreditation Board for Laboratories (NABL), set up in this direction, needs to be nurtured.
- While creating the mechanisms for harnessing S&T, it is necessary to ensure that the investment in technology development programmes is governed by national needs.

10.37 Still another mechanism to harness S&T, which has proved to be successful, is the "Technology " or the "Mission Mode Projects". This approach envisages new management structures with much closer linkages and better interaction and coordination among many departments/agencies for deriving large-scale, time-bound tangible applications of S&T. A number of mission mode programmes can be formulated, based on Technology Vision 2020 programme, with inputs from a wide cross-section of economic ministries and in line with the criteria laid down for prioritisation. In this context, the special requirements in the emerging global scenario have to be kept in mind. Such programmes can be of two types. The first is the Missions of Technological Significance in the areas such as energy, lasers, optics, drugs etc. The second is the Missions of Societal Significance. These can be in the areas of female health care, medical systems, AIDS education, transport systems etc.

10.38 The success of these mechanisms for harnessing S&T depends to a large extent on the allied infrastructure support. For example, in the light of the experience with the implementation of certain technology programmes, it was felt desirable to set up an Engineering Research Centre (ERC) in an educational institution or a forward looking research laboratory with respect to each of the technology areas, selected to be built up. Such a Centre can function on a three-way partnership basis involving the academia, the industry and the Government Laboratory and/or agency. The fundamental aim of such centre will be to bring together engineering and scientific disciplines to address R&D issues, crucial to technology advances from an engineering system perspective. This will also help educate the new generation of engineering students in cross disciplinary systems of problem solving. The possible areas where ERCs can be established are: advanced manufacturing technology, technical acoustics and vibration control, advanced combustion engineering, experimental robotics, opto-electronics/microelectronics, materials processing etc. While the management structures for a programme of this nature are to be carefully planned, such a programme would require participation and long-term commitments from the industry, the user organisations and the government agencies. An excellent outcome of such a cooperative endeavour is the receiver-based telephone answering chip developed jointly by the Indian Institute of Technology, Chennai (an academic institution), the BPL (an Indian company) and the Analog Devices (an MNC).

10.39 Another infrastructural necessity is a network of testing and evaluation facilities. While there have been exceedingly good facilities for doing both basic and applied research, one needs high quality and standard testing and evaluation facilities for upscaling the technology development. Further, it is essential that such facilities in the long run get accreditation with the aim to provide to the nation a network of testing, evaluation and calibration facilities in accordance with international standards. The National Accreditation Board for Laboratories (NABL), set up in this direction, needs to be nurtured. Some of the areas of S&T where such testing and evaluation facilities have already been set up are: wind tunnel facilities, building materials and characterisation facilities, geo technical centrifuge facilities, aeronautic material test facilities etc. The scope of this initiative needs to be widened in such a way that it can cater to the needs of the small scale sector as well.

10.40 While creating the mechanisms for harnessing S&T, it is necessary to ensure that the investment in technology development programmes is governed by national needs. Depending on the emphasis on utilising technology for the improvement of the economy, the pattern of investment would require readjustments in various socio-economic sectors. Science and Technology should be harnessed not to deepen the problem of unemployment but to make the quality of the products more competitive. There should be innovation of appropriate technology that will accelerate the process of decentralised development. With regard to the financing of technology development efforts, it should be ensured that all possible partners - the Government, the industry and the academia - are fully involved in their respective financial commitments and that other sources of funds like the Technology Development Board (TDB), the ICICI, the financial institutions etc. are tapped. The investments from these sources should not, however, be used for building infrastructure which may prove costly, unproductive and redundant. During these endeavours, it is

essential to make the monitoring and evaluation mechanisms perfect and institutionalised.

APPLICATION OF S&T FOR SOCIETAL DEVELOPMENT

10.41 Recognising that S&T can contribute significantly to poverty alleviation and improvement in the quality of life, in recent years and particularly in the 8th Plan scientific departments/agencies like DST, DBT, DOD, CAPART, ICAR, DOS, CSIR etc. have initiated several structured schemes with a focus on disadvantaged sections of society including the weaker sections, women, rural poor, tribals etc. They have made attempts to

- Efforts should be made for the development and application of appropriate technology packages for rural areas with active participation of voluntary agencies; development of rural enterprises through science & technology intervention and complementary development of rural infrastructure through application of science & technology.

carry the fruits of science to rural areas. For example, the use of biomass as a source of energy through briquetting, gasifiers, biomass plants etc. has become very popular. New experiments on wind, hydro and solar energy have also been tried and demonstrated. Other technologies relevant to societal development are in the areas of low-cost housing, safe drinking water, sanitation, organic agricultural practices and biotechnology etc. These attempts apart, programmes such as Integrated Mission for Sustainable Development (IMSD) of the DOS, have carried the fruits of scientific research to several areas of the country. With issues such as global warming and bio-diversity becoming extremely important, the sectors of ecology and environment have been given due importance and special attention. There have been a large number of programmes on organic agriculture which have been implemented with a focus on natural ecology and sustainable development. Important studies have also been carried out to evaluate the social impact in the area of health with particular reference to tuberculosis, diarrhoeal diseases, psycho-social research in family planning, AIDS, nutrition etc.

10.42 A careful scrutiny of the important areas and the interests of the scientific departments, the research institutions and the implementing agencies, particularly in the non-government sector, indicates that the major sectors for taking up intervention programmes are: agriculture, rural artisanal industry, energy, housing and habitat, drinking water, sanitation and health, ecology and environment. During the 9th Plan, efforts should be made by the S&T departments both in the States and the Centre, for the development and application of appropriate technology packages for rural areas with active participation of voluntary agencies; development of rural enterprises through science & technology intervention and complementary development of rural infrastructure through application of science & technology. This calls for a well planned implementation strategy.

10.43 In formulating such a strategy, the first consideration is the unit of operations at the grossroot level. As the village or a Panchayat is too small to undertake a project, the Block has emerged as a viable and stable administrative unit catering to the development needs of about 1,00,000 people. Originally, the development emphasis in a Block was on the welfare and on the provision of minimum social infrastructure. At the second stage, the focus shifted to area development. At present,

the concern is towards poverty alleviation. Since the S&T inputs so far in all these stages have been only marginal, in the next stage, the focus must be on technology.

10.44 In this task, one of the challenges before the S&T establishments is to build the local capability to identify local priorities, plan for solutions and participate as partners. In this, the voluntary organisations, which have a strong science & technology base and high level of professionalism, have to play a very important role in implementing development projects with S&T inputs. Their role would be to help local Governments/Panchayats in ensuring S&T inputs in the development plans being finalised by the District Planning Committees. As the number of such voluntary organisations is very limited at present, there is a need to have more such S&T field groups. The necessary technical back-up for the development activity can be ensured by

- Voluntary organisations, which have a strong science & technology base and high level of professionalism, have to play a very important role in implementing development projects with S&T inputs
- For replication of successful models, measures like granting sabbatical leave or attractive deputation terms to the scientists working on the project may be necessary.
- Special emphasis will be given to the promotion of research and development and adaptation of technologies for improving the life, working conditions and opportunities for gainful employment of women, especially in the rural areas.

formulating collaborative programmes with the involvement of S&T institutions, working scientists, technologists and the State S&T Councils. In the formulation of a project, the implementation mechanism and the enterprise characteristics should be so built into it that it becomes financially viable. The success of the Integrated Mission for Sustainable

Development (IMSD) initiated by the DOS to generate and implement locale-specific developmental plans at watershed level with the help of Central/State agencies, academic institutions, NGOs and voluntary agencies in certain districts, is an excellent example in this regard.

10.45 Once a S&T department, either in the State or at the Centre, has successfully generated/demonstrated a model and proven its replicability, preferably through an assessment involving the other line departments and the financial institutions, a suitable inter-departmental structure/ mechanism may be set up for replication. Organisations like the National Small Industries Corporation (NSIC), the Small Industries Development Bank of India (SIDBI) etc. should be involved in the replication of the models in several diverse socio-economic/geographic contexts. To make this process a success, measures like granting sabbatical leave or attractive deputation terms to the scientists working on the project may be necessary. This will enable them to devote their time fully to their new assignments.

10.46 Another aspect that should be taken care of, under S&T application for societal development, is the improvement of traditional technologies which have the potential of employment generation and upgradation of the quality of life of the common man. Special emphasis will be given to the promotion of research and development and adaptation of technologies for improving the life, working conditions and opportunities for gainful employment of women, especially in the rural areas. The present state of inventories of traditional technologies in various sectors is weak. An initiative has been taken by the National Informatics Centre (NIC) to document these, through Geographical Information System Network (GISTNIC) at various district centres. This

needs to be integrated/linked with the TIFAC's activities. During the 9th Plan, efforts should be made to have a complete documentation of traditional knowledge, specially in the areas like health care, medicinal plants, nutrition, agriculture, water harvesting, building technologies, metallurgical practices, non-farm occupations, etc. Regional centres for promoting research and documentation in traditional sciences and technologies may be set up in the existing institutions around eminent experts/scientists to study documentation, validation, upgradation and diffusion of traditional knowledge.

SCIENCE & TECHNOLOGY IN THE STATES AND UNION TERRITORIES

10.47 With a view to planning and coordinating the activities of science & technology in the States, conscious efforts are being made over the years to set up at the State level a suitable organisational structure in the form of State Council of Science

- The State level S&T machinery has to take the role of a major "prime mover", while the Centre can play a catalytic and advisory role in encouraging this initiative.
- The focus should be on programmatic support through strengthening the linkages/interaction between the State S&T Councils and the Central S&T agencies by suitably dovetailing each others' programmes.

and Technology and Department of Science & Technology to provide necessary planning and organisational inputs for pursuing science and technology activities relevant to the development of the concerned State. The State level S&T machinery has to take the role of a major "prime mover",

while the Centre can play a catalytic and advisory role in encouraging this initiative of the State Government through decentralised planning approach. Today, all the States and Union Territories have set up State Councils/Departments of Science & Technology and the S&T activities are slowly gaining momentum.

10.48 During the Ninth Five Year Plan, the State Governments should be activated much more to bring about a rapid socio-economic development through the application of science and technology. The focus should be on programmatic support through strengthening the linkages/interaction between the State S&T Councils and the Central S&T agencies by suitably dovetailing each others' programmes. Such efforts would go a long way in bringing about a rapid socio-economic development in the States. For this purpose, certain measures need to be taken both by the State Governments and the Central S&T departments.

10.49 The State Government should (i) ensure adequate linkages between the State S&T departments and the development departments for identification of the S&T components of the State' development sectors to improve the productivity of the concerned sectors; (ii) formulate specific S&T projects which can be included in the State's annual and the Five Year Plans in such a way that they would contribute to the development of the State; (iii) identify the specific role that S&T can play in helping the programmes of poverty alleviation and improvement in the quality of life of the people of the State; and (iv) earmark an outlay for, and encourage expenditure on, the S&T activities which would be of direct relevance to the States/UTs, particularly in improving the operational efficiency and productivity.

10.50 The Central S&T departments/agencies should : (i) help in undertaking or initiating studies/surveys which are of special interest to the States/UTs on location-

specific research and technology development, field trials of technologies developed by various Central S&T agencies /States for technology transfer; (ii) share mutually their experiences and the experiences of the States for initiation of regional development programmes through various interactive mechanisms; (iii) make the S&T personnel working in various State Councils aware of the areas, such as management of S&T, patents, laboratory accreditation etc. (iv) dovetail their programme with the programmes of State S&T Councils in the areas of patents, laboratory accreditation, science and society; popularisation of science; entrepreneurship development; National Resource Data Management System (NRDMS); biotechnology; remote sensing and information technology etc; (v) evolve suitable mechanisms for dissemination of information of successful developmental projects taken up by some of the State S&T Councils/departments for horizontal transfer of information/ know-how through the medium of State S&T newsletters etc. and by the networking of State S&T Councils and Central S&T agencies/departments using the NICNET facility.

SCIENCE & TECHNOLOGY INTERFACE WITH INDUSTRY

10.51 The domestic R&D system and the industrial enterprises are the two main players in the S&T-industry interface which had been functioning so long in

- In the emerging competitive environment, cooperation and coordination between Indian enterprises and R&D institutions is not a matter of choice but rather of compulsion derived from competitive pressures.
- The initial emphasis and endeavour should be on developing synergies and alliances to enhance Indian industry's competitive advantage and on gaining a greater share of global markets

distinct and distant compartments without much interaction, as the former is generally in the strategic and non-competitive areas of R&D whereas industrial R&D, which was concerned more with investigating

incremental production problems, was not geared to new process/ product development and was having little interaction with the national and international S&T community. But now the move towards a market economy is compelling both to establish a dialogue and work together for mutual advantage. This change is evident from the fact that the publicly funded R&D programmes are more market driven now than earlier; performance criteria are linked to economic, societal and environmental issues: there has been increasing awareness about the IPR and confidentiality issues and conscious efforts are being made to forge alliances and consortia for more comprehensive technology/service packages. Even on the part of the in-house R&D units, there has been an appreciation of the need for innovative technology development, deployment of larger investments in R&D and recognition of technology as one of the effective instruments of corporate strategy. While these attitudinal changes are desirable, cooperative efforts are also needed.

10.52 The increasing complexity of technology makes it difficult for the individual enterprises, especially the small and medium enterprises (SMEs), to engage themselves in the competitive R&D and technological development efforts due to high financial risks. In the emerging competitive environment, cooperation and coordination between Indian enterprises and R&D institutions is not a matter of choice but rather of compulsion derived from competitive pressures. The need for cooperation is to bring about value addition to the products through endogenous resources/skills;

environmentally clean and economically viable processes; closely held technologies that are commercially denied to Indian industry; strategic/dual-use technologies; technology packages as available from commercially operating units; process/product upgradation and incremental productive improvements; and strategic alliances with partners abroad for gaining market/technology advantage/dominance.

10.53 The initial emphasis and endeavour should be on developing synergies and alliances to enhance Indian industry's competitive advantage and on gaining a greater share of global markets in such areas like speciality chemicals, drugs and pharmaceuticals, footwear & leather products, automotive & light engineering components, customised software, textiles & garments, gems & jewellery, agro-based products etc. This is already visible in the drugs and pharmaceuticals sector. Several Indian pharmaceutical companies have already forged strategic alliances with the domestic R&D institutions. The Drugs & Pharmaceuticals Research Scheme of the DST, the Home Grown Technologies of the TIFAC and the PATSER scheme of the DSIR are some examples of successful Government intervention in shaping the cooperative endeavours. The specific roles to be played by the Government, the publicly funded R&D system, the industrial enterprises and the financial institutions in this process are elaborated in the following paras.

10.54 The Government will have to provide an economic environment favourable not only for the conduct of different kinds of business but also to catalyse the arrangements and the institutional mechanisms that would facilitate synergistic technological development, its absorption and upgradation. As a measure of enhancing R&D/technology demand,

industry may be encouraged to establish its own R&D units by according tax incentives for investments on R&D; allowing accelerated depreciation for product development costs; cost-sharing of R&D projects of even private enterprises; etc. For improving the efficacy of R&D/technology supply, a single window

- The Government will have to provide an economic environment favourable not only for the conduct of different kinds of business but also to catalyse the arrangements and the institutional mechanisms that would facilitate synergistic technological development, its absorption and upgradation.
- The efficiency and effectiveness of the R&D institutions can be significantly enhanced by providing them adequate flexibility and freedom to function in a market economy.
- The increased participation and involvement of the industry in the decision making bodies of R&D institutions will make their programmes not only more attractive to industry but also to the financial institutions offering venture/risk capital.

system for R&D funding may be introduced. The R&D/technology support facilities are required to be enlarged through the development of S&T information networks; the strengthening of standardisation, quality control and assurance systems; enhancement of the capacity of local consulting firms to translate R&D outputs to economic value products; support to technology marketing efforts of R&D institutions and promotion of peer-groups through more active industry/professional associations.

10.55 On the part of the publicly funded R&D system, the avoidance of a purely bureaucratic approach is a necessity. The efficiency and effectiveness of the R&D institutions can be significantly enhanced by providing them adequate flexibility and freedom to function in a market economy. They should, in turn, devise strategic R&D/business plans aligned with the national priorities and tuned to the market needs by utilising multifunctional inputs in the project formulation with clear definition of

project objectives and outputs, by introducing operational flexibility at the bench level and by undertaking effective publicity and marketing of R&D outputs. With a view to increasing the commercial attractiveness of R&D outputs, the industry may be helped to identify and articulate its R&D needs, followed by prioritisation of programmes to be taken up for R&D and by avoiding subcritical funding. The increased participation and involvement of the industry in the decision making bodies of R&D institutions will make their programmes not only more attractive to industry but also to the financial institutions offering venture/risk capital. Strategic alliances can be forged, if the technology is offered with performance guarantees, and more so, if offered as a technology-cum-financial package or as a turn-key project. This can be achieved by a consortium approach, where the R&D institutions, design and consultancy organisations, and financing institutions/venture capital firms will share the stakes in the technology package. The other steps which the R&D institutions should take relate to providing the enterprises access to technical information on several aspects like technological trends, technology sources, technology choices, technology assessment, sources of raw materials and equipment, financing possibilities; meeting the needs of industry for specialised training/skill development and facilitating mutual visits/short term placement of one's experts into the others' system/ environment.

10.56 Parallely, there are several aspects in which industry has to extend its cooperation. For example, in the high risk and high cost R&D areas, the industry need to cooperate in supporting the programmes for the development of generic technology with publicly funded R&D. Some Indian examples are: CFC substitutes, Vitamin A,

- The industry should adopt a cooperative approach in identifying its R&D needs, inviting scientists/technologists to serve on the Boards of companies and, finally, in financing in a major way the projects of their concern.
- Commercially operated venture capital financing has the potential to promote the synergising of competencies of the publicly funded R&D system and industry.
- The DFIs and the venture capital funds may also introduce a scheme for technology insurance to underwrite the risk of using the domestically developed new technology.

Cobalt-based chemicals, high energy rare earth magnets, Flosolver, Cobalt recovery, Carbon fibre for braiding applications, Membrane cell process for chlor alkali production, Titanium scrap recycling etc. These need to be proliferated to enable the Indian industry gain a competitive advantage in the market place. Promotion of long-term R&D alliances between the in-house R&D units and the publicly funded R&D institutions is another method through which one can optimise on the time and costs of technology development and its application. This role apart, the industry should adopt a cooperative approach in identifying its R&D needs, inviting scientists/technologists to serve on the Boards of companies and, finally, in financing in a major way the projects of their concern.

10.57 The financial institutions like SIDBI, banks and ICICI have a role to play in this game. In the Indian context, it has been found difficult to raise funds for technology development and proving the technology either by the industry or the research institutions on their own or sometimes even jointly by both of them. While the newly established Technology Development Fund should cater to the bigger needs, the commercially operated venture capital financing has the potential to promote the synergising of competencies of the

publicly funded R&D system and industry in several ways.

10.58 For technology demonstration/ proving, it is difficult for small and medium enterprises (SMEs) to raise funds from public capital markets due to the smallness of size, the early stage of development and the limited potential for leverage. The venture capital funds do provide finance for this activity, but their coverage has been small. Therefore, this activity needs to be taken up by the other Development Financial Institutions (DFIs) especially by the SIDBI which deals with SMEs. The DFIs and the venture capital funds may also introduce a scheme for 'technology insurance' to under-write the risk in using the domestically developed new technology. Finally, a pragmatic action plan for a meaningful orchestration of Government-Industry-R&D system should be formulated.

10.59 Various steps are involved in the formulation of such an action plan. To start with, each publicly funded R&D institution may prepare, with professional assistance, at least a five year business plan and the funding by Government should be based on that business plan, with gradual reduction in the percentage of Government funding over a period of time. The next step should be networking and forging alliances with other R&D institutions and in-house R&D units to identify various facilities and services available with them which are required for their business plans. On the basis of this, the small and medium enterprises can be assisted to meet their R&D/S&T needs. The R&D in industry should, on the other hand, move towards more innovative product and process development through several measures viz. networking with publicly funded R&D institutions, finding appropriate placements for the scientists to work in industry, giving representation to scientists on the Board of Directors of companies and by approaching the R&D institutions for relevant aspects of their R&D/S&T requirements/plans, in confidence. The Government intervention can be in terms of providing tax incentives linked to direct benefits derived by the economy and creating an environment of freedom and flexibility commensurate with the regulations of a market economy. The financial institutions and the Chambers of Commerce should formulate appropriate rules and guidelines to facilitate the funding of technology development and demonstration activities of the R&D institutions or the industry and to evolve and implement a technology insurance scheme to underwrite the risk of using domestically developed technology.

S&T COMMUNICATION, POPULARISATION AND BUILDING OF SCIENTIFIC TEMPER

10.60 With the setting up of the National Council for Science & Technology Communication (NCSTC), considerable emphasis has been laid over the years on the popularisation of science and the development of scientific temper. A whole range of programmes involving a large number of voluntary agencies as well as official agencies are being undertaken in this direction. Some of the encouraging programmes are: training of science communicators; development/production/ dissemination of software for different media; support to popular science magazines in different languages; compilation of computerised science communication databases; activity-based field projects involving people in large numbers, like celebration of National Science Day, organisation of Bharat Jan Gyan Vigyan Jatha and National Children's Science Congress etc. Besides these activities, the National Council of Science Museums has established a chain of

Science Centres and Science Museums in the country under a common coordinating umbrella, with free exchange of personnel, exhibits and training facilities.

10.61 Notwithstanding the participation of members from professional academies, academic institutions and other scientific agencies/research institutions in science communication activities, there has been only a limited improvement in the

- Greater efforts should be made for instilling the scientific spirit especially among the youth with a view to overcoming the barriers of sectarianism and social prejudices.

pattern of institutional participation/ involvement in science popularisation activities/ programmes. In the States, for example, even though science popularisation is a specific priority and a thrust programme of the State S&T Councils, there is a need to catalyse all the possible science communication activities through the active involvement of interested voluntary organisations. In addition, the National Council for Educational Research & Training (NCERT), New Delhi has been encouraging students and science teachers in creative activities designed to stimulate scientific temper by improving the science text books, production of several books on popular science etc.

10.62 The experience gained in organising the science popularisation programmes should become the basis for undertaking new activities during the Ninth Plan, which could increasingly include encouragement to the publication of the popular science books, institution of incentives like prizes, awards and honours for outstanding science communicators; translation of outstanding popular science books published in foreign languages; efficient distribution mechanism to make these accessible to the target readers through various communication media like radio, TV etc. To bring about change of attitudes and practices of primary school children and their teachers, efforts like children's science congress, 'joy of learning' children's projects, exhibitions, activity camps etc. by schools, voluntary organisations and dedicated science communicators may be encouraged. Greater efforts should be made for instilling the scientific spirit especially among the youth with a view to overcoming the barriers of sectarianism and social prejudices. Further, the existing network of Adult Education Centres, Krishi Vigyan Kendras, District Industries Centres, Health Centres, Jan Shikshan Nilayams, State Science & Technology Councils etc. should be systematically involved in science popularisation activities. Research in science communication is another important area which needs encouragement. Some obvious areas of research are: the levels of science awareness in different communities; the effectiveness of different communication media; the impact of scientific literacy etc. Concerned agencies should support the creation of facilities for research in science communication and education in the existing academic/research institutions. Other promising measures for popularisation of science are: the formulation of enabling mechanisms for the cooperative functioning of S&T personnel and teachers with capable voluntary organisations; the augmentation of the existing infrastructure in terms of science museums, exhibitions, planetaria etc. the development of locally relevant community science programmes; the setting up of a network of nodal centres in selected blocks and villages; and establishment of accessibility both to the nodes of several electronic networks as well as to the stand alone systems, which will become important retrieval and referral systems of information.

S&T MANPOWER DEVELOPMENT AND EMPLOYMENT

10.63 When one is concerned with aspects such as technological innovations, implementation of newly developed technologies and finding solutions to problems of modernising and developing a society, especially in the context of the process of liberalisation, the S&T manpower assumes a special significance and will be required in considerable strength. Moreover, it is an indirect measure of the strength of the country because of the contribution of S&T activities to socio-economic development. But there have been a number of hurdles in the process of S&T manpower development. The major problems inhibiting the growth of S&T manpower are unemployment and under-employment of S&T personnel. The country is facing on the one hand a shortage of S&T manpower in some encouraging areas and on the other a surplus in some conventional areas. In this context, the matters of concern are the lack of accurate estimation of demand and supply of S&T personnel in general and of those in the specialised areas, in particular, especially an assessment of training requirements. The aspects that need consideration in such an estimation process pertain to the outturn and stock of S&T personnel and their training needs.

10.64 As regards the outturn, it is noted that there has been a significant growth in the infrastructure for higher education and consequently there has been a steady increase in the number of graduates, postgraduates and doctorates in the science and engineering

- Besides improvement in quality, what is crucial is the management of S&T manpower.
- Establishment of a National Science Manpower Information System (NSMIS) is required to make available information on scientific manpower in all possible data forms at a single point.

streams. Presently, the estimation of the stock of S&T personnel has been attempted by various organisations like the CSIR, the IAMR etc. and discipline-wise projections have been made. Taking clues from these

estimates/ projections, indepth studies need to be undertaken to estimate the demand and supply of S&T personnel as well as their training needs.

10.65 While looking at the technical manpower, it is not the number alone that should be considered important but the quality as well, especially when the aim is to harness optimally the available resources. But the high quality depends on the education and training facilities available. Moreover, since the requirements of manpower depends on the needs of the society from time to time, the system of education must change accordingly and adapt itself to the changing demands of modern technology. This calls for modernisation of the syllabi in various scientific disciplines as a continuing activity.

10.66 Besides improvement in quality, what is crucial is the management of S&T manpower. For this purpose, specific measures are needed. These include organisation of all -India level selections based upon competitive examinations, akin to the other major service sectors in the country; networking of R&D institutions, universities and industry with necessary cost sharing mechanism; creation of new courses in the thrust areas involving academic sector and utilising the facilities of specialised institutions; involvement of NRI experts in the upgradation of knowledge and skills in the scientific and technological institutions; continuous training to the S&T employees in the subjects of their respective specialisation or in the allied areas in which their professional background/exposure can be gainfully deployed; special training in

accessing the information super highways; mobility of scientists/ engineers among the sectors of industry/R&D/planning institutions, academia; active involvement of S&T personnel in the decision making process; establishing linkages among the academic programmes, research work and the users; etc.

10.67 Apart from these, the establishment of a National Science Manpower Information System (NSMIS) is required to make available information on the scientific manpower in all possible data forms at a single point so that it can provide answers to manpower-related queries covering all the important aspects like characteristics of scientific institutions, inventory of inplant training facilities, enrolment and outturn of science postgraduates, utilisation of S&T manpower, unemployment etc. To look into various S&T manpower-related functions, suitable mechanism at the national level is called for.

INTERNATIONAL SCIENCE & TECHNOLOGY COOPERATION

10.68 International cooperation in S&T is essentially a mechanism to (a) facilitate interaction among scientific researchers of various countries to update and refine their knowledge base for accelerating the pace of investigation as also to fill up any gaps in the available information, (b) develop advanced technologies, high tech equipment and new materials required for the economic growth of the participating countries and (c) take mutual advantage of complementary scientific & technological capabilities amongst the participating countries' teams. The existing mechanisms of cooperation under various programmes include exchange of technical information as well as scientists and research workers; and joint research, training and R&D programmes. On the Indian side, S&T collaboration agreements, on a general basis, have involved the DST, the CSIR and the Indian National Science Academy (INSA), while separate specific sectoral agreements have been concluded by the DAE, the DOS, the DBT, the DOD, the DOE, the DNES and the DOE&F besides the Ministries of Agriculture, Health etc.

10.69 India has entered into inter-governmental S&T agreements with 46 countries. During the last 3-4 years a large number of new agreements were concluded. Of these, the countries with which specific programmes of cooperation are being actively followed are China, Hungary, Israel, Italy, Poland, Russian Federation and Ukraine. In addition, a few bilateral programmes are at an advanced stage of implementation including an Indo-French Centre for the Promotion of Advanced Research (IFCPAR) and an Indo-Uzbek Centre for the Promotion of Scientific & Technological Cooperation. Under multilateral cooperation, a Centre for Science & Technology of the Non-Aligned & other Developing Countries (NAM S&T Centre) and an International Centre for Genetic Engineering & Biotechnology (ICGEB) were set up in New Delhi. Besides, the UN Centre for Space Science and Technology Education for Asia-Pacific Region was established in Dehradun.

- For strengthening the international S&T cooperation, the formulation of S&T programmes should take into consideration the prevailing national scenario as well as conditions and trends in other parts of the world.

10.70 During the past five years joint bilateral collaborative work undertaken with CIS, USA, France, Ukraine, European Community, Poland, Hungary, Germany, Japan, Netherlands, Sweden and Mauritius, includes 300 projects, visits of about 800

Indian S&T personnel, publication of 650 joint research papers, visits of about 100 foreign S&T personnel to India, 241 postdoctoral level fellowships, 73 joint workshops etc. Some examples of multilateral collaboration are : UNESCO - Nehru Science Chair at Jawaharlal Nehru Centre for Advanced Scientific Research in Bangalore and S&T projects with UNDP assistance sponsored by the DST in the areas of Natural Resource Data Management System, Meteorological Application to Agriculture and improving technology transfer through networking.

10.71 For strengthening further the international S&T cooperation, the formulation of S&T programmes should take into consideration the prevailing national scenario as well as the conditions and trends in other parts of the world. Besides mutuality of interest, the investments on international S&T programmes should enhance self-reliance, yield social, economic and scientific returns to the participating countries on equal terms and complement the ongoing national efforts. An international programme should emerge as a follow-up of the identification of the technological gaps in certain areas. Even with regard to funding, the internal sources should be tapped first and then the collaborative activities with other countries should be undertaken to supplement it, based on the mutual interest of the concerned parties. In order to coordinate the international S&T collaborative programmes, an advisory mechanism needs to be set up to formulate an overall policy, to evaluate the needs and suggest an approach for the future, including participation in major international experiments on a cost-sharing basis; visits of foreign specialists; acquisition of the cutting-edge technologies; imparting training to S&T personnel in IPR issues etc.

REVIEW OF THE EIGHTH FIVE YEAR PLAN PROGRAMMES

10.72 During the Eighth Five Year Plan, concerted efforts were made to implement well-defined, time-bound programmes in various disciplines of science and technology. Science and Technology Advisory Committees were set up in most of the socio-

- A three tier national level S&T structure:
 - Cabinet Committee on Science and Technology (CCST)
 - Science Advisory Committee to the Cabinet (SACC)
 - Committee of Secretaries on S&T (COS S&T)

economic sectors for the identification, formulation and implementation of the S&T programmes in the concerned sectors. In order to promote science and technology activities at the grass-root level, State Science and Technology Councils/ departments were

strengthened and their interaction with various scientific institutions and development departments was ensured for effective implementation of location-specific projects/ programmes. To take an overall view of the scientific efforts and policy guidelines for the development of S&T in the country, a three-tier national level S&T structure, viz. Cabinet Committee on Science and Technology (CCST), Science Advisory Committee to the Cabinet (SACC) and a Committee of Secretaries on Science and Technology (COS S&T) has been established.

10.73 There had been a number of significant events during the Eighth Plan period in the science and technology sector. The successful launch of the indigenously built INSAT 2A, 2B and 2C resulted in the provision of several facilities like video conferencing, expansion of TV services to more areas. The PSLV-D2 and D3 were successfully launched and remote sensing satellites (IRS P2 and P3) placed in orbit. The IRS-

IC, the best civilian remote sensing satellite, presently orbiting the earth, was launched. A programme entitled "Integrated Mission for Sustainable Development (IMSD)" was launched in several districts for the formulation of location-specific development plans. The National Institute of Ocean Technology (NIOT) was set up at IIT, Chennai with the objective of undertaking research in the fields of ocean energy, marine instrumentation, ocean engineering systems etc. Some of the useful contributions of atomic energy research pertain to the consolidation of pressurised heavy water reactor technology, demonstration of fast breeder technology, the development of mixed oxide fuel assemblies for power reactor, the initial commissioning of fuel reprocessing plant and U-233 fuelled KAMINI research reactor. A significant development during the Eighth Plan period was the launching of technology mission mode projects in the areas of sugar production technologies, advanced composites, fly ash disposal and utilisation, aquaculture, biological pest control, biofertilizers and leather technologies, for the validation and demonstration of technologies having great promise to the country. Some of the significant achievements vis-a-vis special features in respect of the major S&T departments/agencies are briefly indicated below :

(A) SCIENTIFIC AGENCIES AND DEPARTMENTS

Department of Atomic Energy (DAE) - R & D Sector

10.74 The R&D programmes of the DAE continued to focus on producing safe and economic nuclear power exploiting the natural resources of uranium and thorium in the country and made significant contributions in various sectors like energy, industry, food, health and water. During the Eighth Plan, the DAE registered a significant progress and crossed several milestones in many areas covering

• **Important achievements of DAE (R&D Sector) :**

- BARCIS system for in-service inspection of coolant channels in operating Heavy Water Reactors.
- Conceptual design of the Prototype Fast Breeder Reactor and related R&D studies.
- Release of high yielding and disease resistant varieties of moong and groundnut.
- Food irradiation process for preservation of onions and potatoes.
- Desalination plants on Multi Stage flash (MSF), Reverse Osmosis (RO) and Low Temperature Vacuum Evaporation (LTVE) process.
- Assembly of 450 MeV Synchrotron Radiation Source.
- 64-node parallel processor.
- Giant Meter wave Radio Telescope (GMRT).

peaceful application of nuclear energy. While laying greater emphasis on basic research, the DAE continued to be a nodal organisation for launching some of the technologies having applications in defence, space and other strategic sectors. Some of the milestones achieved in various areas of atomic energy research are listed below :

10.75 The achievements under reactor technology include introduction of MOX fuel in Tarapur reactors, use of thorium in PHWRs. BARCIS system for in-service inspection of coolant channels in operating pressurised Heavy Water Reactors, technology for decontamination of operating reactors, repair technologies and modernisation of control systems based on computers. The development of computerised distributed control & monitoring systems for nuclear power projects was completed. The Fast Breeder Test Reactor (FBTR) was operated at a power level of 10.5MWt corresponding to maximum fuel rating with indigenously developed carbide fuel. The conceptual design of the

Prototype Fast Breeder Reactor (PFBR) and related R&D studies and the experimental phase for the development of technology for the fabrication of critical reactor components, modelling studies relating to equipment and instrumentation were completed. Under the thorium utilisation programme, indigenously designed mini reactor, KAMINI utilising Uranium-233 was constructed at Kalpakkam. The design for advanced heavy water reactor in BARC was completed.

10.76 In the area of prospecting for atomic minerals, with the proving of the resources of Uranium in Meghalaya, Bihar and Andhra Pradesh, the resource base of uranium in the country has been enlarged. The initial commissioning of Kalpakkam reprocessing plant and commissioning of radiochemical hot cell facility for the examination of irradiated fuel were the other achievements in this area.

10.77 In the areas of safety & environmental protection related to atomic energy activities, many studies were completed and a number of environmental monitoring and communication systems developed in BARC. Research in the non power related areas contributed significantly to socially relevant sectors such as health and food. In the field of applications of radio isotopes in health, radiation sterilisation of medical products and contributions to diagnostics and therapy, yearly six lakh patient investigations and 1.5 to 2 million radiation treatment cases were handled using radioisotopes. A 10 Mev microtron developed at Indore was in the process of commissioning for radio-therapy work. The Regional Radiation Medicine Centre (RRMC), Calcutta installed a 4 Mev Linear Accelerator (LINAC), indigenously developed by SAMEER, Bombay and CSIO, Chandigarh enabling it to treat about 600 patients per month.

10.78 In the area of agriculture and food, the achievements include the release of high-yielding and disease resistant varieties of moong and groundnut; food irradiation process for preservation of spices, potatoes and onions; improvements and multiplication of crop plants, developing technologies for the processing and maintenance of quality of fruits like mangoes. In the area of water management, desalination plants on multi-stage flash (MSF) evaporation, reverse osmosis (RO) and low temperature vacuum evaporation (LTVE) processes were set up in the rural areas for purification of brackish water.

10.79 In the area of accelerators, CAT, Indore assembled India's first 450 MeV Synchrotron Radiation Source Indus-1 storage ring and three beamlines were also ready. The other achievements in this area include: commissioning of high resolution beam line at VECC, the Electron Cyclotron Resonance (ECR) Ion Source; and Superconducting booster LINAC and a booster synchrotron etc. The 500 KeV industrial electron accelerator was in an advanced stage of fabrication for application in the plastics industry. In the area of cryogenic technology, a closed cycle cryo-refrigerator was developed and a helium liquifier was under development at CAT. A laboratory was set up to carry out helium gas collection from the hot springs of Bakreshwar and Tantloi.

10.80 The achievements in the areas of robotics, computer technology, material characterisation etc. include the development of a tele-operated manipulator for re-tubing operation of nuclear reactors, installation of antenna control system for GMRT at Pune, development of several robotic devices for integrated automatic sampling and analysis system for reprocessing operation; installation and use of several high

speed super computer facilities like 64-node parallel processors, artificial intelligence- based graphics and speech-based user interfaces for nuclear facilities. In addition a National Centre for Compositional Characterisation of Pure Materials was set up.

10.81 The DAE's R&D efforts have resulted not only in the saving of large amount of foreign exchange but also in providing a number of state-of-the-art technologies to Indian industries including specialised consultancy services in areas such as computers, advanced instrumentation, power electronics, technology relating to materials, chemical and bio-chemical processes and associated equipment, robotics and non-destructive testing.

10.82 Apart from technology development and services, the DAE provided continued support to promote R&D in the frontier areas of science through its aided institutions covering a wide spectrum of subjects such as physics, mathematics, chemistry, biology, material science, condensed matter physics, accelerator-based research, gamma ray astronomy, astrophysics and seismology for creating knowledge base as well as development of strategic technologies. A major achievement of the DAE was the setting up of the Giant Meterwave Radio Telescope (GMRT), which was near completion at Khodad, near Pune. In the area of life sciences, a new gene which controls the ability of organism to grow at low temperatures was identified and the base sequence of its DNA determined along with its expression under different conditions.

10.83 Some of the measures taken for enlarging the scope of the DAE-university interactions include Inter-University Consortium for the Department of Atomic Energy Facilities (IUC-DAEF) at Indore, the DHRUVA national facility and Global Environmental Radiation Monitoring (GERMON) programme for monitoring radiation exposure and radioactivity levels around the globe, installation of prototype 10 MeV compact microtron at Mangalore University, supply of various lasers to universities by CAT for pursuing research work and setting up of a neutron-generator in the Calcutta University by the Saha Institute of Nuclear Physics, besides funding mission oriented R & D activities in some advanced areas of science and technology by BRNS. Several national research programmes/facilities were also implemented like the National Centre for Compositional Characterisation of Pure Materials; the national facility for neutron beam research by BARC; the Centre for Research in Biological Sciences; Homi Bhabha Centre for Science Education by TIFR and National Programme on Lasers by CAT. In addition, an international collaborative research programme involving the utilisation of the international facility namely the Large Hadron Collider (LHC) at CERN, Geneva was implemented by CAT, BARC, VECC and other aided institutions like SINP and IOP.

Department of Space (DOS)

10.84 Over the last three decades, the Indian space programme has established a number of capabilities in the country, e.g building world-class satellites for communications and remote sensing; launching remote sensing satellites from India with indigenously developed

- Indian Space programme has established a number of capabilities in building world class satellites for communication and remote sensing and launching remote sensing satellites with indigenously developed launch vehicle.
- **Various milestones achieved:**
 - INSAT-2A and 2B launched in July 1992 & July 1993 respectively
 - INSAT-2C launched in December 1995.
 - IRS-P2 and IRS-P3 launched in 1994 and 1996 respectively.
 - IRS-1C launched in December 1995.

launch vehicle and reaching the benefits of space technology to improve the quality of life at the grass-root level, essentially through the two national space systems based on INSAT and IRS.

10.85 The INSAT-2A and the INSAT-2B, launched in July 1992 and July 1993 respectively have enhanced the INSAT space segment capacity, facilitating introduction of metro channel in Doordarshan, rural networks, search & rescue service and additional regional channels. The INSAT-2C, launched in December 1995, has been providing additional capability for business communication, services and extended coverage to enable TV programme outreach beyond Indian boundaries catering to the population from South East Asia to the Middle East. The domestic mobile satellite services, being introduced with the INSAT-2C and to be augmented further using the INSAT-2D, will enable communications from any part of India and the sea areas of interest with small portable terminals and ship-mounted terminals. The INSAT-based Meteorological Data Collection System and the Disaster Warning System (DWS) are two invaluable contributions by the DOS for providing meteorological forecasts and cyclone warning services. A developmental communication project, started in Jhabua District of Madhya Pradesh has been providing training and awareness among the rural masses on better agricultural practices, land and water resources management, family planning, health care and hygiene. This project is expected to provide valuable inputs for planning and establishing such networks on a wider scale in the country.

10.86 The Earth Observation Systems, consisting of a series of remote sensing satellites, have been providing a wide variety of data useful for natural resources management of the country. The IRS-P2 and the IRS-P3 satellites, which were successfully launched and operationalised in 1994 and 1996 respectively, have been complementing the data requirements of the user community. The IRS-1C, which is another sophisticated satellite, was launched in December 1995. The data from the IRS satellites, being used on operational basis for a wide range of applications covering agricultural crop acreage and production estimation, forestry, wasteland management, mineral prospecting, ground water targetting, snow melt run-off prediction, environmental monitoring, environmental impact analysis etc. has helped in several aspects of decision making process. This data has also enabled the DOS to take up a major developmental project, viz., Integrated Mission for Sustainable Development (IMSD) to formulate locale-specific developmental plans for sustainable development of land and water resources by synthesising thematic information derived from remotely sensed data with other collateral information. This project is now being executed in 174 selected districts of the country. A more significant development is that the IRS satellite constellation has become an international system recently, with a US company, EOSAT, entering into commercial agreement with India for reception and marketing of the IRS data worldwide.

10.87 Under the launch vehicle programme, the ASLV-D3 mission of May 20, 1992 facilitated validation of a number of technologies useful for larger vehicles of operational class. On this basis, the development of the PSLV and the GSLV was initiated. With the two continuous successful missions, the PSLV was declared operational. The next one, i.e., PSLV-C1, will carry the operational IRS-1D satellite in 1997. However, in respect of the Geo-Synchronous Satellite Launch Vehicle (GSLV) whose first

developmental flight was initially targetted towards the end of the Eighth Plan, is now scheduled during the Ninth Plan.

10.88 Among the other programmes, the MST Radar facility is being extensively used by the scientific community, including university students for advanced research in the area of atmospheric sciences. The infrared telescope was commissioned and scientific validation with trial observations completed. Through the medium of the RESPOND programme, aimed at establishing a large S&T infrastructure base at the academic institutions in the country for carrying out space research projects/programmes, the DOS-academic interface has been strengthened. Over the past 25 years, the DOS has supported as many as 100 universities and research institutions in carrying out about 200 research projects in the areas of space science and technology. In recognition of India's role in sharing her experience in the development and application of space technology for societal benefits, the UN Asia-Pacific Regional Centre for Space Education was set up in India. Due to the strong DOS-industry interface, so far, about 225 technologies developed by ISRO/DOS, have been transferred to the industry for commercialisation. For handling technology marketing and providing consultancy services to the industry, ANTRIX Corporation was set up as a corporate unit within the DOS.

Department of Science and Technology (DST)

10.89 The DST has been making increasing efforts to promote basic research. The financial support to basic research in the Eighth Plan was double that in the Seventh Plan. The number of R&D programmes supported under basic research so far was more than 1236, involving a total cost of about Rs 125 crore and 544 institutions. About 70% of this funding was received by the academic sector and more than 500 R&D programmes costing Rs. 8 crore were sanctioned for young scientists. National facilities and core groups were set up for promoting research in the frontier areas of S&T which include superconductivity, lasers, carbon and nano materials, neurosciences, x-ray crystallography, robotics, laser processing of materials, nutritional studies etc. About 3000 original research papers were published by 13 DST supported autonomous institutions. Some of the outstanding works of these institutions were in the areas of blood oxygenator, hydrocephalus, amorphous silicon solar cells, BOD Sensors, Plasma Nitriding Process etc. besides experimental demonstration on simultaneous manifestation of light as a particle and a wave; and new series of compounds exhibiting novel liquid crystalline phase. Several of these technologies were transferred to the industry.

Major achievements:

- National facilities and core groups were set up for promoting research in frontier areas of S&T.
- Experimental demonstration on simultaneous manifestation of light as a particle and a wave.
- New series of compounds exhibiting novel liquid crystalline phase.
- International Advanced Research Centre for Powder Metallurgy and New Materials.
- Treatment of tuberculosis and other diseases using lasers.
- Demonstration-cum sale of PARAM super computer.
- Integration of seismographs for use by IMD.
- Mission Mode projects undertaken in the areas of:
 - Sugar Production Technologies.
 - Advanced Composites.
 - Fly Ash disposal and utilisation.

10.90 Under the international R&D co-operation, efforts were made to expand and accelerate the pace of collaborative research with a number of countries abroad. Some of the significant outcomes were: the setting up of International Advanced Research Centre for Powder Metallurgy and New Materials, treatment of tuberculosis and other diseases using lasers, demonstration-cum-sale of PARAM supercomputers, integration of seismographs for use by IMD etc.

10.91 Through the S&T Advisory Committees (STACs) set up in 22 Ministries to promote and coordinate the technology development programmes, the DST undertook several joint R&D projects with other Government departments and the industry in a number of areas such as building materials, wood substitutes, orthopaedic devices, mini-micro hydel power, robotics, CFC substitutes, air pollution control catalysts, laser processing materials etc. A few mission mode projects that were undertaken, and the significant results that were demonstrated, relate to sugar production technologies, advanced composites, fly ash disposal and its utilisation etc. Several society-related programmes were undertaken by the DST with an emphasis on development of technologies for poverty alleviation, employment generation, enhancement of income and improvement in quality of life of rural and urban poor, women, scheduled castes and tribal populations and weaker sections. More than 364 projects involving 250 NGOs in the area of rural and tribal development were implemented benefitting about 170,000 people. Under the S&T Entrepreneurship Development Programme, more than 35000 job opportunities were created and more than 1000 industrial units were set up by trained entrepreneurs, providing additional employment to about 4000 people. Some of the science popularisation efforts being organised by the National Council for Science & Technology Communication (NCSTC) included Bharat Jan Gyan Vigyan Jatha (BJGVJ)-1992, 144 episodes of radio serial titled 'Manav Ka Vikas' - the longest science serial ever produced and broadcast simultaneously in 18 languages; two National Childrens' Science Congress in which thousands of children participated; production and telecast of TV serials on different themes of S&T etc. Under the programme of National Resources Data Management System (NRDMS), 22 Data Base Centres were established in the country in different geo-environmental settings for developmental planning. The other important activities of the DST pertain to the development of an operational medium range weather forecasting model suited to indigenous needs using Super Computer and the strengthening of the State S&T Councils for the development and promotion of State level S&T activities, particularly locale-specific programmes.

10.92 The India Meteorological Department (IMD) continued to engage itself in the dual role of conducting research in the areas such as ozone in tropics, agricultural meteorology, use of monsoon teleconnections etc. and providing specialised services in terms of meteorological forecasts to meet a variety of demands from different types of users through a network of 5 Regional and 13 State Centres. The important programmes

Important programmes undertaken by IMD

- Modernisation of radar data network for improving the accuracy in the forecasting of upper winds and severe storms.
- Modernisation of upper air network with 401 MHz radio-theodolites.
- Installation of CYBER-2000 computer to make forecasting network more efficient.
- Commissioning of instruments like ceilographs/skopographs at National Airports.
- World Bank Aided projects to upgrade the seismological instrumentation in peninsular India and hydrological networks.

undertaken during the Eighth Plan pertain to the modernisation of radar data networking by replacing 6 wind finding radars and 4 storm detection radars for improving the accuracy in the forecasting of upper winds, severe storms etc.; modernisation of the upper air network by replacing 6 old and obsolete Metox radio-theodolites by new 401 MHz radio-theodolites; installation of a CYBER 2000U Computer at Delhi to make the forecasting network more efficient; and commissioning of the instruments like ceilographs/ skopographs at the national airports etc.

10.93 The other major programmes and services rendered by the IMD relate to meteorological telecommunication; agromet-advisory services; establishment of the INSAT Meteorological Data Processing System at New Delhi to receive, process and disseminate INSAT data; replacement of the computer at National Data Centre (NDC), Pune for improving the management and storage of meteorological data for research and study; etc. Besides these, two World Bank Projects were also launched to upgrade the seismological instrumentation in peninsular India and hydrological networks. The execution of the 8th Plan projects in the IMD led to a visible improvement in the quality and scope of various meteorological forecasting services.

Department of Scientific and Industrial Research (DSIR)

10.94 The DSIR has been undertaking schemes relating to Technology Promotion, Development & Utilisation (TPDU); the National Information System on Science and Technology (NISSAT); two public sector undertakings, viz. National Research Development Corporation (NRDC) and the Central Electronics Limited (CEL) and the programmes of the Council of Scientific and Industrial Research (CSIR). The programmes under the TPDU scheme are of 3 types viz., Research and Development by Industry (RDI), Programme Aimed at Technological Self Reliance (PATSER); and Scheme to Enhance the Efficacy of Transfer of Technology (SEETOT).

Major achievements of DSIR

- PATSER resulted in commercialisation of products and processes for:
 - CNC tools and Cutter Grinder
 - Fuel efficient diesel LCV engines
 - 25 KW solar photo voltaic power plant
- NRDC programmes resulted in licensing of technologies related to:
 - Heart Valve
 - Cyclosporin-A
 - Rice Husk Particle Board
 - Calcium Gluconate
 - Fly Ash bricks
 - Carbon fibre for braiding applications
 - Glycol based automobile coolant
 - Special blister packaging machines

10.95 Under the RDI scheme, 5 National Conferences on In-house R&D in industry were organised; 88 National Awards for outstanding In-house R&D achievements were presented; recognition was accorded to about 350 new In-house R&D units and about 150 new Small Industries Research organisations (SIROs), and financial support was provided to several R&D projects. Under the PATSER scheme, about 50 technology development projects were completed, resulting in the commercialisation of products and processes such as CNC tool and Cutter Grinder, fuel efficient diesel engines for tractors, improvement of fuel efficiency and emission reduction in LCV engines and 25 KW solar photovoltaic power plant etc. The support under the PATSER programme to the tune of about Rs.16.0 crore for technology development has generated projects costing Rs.40 crore. These not only resulted in significant

technological and commercial returns but also helped in building up the R&D capabilities of the concerned units. The other activities under PATSER scheme resulted in bringing out Technology Evaluation and Norms reports in 50 sectors/areas; 6 reports on assessment of capital goods requirement in various sectors and 20 pre-feasibility reports to attract investment from Talented Indian Engineers and Scientists (TIES). The main activities under SEETOT included compilation and analysis of foreign collaborations, analytical studies relating to technology transfer, preparation of reports on more than 80 technology status studies, international trends, gaps in technology etc. A total of 31 studies, projects and other activities were completed. In the area of consultancy development, 28 studies on sectoral/State level consultancy capabilities were completed and the Consultancy Development Centre (CDC) was supported for undertaking training programmes, information services etc.

10.96 The activities of the National Information System on Science and Technology (NISSAT) included the maintenance of 11 Information Centres already set up in the areas of leather, food etc. and promotion of resource sharing among libraries and the Information Centres by setting up library networks at Calcutta, Delhi, Mumbai, Pune, Ahmedabad and Mysore; completion of software development for automation and networking of S&T libraries and organisation of about 60 training courses on various subjects of information science & technology.

10.97 The NRDC completed technology upscaling of the projects relating to rice husk particle board, spirulina algae and heart valve etc. resulting in the licensing of the technologies relating to heart valve, cyclosporin A, rice husk particle board, calcium gluconate, fly ash bricks, carbon fibre for braiding applications, resorcinol, glycol based automobile coolant, spice oleoresins, special blister packaging machines etc. Cash prizes were awarded to 55 inventions and financial and technical assistance was provided for filing around 130 patents in India and 55 abroad. Export of projects and services through NRDC led to foreign exchange earning of around Rs. 3 crore.

10.98 At CEL, the R&D schemes undertaken were: Solar Cell Process Development (SCPD); Ultra High Efficiency Single Crystalline Solar Cells (UHEC); New SPV Systems (NSS); Bench Scale Process Development of High Permeability Ferrites (HPF); Advanced Ceramics and Ceramic Paste (ACCP); and Railway Electronics. The projects on SCPD, UHEC and HPF were completed. The efficiency of the solar cells was improved from 10.4% to 13.5% and a pilot plant for making Ultra High Efficiency (UHE) Solar Cells of 17% efficiency was established. Under the New SPV Systems, some of the technology developments include new SPV pumps using surface centrifugal pumps, high efficiency inverter, SPV educational kits, high efficiency ferrites etc. SPV systems were exported to Bhutan, Cuba and Oman and an SPV module and systems plant was established in Syria. The CEL earned Rs.15 crore from Railway Electronics business and Rs. 9.5 crore on microwave components. About 60000 piezo ceramic electric systems were also supplied for defence communication.

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| <ul style="list-style-type: none"> • CEL R&D activities resulted in: - Improvement of solar cell efficiency from 10.4% to 13.5% - Establishment of pilot plant for Ultra High Efficiency Solar Cells of 17% efficiency - New SPV surface centrifugal pumps - High Efficiency inverter - SPV educational kits - High efficiency ferrites. |
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10.99 The Council of Scientific & Industrial Research (CSIR) has built up over the years a network of 40 specialised national laboratories with 80 field extension centres having expertise and knowledge-base in diverse scientific disciplines and serving practically all the socio-economic sectors. During the Eighth Plan, the CSIR reoriented its activities to operate in an environment of international competition and to strive towards self sustaining growth. For this, policy changes were brought about in the management structures and the mode of functioning so that the CSIR system became more user responsive and market-driven. Efforts were also made to develop closer links with the user agencies and to forge strategic alliances through increased industry representation on the apex decision making bodies of CSIR such as Governing Body, Technical Advisory Body etc. and by providing technical know-how on turn-key basis.

10.100 There were several scientific & technological achievements by the CSIR laboratories. The country's first all-composite aircraft was designed and fabricated.

Important achievements of the CSIR laboratories:

- Design and fabrication of all composite aircraft.
- New catalysts for refineries, petrochemical and chemical industry.
- New drugs for anti-fertility, bio-enhancer and memory enhancer.
- Novel cost-effective processes for 30 drugs and four drug intermediates licensed.
- Long wall and wide stall methods of mining.
- Oil palm processing technologies.
- Mechanised pulse mill of 100Kg/Hr capacity.
- Hand operated daal mill of 40-50 Kg/Hr. capacity.

New catalysts were developed for refineries, petrochemical and chemical industry. A cost-effective novel process for NMP (a solvent used in refinery processes) was developed. New drugs for antifertility, bioenhancer and memory enhancer were developed and novel cost-effective processes for over 30 drugs and four drug intermediates

were licensed as anti-AIDS, anti-viral, anti-cancer, anti-bacterials, anti-malarial, analgesics, anti-inflammatory and anti-allergic. In the Energy Sector appropriate techniques/ technologies were developed for long-wall mining and wide stall method of mining, beneficiation of coking and non-coking coal for reduction of ash content, coal carbonisation, solvent refining, conversion of synthetic gas/coal to middle distillates etc. The R&D in Food & Food Processing Sector led to the development of oil palm processing technologies including a screw press of 5 tonnes FFB/hr capacity; mechanised pulse mill of 100 kg/hr capacity and hand-operated daal mill of 40-50 kg/hr capacity. The CSIR's wide-ranging, multi-disciplinary expertise and capabilities were gainfully utilised by several clients in the developed countries like USA (Abbot Laboratories, Parke-Davis, Smith-Kline Beecham, FMC, GE, Du Pont etc.), UK, Switzerland, Canada, Finland, as well as in the developing countries like China, Brazil, Indonesia and Oman.

10.101 During the Eighth Plan, the industrial production based on CSIR know-how increased to Rs. 10,000 crore, with a productivity saving worth Rs. 800 crore. In addition, 250 new technologies were made available for licensing

Performance indicators of CSIR

- Industrial production based on CSIR know how increased to Rs. 10,000 crore.
- 250 New technologies made available for licensing.
- 800 Technology license agreements signed.
- 920 patents filed in India.
- 120 patents filed in other countries.
- Rs. 700 crore External Cash Flow generated through contract R&D work and consultancy.

and 800 technology licence agreements were executed. A total of 920 patents were filed in India and another 120 patents abroad. Technical assistance was rendered to about 4000 entrepreneurs and an external cashflow to the tune of around Rs. 700 crore was generated through contract R&D work and consultancy. These achievements apart, the CSIR has been able to create and nurture R&D manpower at all levels, over a wide spectrum of disciplines. This is realised through awards, Fellowships/ Associateships to scientists, sponsoring extramural research (EMR) schemes to Universities/ R&D organisations etc. During the Eighth Plan period, a total of around 5000 JRF, 6000 SRF, 1000 RA and 2000 Pool Officers were supported.

Department of Biotechnology (DBT)

10.102 There were several breakthroughs in the field of biotechnology, particularly in the areas of molecular biology, plant and animal cell culture and in the development of immunology covering agriculture and allied areas, medical research, environment including biodiversity conservation with biotechnological tools etc. Major advances have taken place in basic research in modern biology, leading to the emergence of many techniques, tools and products to usher in a biotechnology revolution in the country. New leads for vaccines and drugs were made available through basic research. Cloning of gene, structural studies using X-ray crystallography and genome

Major achievements:

- Diagnostic Kits for tuberculosis, hepatitis A & C, Amoebiasis, Pregnancy, Streptococcal infection in children and HIV-I & II.
- High frequency reproducible regeneration of wheat plants.
- Transfer of technology for monoclonal M-13 bacteriophage.
- Marketing of Diagnostic kit for Leishmaniasis.
- Cloning of gene coding and expression in E.coli.
- Mission mode projects initiated in the field of:
 - Biofertilisers
 - Biological control of pests
 - Aquaculture.
- Establishment of Centre for DNA Fingerprinting and Diagnostics (CDFD) at Hyderabad.

mapping have also provided clues for further work in the area of medical biotechnology. The development of diagnostic kits for infectious diseases has received very high priority. The development of kits for tuberculosis, hepatitis A&C, amoebiasis, pregnancy, streptococcal infection in children and HIV-I&II infections are in very advanced stages and negotiations on technology transfer

to industry are in progress. There was a significant breakthrough in wheat, where high frequency reproducible regeneration of plants has been achieved and a large number of plants have been transferred to the field. Tissue culture raised cardamom plant gave 37% higher yield. Through continued support to the States and socio-economic ministries for research and development programmes, demonstration activities, technology transfer, patenting of inventions and conservation of natural resources, especially of genetic diversity, using biotechnological tools, efforts were made to formulate and implement joint proposals for promoting research in various areas of biotechnology. During the Eighth Plan, about 700 projects were recommended for financial support, ten patent applications were filed and 15 were under process. At least 10 technologies have been perfected and negotiations are in progress through BCIL and NRDC for their transfer to the industry. Some of the scientific services provided by the DBT were: infrastructural facilities in the areas of animal house, cell cultures, genetic engineering, germplasm collection etc. The facilities for fundamental research in structural biology, bioinformatics network etc. are being utilised extensively by a large number of scientists and students in the country.

10.103 The other significant contributions of the DBT were transfer of the technology for monoclonal M-13 bacteriophage to M/s Pharmacia Inc., USA., marketing of a diagnostic kit for leishmaniasis developed at the CDRI Lucknow; the cloning of the gene coding and expression in E. coli at IMTECH, Chandigarh; 'Alphanso' variety of mango through somatic embryogenesis; multiplication of a few endangered species of orchids and tea, cocoa, pepper and coffee; solvent extraction and chemical fractionation of six plants at NII leading to the identification of two active fractions with distinct antibacterial activity etc.

10.104 During the Eighth Plan period, three mission mode projects on biofertilizers, biological control of pests and aquaculture were under implementation. The first two were successful while there was a slippage in the case of the aquaculture project. Under the first one, there has been an increase in the grain yield with the use of biofertilizers. Under the second, eight candidate biopesticides were developed and perfected. Under the aquaculture project only demonstration of freshwater prawn culture could be initiated in the States of Orissa, Madhya Pradesh and Tamil Nadu. Due to the special efforts made by the DBT, about 5000 persons belonging to SC/ST and weaker sections benefitted in terms of employment opportunities, better nutrition and health care systems. In the earthquake-affected areas of Latur and Osmanabad, 13000 families were benefitted through eight demonstration projects.

10.105 In the area of Human Resource Development, postgraduate teaching and postdoctoral research and training programmes are being conducted at 33 select universities and institutions; a number of short-term training courses are being supported and a number of national and overseas Associateships awarded. Under international cooperation, the significant programmes include the setting up of a Centre of Excellence with the help of SIDA; establishment of gene banks for medicinal and aromatic plants and a sub-programme on Asian Biotechnology and Biodiversity supported by UNDP/FAO. The significant research efforts at the two autonomous institutes, viz., the National Institute of Immunology, New Delhi and the National Centre for Cell Science (NCCS), Pune pertain to immunisation, diagnostic tests based on synthetic peptides of the various antigens of HIV; leprosy vaccine as immunotherapeutic and immunoprophylactic; a non-isotopic modality of PCR-based DNA probe for tuberculosis; research on primary cultures of human foreskin fibroblast etc. The third centre, viz., International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi became functional from its new building. The significant areas of research work of this Centre relate to hepatitis vaccine, technology for production of gamma interferon, diagnostic kits for AIDS etc. A new Centre for DNA Fingerprinting and Diagnostics has also been set up with DBT support at Hyderabad during the Eighth Plan.

DEPARTMENT OF OCEAN DEVELOPMENT (DOD)

10.106 The programmes of the Department of Ocean Development were broadly grouped as : Basic Research, Strategic Fields, Technology Development / Scientific Services and Societal Programmes. Under basic research, 42 projects were implemented in colla-boration with a large number of national laboratories, universities and educational institutions. They provided interesting and useful results on the history of the sedimentation process and provided clues for the development of potential drugs and chemicals from the marine organisms. They also facilitated identification of the

areas of heavy metal pollution; characterisation of the toxic components of various pollutants specifically in some estuaries and coastal areas and standardisation of technologies for extraction of iodine from selected seaweeds.

10.107 The activities in strategic fields included polar exploration, Polymetallic Nodules Programme and international cooperation. During the Eighth Plan, six expeditions to Antarctica were conducted and polar research was carried out on various aspects of global climatic phenomena, ozone depletion, ice-core samples, etc. In one of these expeditions, the distribution and abundance of krill, cephalopods and Antarctic fish were studied

Major achievements:

- Six expeditions to Antarctica.
- Survey of entire pioneer area of 1,50,000 sq. Km. For Polymetallic Nodules using hydrosweep.
- Prototype of remotely operated collector unit operating up to 200 meter depth.
- Bucket-in-pipe lifting system for transporting nodules from the collector system.
- Three process routes for recovery of metals from nodules.
- Identification of 17 potential organisms having several medicinal properties.
- Established National Institute of Ocean Technology (NIOT) at Chennai.
- Potential fishing zone advisories disseminated to 174 fish landing centres.
- Communication facilities created at nine places in four southern states for enhancing the safety of fishermen.

and the feasibility of commercial exploitation of these resources was established. In the Polymetallic Nodules programme, the survey of the entire pioneer area of 1,50,000 sq. Km. allotted to India in the Central Indian Ocean Basin has been completed using the hydrosweep. A prototype of a remotely operated collector unit operating upto 200 metre depth and a bucket-in-pipe lifting system for transporting nodules from the collector system was designed and fabricated and three process routes for the recovery of metals from nodules were identified. As per the international agreement, out of 50% of the area to be relinquished in the Central Indian Ocean, 20% has already been relinquished to the International Seabed Authority.

10.108 The most important among the technology development projects relates to the development of potential drugs from the ocean leading to the identification of 17 potential organisms having several properties like anti-fertility, anti-microbial, anti-viral, anti-diabetic, anti-malarial, anti-hypertensive and anti-inflammatory. Out of these, five organisms, which showed potent activity as anti-diabetic, anti-viral, anti-amoebic, anti-anxiety and larvicidal agents, have been identified for development of atleast two herbal drugs in the next few years. The National Institute of Ocean Technology (NIOT), set up in IIT, Chennai initiated projects in the areas of Ocean Energy, Deep Sea Technology and Ocean Mining, Coastal Zone and Marine Instrumentation. These have enhanced the capabilities for generating energy from the ocean; venturing into shallow bed mining; identification of new sites for ports and harbours, etc. The major societal programmes initiated were: Coastal Ocean Monitoring and Prediction System (COMAPS); National Ocean Information System (NOIS) and Marine Satellite Information Service (MARSIS). The data on various pollutants collected under the COMAPS programme, helped in drawing a long-term plan for keeping our coastal zone clean. The data collected through the NOIS, set up in 14 National Marine Data Centres, is being used for planning, development, management of specific fields of ocean science and technology and exchange of data with national and international institutions. Under the MARSIS programme, potential fishing zone advisories were disseminated to 174 fish landing centres on a regular

basis. This helped the fishermen in getting better fish catches and reducing the time spent on reaching the fishing grounds which in turn reduced the overall operational cost and improved their incomes and living conditions. The communication facilities created at nine places in the four southern States and South Goa have benefited over 850 fishermen families and demonstrated the usefulness of the communication system for enhancing the safety of fishermen.

(B) SOCIO-ECONOMIC SECTORS

10.109 The integration of S&T component with the concerned socio-economic sectors was continued through the Science & Technology Advisory Committees (STACs) set up in 22 ministries with the objective of identifying and formulating specific S&T Plans & promoting S&T programmes relevant to the

Joint R&D projects identified through IS-STAC mechanism:

- Column floatation technology for industrial applications (Ministry of Mines)
- Development and Testing of STATCON Dynamic Voltage Restorer (DVR) (Ministry of Power)
- Industrial application of vorsyl separator (Ministry of Coal)
- Super Clean Coal development for metallurgical industry (Ministry of Coal)
- Introduction of short wall mining (Ministry of Coal)
- Energy efficient materials for mining industry (Ministry of Mines)

concerned sector. The guidelines for STACs were formulated and assistance was provided to various socio-economic sectors in terms of identification of experts, thrust areas, linkages with national laboratories/ universities. Efforts were made to make the STACs more active in the overall S&T development and planning of the concerned sectors. An Inter-Sectoral Science & Technology Advisory Committee (IS-STAC) continued to function in the DST with a view to coordinating the STAC activities and providing a forum to share their expertise and experiences. This process served the dual purpose of making the STACs, which were already functional, more active and in activating those which till then had not yet become functional.

10.110 With the active cooperation of the STACs, several technology mission mode projects were initiated in the areas of sugar production technologies, development of advanced composites, fly ash utilisation, biofertilizers, biopesticides and aquaculture and a number of important R&D projects which have relevance to the concerned sectors identified and funded. An important initiative taken through the IS-STAC mechanism led to the identification of some joint research projects/programmes and schemes in consultation with the concerned ministries/departments. Some examples of such joint projects are: development of indigenous column floatation technology for industrial applications (Ministry of Mines); development and testing of STATCON Dynamic Voltage Restorer (DVR) (Ministry of Power); industrial applications of vorsyl separator (Ministry of Coal); super clean coal development for metallurgical industry (Ministry of Coal); introduction of shortwall mining (Ministry of Coal); energy efficient materials for mining industry (Ministry of Mines) etc. The other measures of the IS-STAC, which have an impact on the S&T inputs in the socio-economic sectors are: publication of a newsletter, 'STAC Scan', covering information regarding technology needs of the socio-economic ministries and organisation of awareness workshops on, Control Technologies for Greenhouse Gas Emissions, Pre-combustion Clean Coal Technologies and R&D in Energy and Energy Efficiency.

NINTH FIVE YEAR PLAN PROGRAMMES

(A) Scientific Agencies/Departments

DEPARTMENT OF ATOMIC ENERGY (DAE) - R&D sector :

10.111 The thrust during the Ninth Plan in R&D sector will be on design and development of fast breeder reactor; enhancement of thorium utilisation; engineering development of thorium-based advanced heavy water reactor and matching developments in the fuel cycle area; accelerator-based systems and fusion power; technology missions in radiation applications in health, agriculture and food, specially on food preservation, desalination and isotope hydrology; strategic technologies in the areas of special materials, lasers, particle accelerators, computers, robotics, cryogenics and special instrumentation; safety and environmental protection; and technology spinoff to industry.

10.112 On the power reactor front, the existing PHWR programme aims at more

Thrust of DAE (R&D) during the Ninth Plan:

- Design and development of fast breeder reactor.
- Enhancement of Thorium utilisation.
- Engineering development of Thorium based advanced heavy water reactor.
- Accelerator based systems and fusion power.
- Technology missions in radiation application in health, agriculture and food.
- Safety and environmental protection.
- Technology spin-offs to industry.

efficient utilisation of uranium and eventually of thorium, development of specific reactor systems, such as high temperature reactors, source-driven reactors which use spallation or fusion neutrons and accelerators as non-fission neutron sources in application areas such as desalination and compact power packs for use in

remote areas etc. The programme of advanced heavy water reactors is aimed at getting a large fraction of energy output from thorium. The Fast Breeder Technology Development Programme, pursued in IGCAR, will focus on schemes relating to R&D in engineering and technology development for Fast Breeder Reactors (FBRs). Under Nuclear Fuel Development, the efforts will be on modernisation of fabrication and assembly facilities incorporating advanced automation systems and updating of hot laboratory facilities. In addition, metallurgy and materials development programme for FBRs will be pursued for carrying out R&D work. The work on reprocessing of thermal reactor fuels will concentrate on upgrading the technology to the state-of-the-art by process innovations, equipment development, incorporation of remote maintenance by robots, advanced techniques etc.

10.113 The activities relating to safety will be directed towards understanding safety-related phenomena, surveillance, monitoring and life prediction of components through related experimental studies. Under the radiological safety programme, a Regional Radioactivity Laboratory will be set up for continuous monitoring of very low levels of short/long-lived radionuclides in a variety of environmental matrices. The Atomic Energy Regulatory Board, (AERB) will take up research related to nuclear industrial and radiation safety with specific emphasis on regulatory aspects covering development of computer codes and their validation, studies connected with serious accidents, safety evaluation methodologies etc. The programme under radiation

and radioisotope technology envisages improved infrastructure and state-of-the-art instrumentation in hydrology, industry and medicine, covering the upgradation of isotope technology laboratory; the setting up of Electron Beam Irradiation Centre; the development of prototype accelerator for various applications like food irradiation, medical product sterilisation and therapeutics etc. The research work on the application of nuclear energy for societal benefit will relate to research in nuclear agriculture, plant bio-technology, plant molecular biology, with application of radiation-induced mutations and plant breeding techniques; plant tissue culture techniques for various applications; large-scale production of biopesticides and integrated pest management for maintaining high yields in crops etc. The R&D programme relating to the application of radiation and radioisotope technology to health care will be intensified by establishing medical cyclotron with Positron Emission Tomography (PET) facility for metabolic imaging for diagnosis, including development of new radiopharmaceuticals at site. A few mobile rural Cancer Centres will also be set up for early detection of cancer in the rural population.

10.114 Some of the essential facilities that will be upgraded/set up include: animal house facilities at BARC and TMC; installation of a high frequency NMR machine; augmentation of low temperature facilities; completion of the ongoing scheme relating to Advanced Centre for Training, Research and Education in Cancer (ACTREC) by Tata Memorial Centre (TMC); establishment of linear accelerator; augmentation of equipment at TMC; augmentation of space and infrastructure at Tata Memorial Hospital (TMH); augmentation of equipment at Cancer Research Institute (CRI); replacement of megatron linac system with dual energy linear accelerator etc.

10.115 Thrust will also be on the R&D programmes on accelerators. Besides the ongoing programme on Superconducting Cyclotron, the Variable Energy Cyclotron Centre (VECC) would take up schemes relating to heavy ion accelerator with Variable Energy Cyclotron, setting up of radio active ion beam facility, radiation medicine and application, material science research using accelerator, recovery and analysis of helium from hot springs, heavy ion experimental facilities etc. The Centre for Advanced Technology (CAT) will take up new projects for utilisation of INDUS-II, Proton Synchrotron, Accelerator Technology and Application and DAE-CERN collaboration for Large Hadron Collider (LHC). The laser programme will focus on demonstration of laser-based processes for nuclear programme, spinoff techniques for use of lasers in various applications, such as diagnostics, therapy in medical field, instrumentation and Non Destructive Testing and Evaluation (NDTE) applications. The thrust will be on the expansion of infrastructure facilities at CAT besides new activities relating to advanced laser technology and applications, special materials etc.

10.116 The programmes under basic research, which will receive priority relate to X-ray-based condensed matter research using INDUS-I and II; collaborative research programme by using the upcoming international high energy facilities such as RHIC, Brookhaven and LHC, CERN and Spring8-Japan; frontier areas of mathematical physics, condensed matter physics, astroparticle physics, Bose-Einstein condensation, quantum computation and communication and complexity theory, chemical physics etc. at TIFR; condensed matter physics and surface studies, ultrafast parallel processing, setting up of research facilities for high

temperature superconductors, composites, intermetallics and alloys, thin film, low temperature measurement etc. at Saha Institute of Nuclear Physics (SINP); pelletron-based experimental programme, theoretical astrophysics and setting up experimental facilities in biophysics at Institute of Physics (IOP); and strengthening of research in mathematical science at Institute of Mathematical Science (IMS) and Mehta Research Institute (MRI). Under plasma research, the scheme relating to advanced plasma research for steady state superconducting TOKAMAK will be continued and ADITYA will be upgraded to increase plasma purity in addition to augmentation of diagnostics at IPR.

10.117 Under the technology development and transfer programme, the facilities to be set up include development of electron beam melter, electron beam welder and electron beam evaporation unit; development of plasma melter, plasma gas heater, RF plasma reactor and microwave & low pressure plasma reactors; development of RF excited carbon laser, pulsed excimer laser and photo chemical reactor, facility for fabrication of ultra high precision components along with balancing equipment for the accelerator programme, employing super conducting cavity and beamline equipment etc. The Centre for Product Engineering and Technology Transfer would be engaged in technology transfer.

10.118 The new national programmes proposed to be taken up include: neutron beam research, facilities for macromolecular crystallography and superconductivity and cryogenics, international programmes relating to nuclear physics research with high energy accelerators by BARC; international collaboration programme for the study of quark-gluon plasma at heavy ion colliders at VECC and SINP; and the setting up of centres for radioastrophysics, applied mathematics and accelerator physics. In addition, facilities for high current isotope separation ion implantation; multi-element gamma and Heavy-ion and neutron array detectors will be set up at SINP besides strengthening of Homi Bhabha Centre for science education and the National Centre for Biological Science.

10.119 As in the past, HRD will be accorded due priority in accordance with the requirements of manpower arising out of the global science and will maintain interaction with various science Departments of the Government and other premier scientific agencies in the country during the execution of its programmes.

DEPARTMENT OF SPACE (DOS)

10.120 While the basic vision for the space programme will continue to be the same as was enunciated at its inception, it will be adapted to respond effectively to the dynamic and complex scenario of the coming years and unstinted efforts will be made towards developing and harnessing advanced space technologies to provide additional and newer services in a self-reliant manner for the socio-economic development of the country.

10.121 Under the INSAT series, the INSAT-2D & 2E are planned to be launched followed by four satellites of the INSAT-3 series (INSAT-3A, 3B, 3C, 3D) during the Ninth Plan. The INSAT-3E is planned to be a ground spare, with flexibility in configuration. The GRAMSAT network is planned to be established in the coming decade, integrating the potentials of satellite communication and satellite remote sensing for a wide range of applications for rural development, including tele-education and tele-health. The ongoing Jhabua Development Communication Project will be completed and large-scale replications of the same in

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| <p>Important missions planned for Ninth Plan:</p> <ul style="list-style-type: none"> • Satellites: <ul style="list-style-type: none"> - INSAT-2D and INSAT-2E - INSAT-3A, 3B, 3C and 3D - INSAT-3E as ground spare. - GSAT satellite - IRS-1D - IRS-P4 (Oceansat-1) - IRS-P5 (Cartosat-1) - IRS-P6 (Resourcesat) • Launch Vehicles: <ul style="list-style-type: none"> - PSLV will be the workhorse vehicle for all IRS satellites. - Enhancement of payload capability and reliability of PSLV - Operationalisation of GSLV enabling indigenous launch from INSAT-3C onwards. - Development of Cryogenic Upper Stage (C20) and Solid Booster (S250). |
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several districts will be carried out. The new communication services proposed to be rendered include: Digital Audio and Data Processing, expansion of mobile communication services etc. The GSAT satellite is planned to be launched during the Ninth Plan to meet these requirements. In the area of earth observations, the major objective will be to emerge as a front ranking leader globally in high quality data, wide range of application services etc.

10.122 While continuing to utilise the remote sensing technology for widening the scope of the IMSD and the establishment of NNRMS, efforts will be directed towards a better understanding of the geosphere-biosphere interaction, environmental protection of the earth, establishment of a National Disaster Warning and Management System etc. To achieve these objectives, the IRS-1D, identical to the IRS-1C and three more remote sensing satellites, viz., the IRS-P4 (Oceansat-1), the IRS-P5 (Cartosat-1) and the IRS-P6 (Resourcesat) are planned to be launched during the 9th plan. Significant developmental efforts are also planned during the 9th Plan towards realisation of the follow-on remote sensing satellites required to be launched during the 10th Plan such as the IRS-2A, the IRS-2B and the IRS-2C satellites, meteorological satellite and the microwave remote sensing satellite, which will ensure continuity of services in an enhanced manner and enable capitalising on the technology edge established in the global market. A National Disaster Warning and Management System using the potentials of communication and remote sensing satellite, will be established.

10.123 In the area of launch vehicle systems, interlocking the satellite requirements with the launch vehicle capability will be the prime objective. The Polar Satellite Launch Vehicle (PSLV) will continue to be the workhorse vehicle for launching all the IRS satellites. The major targets for the Ninth Plan are: enhancement of the payload capability and reliability of PSLV; operationalisation of Geosynchronous Satellite Launch Vehicle (GSLV) towards achievement of self-reliance in launching communication satellites enabling indigenous launch from the INSAT-3C onwards, progressively enhancing the payload capability of GSLV to meet the requirements

of the state-of-art communication satellites; and the development of Cryogenic Upper Stage (C20) and the Solid Booster (S250).

10.124 The Indian industry and academia will have an enhanced role, as partners in the national space effort. The Regional and State Remote Sensing Centres will play a major role as delivery systems for space application services at the grass-root level. In the international space scene, strategic alliances will be forged with international agencies to service the commercial global space market. Research and development as well as technology development will continue to be the mainstay of the space programme. Research programme in the area of astronomy/ aeronomy missions, inter-planetary studies and microgravity experiments will be initiated. Human resource development will receive the maximum possible attention in the coming years. Even though the missions and tasks to be accomplished in the 9th Plan will be double that in the 8th Plan, there will not be any significant addition to the existing manpower, except in technologically complex and new initiatives. In all, 16 satellite missions and 11 indigenous launch vehicle missions are envisaged during the 9th Plan, as compared to 9 satellite missions and 5 indigenous launch vehicle missions in the 8th Plan.

DEPARTMENT OF SCIENCE AND TECHNOLOGY (DST)

10.125 The thrust of the DST during the 9th Plan will be on building and sustaining a strong science & technology base in the country, developing centres of excellence in the frontline areas of science & technology and modernising the infrastructure of its autonomous research institutions. Under the SERC programme, new initiatives will be launched to further strengthen the S&T base in the country in selected areas of technological importance. The overall approach will be to promote basic research around outstanding

Important initiatives under SERC:

- Promotion of research in less endowed universities.
- Setting up Engineering Research Centres in the area of Concurrent Engineering, Bio-Engineering, Technical Acoustics etc.
- Providing industrial research fellowships to work in industry.
- Encouraging frontier areas like biodiversity, plasma chemistry, micro-robotics, chemical engineering, modern classical optics, boundary layer modelling etc.

Major facilities planned under IRPHA

- Electron Spray Mass Spectrometer
- Radioactive Ion Beam
- Multi GeV Hadron Heavy Ion Accelerator
- Low energy accelerator
- Confocal Microscopy facility

scientific groups and to a large extent in the academic sector. The SERC will be provided more autonomy and flexibility for better management of R&D schemes and their proper monitoring and evaluation. Some of the important initiatives under the SERC will include promotion of research in less endowed universities; setting up Engineering Research Centres in the areas of Concurrent Engineering, Bio-Engineering, Technical Acoustics etc; providing industrial research fellowships to work in the industry; encouraging some of the frontier areas like biodiversity, noise control, plasma chemistry, micro robotics, chemical engineering sciences, modern classical optics, stress biology and immunology, boundary layer modelling, study of atmospheric chemistry etc. The research areas for the engineering sciences, will be in the disciplines like Chemical Engineering; Materials, Mining and Mineral Engineering; Robotics; Computer Engineering; etc. Under the programme of Intensification of Research in High Priority Areas (IRHPA), the focus will be on setting up a few major

sophisticated facilities and Centres in the country to pursue frontline R&D, such as electron spray mass spectrometer, radioactive ion beam, multi-GeV Hadron heavy ion accelerator, low energy accelerator, confocal microscopy facility etc.

10.126 The National Accreditation Board for Testing and Calibration Laboratories (NABL) will be strengthened to meet the demands which are likely to go upto about 1500. Along with it, the assessors training programme and the laboratory awareness programme will be intensified. The NABL will be enrolled as a member of the International Laboratory Accreditation Cooperation as well as the Asia Pacific Laboratory Accreditation Cooperation for achieving the Mutual Recognition Agreement.

10.127 As a part of the National Science and Technology Manpower Information

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| <p>Technology Development programmes:</p> <ul style="list-style-type: none"> • A more holistic and user friendly approach towards making the high technologies and products available to the society. • Drug development based on traditional systems of medicine. • Technology mission mode projects in the areas of: <ul style="list-style-type: none"> - Agro food - Food processing - Waterways - Road Transportation - Electric Power - Telecommunication - Aviation - Sensors | <p>System (NSTMIS), a new initiative on the setting up of a National Science Manpower Information System, will be taken up and it will be integrated with the ongoing National Technical Manpower Information System of the Ministry of Human Resource Development. An on-line access to international databases on S&T statistics will also be established. In the area of technology development, a more holistic and user-friendly approach will be adopted towards making the high technologies and</p> |
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products available to the society. The thrust will be on technology missions, technology promotion and special technology projects through critical technology promotion, high technology intervention in selected export areas and promotion of NGO/society/ organisation. In respect of the Instrument Development Programme, it is proposed to support new projects for the development of instruments in some new areas like energy monitoring and management, sensors etc. besides conducting training programmes and transfer of know-how of instruments to industries. The new initiatives under drugs and pharmaceutical research will include: drug development based on traditional systems of medicine like Ayurveda, Unani, and Sidha besides Homeopathy and support to joint projects leading to drug development for infectious diseases. For undertaking technology projects on a mission mode, the new areas will be agro food processing, waterways, road transportation, electric power, telecommunication, aviation, sensors, IPR and future technology forecast for India for 2020. The thrust of the S&T Entrepreneurship Development activities will be on strengthening and expansion of the entrepreneurship development cells and the S&T Entrepreneurship Parks. Efforts will be made to initiate rural enterprise development through innovative S&T-based micro-enterprises in rural areas.

10.128 The science communication and popularisation programme will be expanded to cover more beneficiaries. The activities proposed include training in S&T communication through short-term courses for voluntary organisations, teachers; support to popular science magazines in regional languages; production and screening of science films on Doordarshan; development of low-cost toys, dissemination of

software for S&T communication/popularisation etc. The National Resources Data Management System (NRDMS) will concentrate on building specialised problem-oriented data bases and operationalising them for real-life planning and administrative decision making. The activities of the State S&T Councils/Departments will be intensified so that the States will be able to take up major projects and a visible impact can be seen during the Ninth Plan. Under the international S&T co-operation programme, efforts will be made to strengthen bilateral and multi-lateral joint venture programmes and to expand and accelerate the pace of S&T co-operation with research institutions in a number of countries. The 12 autonomous research institutions being supported by the DST, will be upgraded with state-of-the-art research facilities in a phased manner. In addition, funds would be provided for improvement of S&T infrastructure in universities and related institutions.

10.129 The India Meteorological Department (IMD) will further intensify its high technology efforts which have already resulted in improving the accuracy of predicting severe weather, its timely warning and dissemination of its long range predictions of the monsoon. The major activities proposed during the Ninth Plan include: modernisation of the observational and telecommunication systems, use of contemporary radar and satellite technology for better understanding of weather systems, satellite-based dissemination of timely warning of tropical cyclones, monitoring of seismic activities, exploitation of remote sensing data for agro-meteorological advisories, etc.

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH (DSIR)

10.130 The efforts initiated by the DSIR in the areas of Technology Promotion, Development and Utilisation (TPDU) under the three schemes viz., Research and Development by Industry (RDI), Programme Aimed at Technological Self reliance (PATSER) and Scheme to Enhance the Efficacy of Transfer of Technology (SEETOT) will be continued. The programmes proposed to be taken up include: creation of awareness of Intellectual Property Rights (IPR) through training and education and development of export promotion mechanism to make the companies aware of the processes involved in the acquisition of technologies from abroad and their export. Some of the activities/projects which NISSAT will initiate are: establishment of Indian Internet Server and a facility to promote and support public and private institutions on database development, information resource

- Important programmes of DSIR**
- Creation of awareness of Intellectual Property Rights (IPR)
 - Development of Export Promotion mechanism
 - Establishment of Indian Internet server and a facility to promote and support public and private institutions on database development.
 - NRDC would promote:
 - Design and engineering consultancy companies
 - Equity investments in R&D companies
 - Promotion of small and medium industries in NE states.

- R&D Activities planned by CEL**
- Process upgradation for larger size cells.
 - New/alternate SPV technology.
 - New SPV systems.
 - Electronics systems for Railways, Telecommunication and Power.
 - New ferrite materials.
 - Surge arrestors
 - Beam switching array
 - Antenna elements

development and services generation; development of information referral system; establishment of a regular mechanism to study international trends in information and information technology etc. The activities proposed by the NRDC include promotion of design and engineering consultancy companies; equity investments in R&D companies; regional technology transfer centres etc. besides promotion of small and medium industries in the North Eastern States to develop entrepreneurship. The specific R&D programmes and projects identified by the Central Electronics Limited (CEL) pertain to process upgradation for larger size cells; new/alternate SPV technology; new SPV systems; electronics systems for railways, telecommunications and power; electronics component development for coils/transformers; new ferrite materials; surge arrestors; beam switching array; antenna elements etc. Under the manufacturing sector, the CEL's efforts will be directed towards plant capacity expansion from 2 MW to 3.5 MW; upgradation of production facility for electronic systems; power control unit for SPV power plants; manufacture of solar batteries; production of Electronic Ballast, coils/ transformers; development of new PZT Components and Microwave components; production of phased arrays; capacity upscaling for PCM production etc.

10.131 The programmes of CSIR will be guided by the White Paper, 'CSIR 2001: Vision and Strategy', with the Mission statement: "To provide scientific and industrial research and development that maximises the economic, environmental and societal benefit for the people of India".

Goals set by CSIR:

- Generation of an Annual Cash flow of over Rs. 700 crore from external sources.
- Development of at least ten exclusive and globally competitive technologies in niche areas.
- Creation of a Patent Bank of 500 foreign patents.
- Realisation of 10% of operational expenditure from Intellectual Property licensing
- Deriving annual earning of \$ 40 million from overseas R&D work and services.

Accordingly, the CSIR has set for itself certain goals and targets to be achieved by the terminal year of the Ninth Plan i.e. 2001-02, which include generation of an annual cash flow of over Rs.700 crore from external sources (as against Rs. 225 crore envisaged in 1996-97) with at least 50% from industrial customers; development of at least ten exclusive and

globally competitive technologies in niche areas; creation of a Patent Bank of 500 foreign patents as against less than 50 at present; realisation of 10% of operational expenditure from intellectual property licensing compared to less than 1% at present; and deriving annual earnings of \$ 40 million from overseas R&D work and services, compared to less than \$ 2 million now. In order to achieve these targets, efforts will be made to re-engineer the organisational structure; link and relate R&D to market place; stimulate intellectual property orientation; and invest in high quality science for generation of future technologies. Depending on the R&D needs, priorities and the societal requirements, the national laboratories will undertake new programmes in various socio-economic sectors like health, food, energy, environment, housing & construction, rural development, industrial development besides exports of R&D and services, basic research etc.

10.132 The CSIR has a significant potential to market its R&D knowledgebase and services to the international clientele both in the developed and the developing countries and it is proposed to develop business opportunities wherever possible. Since there has been a long-felt need in the CSIR system for the modernisation of obsolete equipment and

facilities, which have adversely affected the productivity and competitiveness of the CSIR laboratories, the CSIR's endeavour will be to modernise and upgrade its facilities during the Ninth Plan in a phased manner. In the area of Human Resource Development Programme, besides the ongoing activities, the CSIR will take special measures to formulate a structured scheme to bring together the working of researchers from academia, national laboratories and in-house R&D units in industry. To meet the needs of the CSIR Headquarters which has multifarious activities and responsibilities in the new context of greater market orientation, self sufficiency and global competitiveness of the laboratories, advanced level training programme will be organised. In addition, a well designed and workable Management Information System (MIS) linking the HQ and laboratories will be set up in order to optimise business opportunities, synergise the core competencies and the resource base and to bring in a sense of transparency and empowerment. The proposed MIS will encompass customer and market information, project management, financial management, human resource management, investment management and intellectual property and technology management.

10.133 In respect of residential buildings and other amenities, the endeavour will be to bring the housing satisfaction up to an average level of 60% (70% in remote locations, 60% in towns and 50% in metropolitan cities) by the end of the Ninth Plan, as compared to 40% now. In order to achieve this target, a long-term plan has been evolved, seeking construction of additional staff quarters in selected places (2500 quarters); leasing of accommodation for some categories of staff; and transit accommodation and hostel accommodation for research fellows. Further, in view of CSIR's objective of expanding its business development activity several fold in the Ninth Plan period, a few Business Centers - self contained modern offices - with tele-conferencing facilities through advanced communication systems will be set up initially at four places viz., Mumbai, Hyderabad, Delhi and Calcutta.

DEPARTMENT OF BIOTECHNOLOGY (DBT)

10.134 For providing the basic minimum requirements of the population, including food, economic, ecological and livelihood security, since biotechnology is likely to become a lead technology in future, one of the objectives of the Ninth Plan programmes will be to realise the full potential of biotechnology for national development. Accordingly, appropriate biotechnological inputs will be provided for enhancing the productivity and efficiency of the concerned areas such as: health care system; soil fertility and environmental conservation and protection, aiming at sustainable development, particularly for rural areas. The projects/programmes in this sector will aim at meeting the livelihood and economic and ecological security of the people through research and development, demonstration and application of biotechnology covering all important sectors.

10.135 The main thrust of biotechnology programmes during the Ninth Plan will be on bioindustrial development of the country, ensuring judicious utilisation and conservation of biological resources using the biotechnological tools; research and development for products, processes and technology generation for achieving academic excellence of the highest national and international standards and for societal benefit; mission mode programmes in identified areas; biotechnology based programmes for weaker sections, SC/ST and rural areas; technology transfer activities

with the help of the Biotechnology Consortium India Limited (BCIL), the NRDC, financial institutions and industry; support to product development activities in some identified areas in collaboration with industry and financial institutions; human resource development at required levels; strengthening, expansion and operationalisation of a country-wide network in bioinformatics; and the setting up of new infrastructure facilities and Centres of Excellence in the areas of relevance to the country.

Thrust of Biotechnology programmes:

- Bioindustrial development of the country.
- Judicious utilisation and conservation of biological resources using biotechnological tools.
- Research and Development for product, processes and technology generation.
- Long term support for basic research in sectors like:
 - Structural biology
 - Drug development and design
 - Genome mapping and sequencing
 - Host parasite interaction
- Priority to programmes of:
 - Genetic enhancement
 - Micropropagation parks
 - Centres of excellence in areas of brain research, molecular medicine etc.

10.136 A major effort will also be to provide long-term support for basic research in a few strategic sectors such as structural biology, drug development and design, genome mapping and sequencing, host parasite interaction etc. From the viewpoint of both the societal needs and industrial development, some of the areas like basic molecular biology, crop biotechnology, medical research, industrial and environmental programmes will be accorded priority. Various aspects of research on transgenic plants and animals, immune system diagnostic development, prospecting of useful genes and biomolecules from the biodiversity, Indian genome initiative etc. will be studied. To ensure that the research leads are converted into commercial ventures and to evolve appropriate biosafety guidelines and regulatory procedures, programmes on product development, especially for diagnostics, biologicals and biomolecules would be taken up. Human resource development covering all aspects of biotechnology will also be pursued including technicians' training and popularisation of biotechnology in the country. Priority will be accorded to the programmes of genetic enhancement, micropropagation parks and centres of excellence in areas such as brain research, molecular medicine etc. besides training programmes for the scientists, legal experts and industries on patenting in biotechnology areas.

DEPARTMENT OF OCEAN DEVELOPMENT (DOD)

10.137 The importance and uses of ocean are well known and the developments towards ocean science and technology are directed towards exploring and exploiting the vast resources of the ocean on a sustained basis for the socio-economic benefit of the human society with integrated approach towards environment and development.

10.138 During the 9th Plan, five Antarctic expeditions will be undertaken, one each year and multi disciplinary research carried out in the areas of atmospheric sciences, earth sciences, human physiology, biological oceanography and environmental sciences. An Antarctic Study Centre will be established at Goa as a first polar research laboratory with a facility for sub-zero temperature research on ice cores retrieved from both Antarctica and the Himalayas. It will also function as a nodal point for the Antarctic scientific and logistic activities. The major activities under the Polymetallic Nodule (PMN) programme include: sampling work of the Survey and Exploration in 40 selected

Important activities planned under Ocean Sciences:

- Five Antarctic expeditions.
- Antarctic Study Centre at Goa as a first Polar Research Laboratory with facility of sub-zero temperature research.
- Developing mining device with a crawler, collector and riser system along with technology for collection of nodules at a depth of 6000 meters.
- Commissioning of 500 Kg./day capacity pilot plant for metallurgy.
- Designing of remotely operated vehicle capable of operating at 6000 meters depth.
- Undertake studies on Ocean Thermal Energy Conversion (OTEC).
- Delineation of continental shelf under the UN convention on the law of the sea.

blocks of 25 km. x 25 km. at 5 km. grid covering 800 stations; Environmental Impact Assessment (EIA) study for monitoring the impact on the re-colonisation and restoration of the original benthic organisms at Chavara and Manavalakuruchi areas; developing a mining device with a crawler, collector and riser system along with a technology for collection of the nodules at a depth of 6000 meters; commissioning of 500 Kg/day capacity pilot plant for metallurgy; development of an upgraded remotely operated vehicle at a depth of about 200 metres and designing of

remotely operated vehicle capable of operating at 6000 metres depth.

10.139 The three ongoing programmes - Marine Satellite Information Service (MARSIS), Sea Level Modelling and Monitoring (SELMAM) and Data Buoy will be integrated under one scheme viz. Ocean Observation and Information Services and will be operated under four components viz. (a) ocean observation services (b) ocean information services (c) satellite oceanography and ocean modelling and (d) ocean dynamics. For the monitoring of Marine Pollution (COMAPS), a Geographical Information System (GIS) will be developed to keep track of the various sources of pollutants and two indigenously built coastal research vessels, Sagar Paschimi and Sagar Purvi will be utilised to monitor the health of coastal waters of India. Under the ongoing Marine Research and Manpower Development Scheme, research projects in the emerging and frontline areas of ocean sciences will be funded and assistance provided to selected universities to undertake specialised courses in marine sciences. The construction of an oceanarium in Goa, which was started by a foreign firm in the 8th Plan on Build, Own, Operate and Maintain (BOOM) basis, will continue. The NIOT will undertake studies on Ocean Thermal Energy Conversion (OTEC) and test new designs of turbine, generators and caissons for various other applications of the wave energy plant at Vizhingam. It will also work on the technologies relating to deep sea mining and the sub-systems used in deep sea applications. Under the ongoing project on Drugs from the Sea, efforts are on to develop two drugs and license them for marketing as traditional medicine and to file 2 to 3 international patents.

10.140 For promoting sustainable marine development, two new schemes viz., (i) Integrated Coastal Marine Area Management and (ii) Marine Biodiversity are proposed to be taken up. The objective of the first is to ensure sustainable development through proper management of the ocean resources and enforcement of rules and regulations for ocean-related activities in the economic ocean zone and to make Indian oceans clean and productive. The second is intended to preserve, conserve and protect the marine flora and fauna and to promote sustainable development through proper use of biological resources. Another important new scheme relating to 'Delineation of Outer Limits of Continental Shelf' will be initiated. The objective of this is to obtain the data through bathymetric and seismic surveys of India's coastline

for collection of relevant biological, geodetic and hydrographic data and preparation of required charts and maps for submission to the Commission on the Delineation of the Continental Shelf under the UN Convention on the Law of the Sea (UNCLOS) by the year 2005. For this purpose, a ship equipped with sophisticated scientific instruments for the collection of data will be chartered. Delineation of the continental margin will give an additional area of about 1.5 million Sq. km. outside the exclusive economic zone.

(B) S&T in Socio-Economic Sectors

10.141 The efforts made in the Eighth Plan to integrate S&T component with the concerned socio-economic sectors will be pursued more vigorously during the Ninth Plan. While the stress generally will be on identification of technology priorities in various sectors and on undertaking R&D for technology absorption/upgradation and support to Research, Development and Demonstration (RD&D) projects, priority will be given to energy research and technology development projects. The efforts will be to evolve a few joint technology development programmes in priority areas involving the user ministries, the industries and the academic institutions. The attempt will be to evolve new mechanisms for identifying and catalysing multi-partnership sectoral projects in this fast changing technology scenario in association with the organisations involved in forecasting and assessment. The areas of common interest to more than one ministry such as clean coal technologies, telecommunications, alternate fuels, bio-reactor technology etc. will also be taken up.

FINANCIAL ASPECTS

10.142 The total Plan outlay for the S&T sector, has increased from Rs.4086 crore in the Seventh Plan to Rs.9393 crore in the Eighth Plan (an increase of 130%). The actual expenditure during the Seventh Plan was Rs.5106 crore and in the Eighth Plan it is estimated to be of the order of Rs. 11561 crore (an increase of about 126%). This increase is in absolute terms. But if the growth of S&T as measured by the ratio of S&T expenditure to Gross National Product (GNP) is considered as an indicator, it is not very encouraging. It is only 0.81% of the GNP in 1994-95. This is very small as compared to that in developed countries like USA, UK, Japan, France, Germany etc. which spend about 2% to 3% of their GNP on S&T. The experience of the developed world shows that increase in R&D expenditure can be achieved by substantially increasing the industrial R&D expenditure which is only about 0.60% of the sales turnover in India in 1994-95. In terms of the share of the industrial sector's R&D to the total R&D expenditure, there was a slight decrease from 27% in 1992-93 to 26.5% in 1994-95. These figures show that the level of expenditure made on R&D by the industry is very low (only about 27%) as compared to about 60 to 70% in the developed countries like USA, FRG and Japan. This calls for an appropriate policy for bringing about substantial increases both in Government and industrial R&D expenditures.

10.143 While the Government's role in supporting basic research, technology development and application as well as S&T infrastructure should continue and also be considerably enhanced, experience of other countries indicates that a substantial part of S&T expenditure has to come from users and industries. With regard to the Central S&T Agencies/Departments there will be increases in their allocations

depending on their projections. In respect of the socio-economic sectors, it is necessary that the S&T allocation should have a relationship with the overall investment in that sector. This is possible, if all the socio-economic ministries allocate not less than a fixed percentage of their respective total budget to S&T activities. This will go a long way in promoting S&T for sectoral development.

10.144 The second strategy will be to ensure that the industry, both in the public and the private sectors, invest substantially in the S&T areas. For this, incentives by themselves are not enough. The industry itself should take the challenge and initiate R&D programmes. While there is a need for the industry to substantially increase its R&D expenditure as a percentage to its sales turn over, the S&T agencies should utilise sources like the Technology Development Fund, SIDBI and other financial institutions. It is only then that the desired increase in R&D expenditure can be brought about.

10.145 Annexures 10.1, 10.2 and 10.3 summarise the financial outlays/expenditure in the Seventh & Eighth Plans in respect of each of the S&T Departments/agencies, various socio-economic ministries and the States/UTs.

ANNEXURE- 10.1

CENTRAL S&T DEPARTMENTS/AGENCIES

PLAN ALLOCATION/EXPENDITURE

(Rs. in crore)

S&T DEPARTMENTS /AGENCIES	Seventh Plan Outlay	Seventh Plan Exp.	Eighth Plan Outlay	1992-93 Actuals	1993-94 Actuals	1994-95 Actuals	1995-96 Actuals	1996-97 Actuals	1992-97 Actual Expenditure	9 th Plan 1997 to 2002 Outlay
Deptt. of Atomic Energy (R&D)	315.00	284.86	600.00	84.09	100.21	139.31	160.44	179.86	663.91	1500.00
Deptt. of Ocean Development (Including I&M)	110.00	72.63	130.00	31.18	35.84	43.75	43.67	44.96	199.40	510.62
Deptt. of Sc. & Technology	301.78	332.90	640.00	121.16	167.56	212.03	214.97	220.99	936.71	1497.35
Deptt. of Bio-Technology (Including I&M)	132.00	142.86	265.00	73.16	78.00	80.87	79.15	84.66	395.84	675.00
Scientific and Indus. Research (Including I&M)	370.00	400.91	655.00	118.89	141.62	157.91	176.16	180.35	774.93	1327.48
Deptt. of Space	793.96	1364.89	1804.00	360.03	547.36	604.17	754.14	889.15	3154.85	6511.72
TOTAL (S&T)	2022.74	2599.05	4094.00	788.51	1070.59	1238.04	1428.53	1599.97	6125.64	12022.17

* Excluding Capital Works component.

ANNEXURE-10.2

S&T Plan Outlays under Socio-economic Ministries/Departments

(Rupees in Crore)

S No.	7th Plan 1985-90		8th Plan 1992-97	1992-93 Actuals	1993-94 Actuals	1994-95 Actuals	1995-96 R.E.	1996-97 B.E.	1992-97 A.E.
	Outlay	Actuals	Outlays						
				176.02	228.49	274.70	289.60	283.90	1257.71
1 Agricultural Research (ICAR)	425.00	438.15	1300.00	32.05	35.50	37.23	36.50	40.10	181.38
2 Bio-medical Research (ICMR)	2.59	2.83	11.50	1.00	1.41	0.97	1.92	7.39	12.69
3 Chemicals	3.47	1.98	2.10	0.32	1.12 @@	0.05	0.55	0.35	2.39
4 Civil Aviation	2.78	1.05	1.78	1.66	3.03	2.50	2.80	2.80	12.79
5 Civil Supplies	120.00	33.19	87.00	4.48	3.92	0.00	11.10	14.70	34.20
6 Coal	12.77	13.73	20.00	4.51 @@	4.23	6.48	9.85	13.73	38.80
7 Commerce	151.00	163.42	423.30	50.18	75.25	93.87 #	117.84 @@	129.62 ++	456.76
8 Communications	7.00	4.65	17.48	3.15	2.75	1.50	10.31	11.00	28.72
9 Drugs & Pharmaceuticals	0.00	0.00	105.75 *	23.90	27.49	29.34 #	29.63 @@	32.66 ++	143.08
10 Ecology & Environment	180.00	528.74	1147.50	204.78 @@	243.33 @@	257.66 +	294.43 ++	294.43 ++	1304.63
11 Education	38.00	62.06	75.00	8.67	14.58	23.35 #	34.15 @@	25.69 ++	106.44
12 Electronics	23.15	20.81	70.00	16.34	15.42	15.86 #	15.02 @@	17.45 ++	80.09
13 Fertilizers	13.64	6.78	40.00	0.56	0.33	2.13	5.71	2.41 ++	11.26
14 Food	Included in Food		6.50 *	1.30 @@	0.00	0.00	0.00	0.00 ++	1.30
15 Food Processing	33.00	43.79	145.00 *	5.89	36.28	54.22 #	57.50 @@	59.64 ++	213.53
16 Forests & Wild Life	66.01	76.23	83.70	4.81	5.90	6.07 #	9.07 @@	6.68 ++	32.53
17 Heavy Industries	25.00	9.79	25.00	0.00	0.75	1.14	3.30	4.00	9.19
18 Ministry of Home Affairs (Forensic Science and Police Wireless)	20.95	37.43	92.00	11.16	8.45	12.58	31.32	35.00	98.51
19 Industrial Development	6.25	3.97	20.00	0.12	0.14	0.98 #	0.78 @@	1.08 ++	3.10
20 Information & Broadcasting	10.00	40.49	76.85 *	8.90	9.18	13.33 #	14.47 @@	14.66 ++	60.54
21 Irrigation (Water Resources)	1.51	2.03	1.40 *	0.30	0.55	0.77 #	2.37 @@	0.85 ++	4.84
22 Labour	30.24	28.89	34.20	9.65	6.04	5.12	8.77	7.50	37.08
23 Mines	14.75	8.40	13.00	2.10	3.60	4.06	5.56	3.80	19.12
24 National Test House (Supply)	130.35	162.30	120.80 *	24.16 @@	11.72 #	9.80 @	21.28 @@	23.41 ++	90.37
25 Non-conventional Energy Sources	41.74	47.60	88.20	0.00	1.00	3.00	10.00	10.00	24.00
26 Petro-Chemicals	150.00	212.61	249.20	40.27	47.73	73.14 #	97.26 @@	106.99 ++	365.39
27 Petroleum & Natural Gas									

ANNEXURE-10.2 (Concl'd.)

S&T Plan Outlays under Socio-economic Ministries/Departments

(Rupees in Crore)

S No.	7th Plan		8th Plan	1992-93	1993-94	1994-95	1995-96	1996-97	1992-97
	1985-90 Outlay	Actuals	1992-97 Outlays	Actuals	Actuals	Actuals	R.E.	B.E.	A.E.
28 Power	76.22	74.58	251.37	43.51	56.20	32.15 #	89.80 @@	98.78 ++	320.44
29 Railways	25.00	27.28	25.00	7.78	2.68	8.00	2.00	9.00	29.46
30 Rural Development	20.00	14.62	104.00	4.94	8.21	13.35 #	16.20 @@	17.82 ++	60.52
31 Shipping & Transport	18.17	11.98	20.00	2.43	3.76	3.10	4.37	7.11	20.77
32 Social Welfare & Nutrition	0.00	2.96	6.11 **	0.65	0.87	1.25	1.20	1.20	5.17
33 Steel	98.94	104.05	144.23	9.28	32.05	32.90	42.56	40.59	157.38
34 Textile	70.95	67.36	80.75	7.82	13.85	14.94 #	16.86 @@	18.55 ++	72.02
35 Urban Development (Including Housing & Water Supply)	10.01	6.93	25.25	4.99	6.73	6.00 #	8.50 @@	9.35 ++	35.57
36 SSI & VSI	+	9.62	24.30 @	3.19	3.54	3.71	8.05	6.45	24.94
	1978.49	2417.93	5105.97	720.88	916.14	1045.31	1310.69	1363.67	5272.97

@ Excluding Khadi and Village Industries.

* Figures estimated on the basis of 1992-93 Outlay

** Excluding Nutrition

+ Included under Industrial Development

@@ Actual Expenditure/R.E. Not Available. Therefore, the figures indicate B.E. only.

Actual Expenditure Not Available. Therefore, the figures indicate R.E. only.

++ Figures indicate Estimated B.E. only as firm figures of B.E. are not available.

ANNEXURE-10.3

S&T Plan Outlays for the Eighth Plan (1992-97) Under the State Plan.

(Rs. in Lakhs)

S.No	States/UTs	7th Plan 1985-90 Outlay	7th Plan 1985-90 ACT	8th Plan 1992-97 Outlay	1992-93 Act	1993-94 ACT.	1994-95 ACT.	1995-96 ACT.	1996-97 R.E.	1992-97 A.E.
				*						
1.	A.P.	610.00	208.00	200.00	13.00	15.00	10.00	20.00	56.00	114.00
2.	Arun. Prad	12.00	19.92	47.00	9.00	12.00	13.00	16.00	17.00	67.00
3.	Assam	300.00	376.00	462.00	83.00	139.00	152.00	204.00	110.00	688.00
4.	Bihar	300.00	430.00	782.00	119.00	0.00	37.00	26.00	33.00	215.00
5.	Goa	110.00	127.20	300.00	21.00	42.00	28.00	38.00	30.00	159.00
6.	Gujarat	450.00	88.00	550.00	39.00	11.00	35.00	19.00	320.00	424.00
7.	Harayana	165.00	310.00	662.00	36.00	66.00	64.00	117.00	123.00	406.00
8.	H.P.	100.00	79.00	275.00	33.00	44.00	45.00	76.00	146.00 *	344.00
9.	J&K	100.00	38.00	190.00	25.00	17.00	31.00	33.00	255.00	361.00
10.	Karnataka	200.00	312.00	800.00	151.00	196.00	274.00	293.00	292.00	1206.00
11.	Kerala	1700.00	2302.00	2193.00	478.00	565.00	649.00 *	965.00	1400.00 *	4058.00
12.	M.P.	650.00	626.00	641.00	101.00	76.00	151.00	220.00	219.00	767.00
13.	Maharashtra	200.00	193.00	568.00	47.00	78.00	72.00	55.00	118.00	370.00
14.	Manipur	200.00	202.00	400.00	66.00	64.00	86.00	87.00	78.00	381.00
15.	Maghalaya	150.00	61.00	193.00	41.00	58.00	45.00	22.00	50.00	216.00
16.	Mizoram	10.00	54.00	195.00	33.00	36.00	35.00	48.00	45.00	196.00
17.	Nagaland	80.00	57.00	100.00	9.00	22.00	10.00	27.00	21.00	89.00
18.	Orissa	216.00	479.00	4556.00	139.00	254.00	387.00	269.00	297.00	1346.00
19.	Punjab	400.00	199.00	750.00	37.00	40.00	31.00	30.00	58.00	196.00
20.	Rajasthan	344.00	130.00	700.00	96.00	114.00	137.00	159.00	137.00	643.00
21.	Sikkim	22.00	36.00	250.00	43.00	32.00	28.00	45.00	50.00	198.00
22.	Tamil Nadu	450.00	575.00	1000.00	121.00	140.00	215.00	171.00	153.00	800.00
23.	Tripura	200.00	208.00	225.00	37.00	44.00	41.00	53.00	51.00	226.00
24.	U.P.	1000.00	1414.00	1000.00	166.00	426.00	303.00	597.00	338.00	1830.00
25.	West Bengal	320.00	186.00	1833.00	58.00	117.00	122.00	127.00	80.00	504.00
	Total State	8289.00	8710.12	18872.00	2001.00	2608.00	3001.00	3717.00	4477.00	15804.00

ANNEXURE-10.3 (Concl.d.)

S&T Plan Outlays for the Eighth Plan (1992-97) Under the State Plan.

(Rs. in Lakhs)

S.No	States/UTs	7th Plan 1985-90 Outlay	7th Plan 1985-90 ACT	8th Plan 1992-97 Outlay	1992-93 Act	1993-94 ACT.	1994-95 ACT.	1995-96 ACT.	1996-97 R.E.	1992-97 A.E.
U.Ts.										
1.	A&N Islands	26.00	58.54	135.00	36.24	41.57	11.51	22.13	28.00	139.45
2.	Chandigarh	20.00	57.23	15.00	1.99	3.50	6.09	5.49	13.00	30.07
3.	D & N Haveli	14.00	1.55	38.00	0.00	5.50	5.50	5.50	5.50	22.00
4.	Delhi	56.00	10.24	30.00	1.32	1.17	1.31	67.63	1.00	72.43
5.	Daman & Diu	**		40.00	2.01	3.71	14.34	10.70	13.00	43.76
6.	Lakshadweep	25.00	29.24	127.61	17.37	16.31	21.74	24.01	49.00	128.43
7.	Pondicherry	36.00	1.03	13.00	0.50	7.00	2.10	4.49	5.50	19.59
Total		177.00	157.83	398.61	59.43	78.76	62.59	139.95	115.00	455.73
Grand Total		8466.00	8867.95	19270.61	2060.43	2686.76	3063.59	4212.68	4592.00	16259.73

* Including Ecology and Environment

** Included in Goa



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