EIGHTH FIVE YEAR PLAN

1992-97

VOLUME II

Sectoral Programmes of Development

GOVERNMENT OF INDIA
PLANNING COMMISSION
NEW DELHI

EIGHTH FIVE YEAR PLAN (1992-97)

VOLUME II

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CHAPTER 1

AGRICULTURE AND ALLIED ACTIVITIES

1.1.1 Agriculture and allied activities constitute the single largest contributor to the Gross Domestic Product (GDP), accounting for almost 33% of the total. They are vital to the national well-being as, besides providing the basic needs of the society and the raw materials for some of the important segments of Indian industry, they provide livelihood for almost two thirds of the work force. The share of the agricultural products in the total export earnings, both in primary and processed forms, is very significant.

1.1.2 Over the last four decades, agriculture has made important strides in our country. It has been able to meet the growing demand of the increasing population for their essential need, namely food. The production of foodgrains increased from 51 million tonnes in 1950-51 to 176.22 million tonnes in 1990-91. This has enabled the country to be, by and large, self-sufficient and to increase the per capita availability of foodgrains albeit slowly, from about 395 gm per diem in 1951 to 475 gm in 1990.

1.1.3 The population which as per 1991 census was about 844 million, has been increasing, though with a slightly lower growth rate and is expected to cross the billion mark in the early years of the next decade. Not only consolidation but also acceleration of agricultural production gains are critical for meeting the increasing demands due to the increase in population as well as due to improvements in incomes, particularly of the poor sections of the society. At the same time, it is necessary to ensure that the process of development is sustainable.

Seventh Plan Performance Review

1.2.1 Agriculture and allied sector outlays in the Plan, including forestry and wildlife, increased from Rs. 238 crores in the First Plan to Rs. 10,524 crores in the Seventh Plan. The share of this sector in the total outlay has fluctuated between 5.7% in the Second Plan and 12.9% in the Fourth Plan. Table-1.1 below brings out the fluctuations clearly:

Table 1.1 Public Sector Outlay for Agriculture Sector - All India

(Rs. in crores)

Five Year Plans	1st 1951-56	2nd 1956-61	3rd 1961-66	4th 1969-74	5th 1974-79	6th 1980-85	7th 1985-90	Annual 1990-91
Agriculture ncluding cooperation)	238	275	591	2059	3356	6440	10524	3803
All Sector	2377	4800	8099	15902	39322	97500	180000	64717

Source : Agricultural Statistics at a Glanace, March 1991 Directorate of E & S , Ministry Of Agriculture.

1.2.2 **Foodgrains:** The average level of annual production of foodgrains during the Seventh Plan was around 155 million tonnes compared to about 138 million tonnes in the Sixth Plan. The performance of crop production during the Seventh Plan is reflected in Annexure-1. In the first three years of the Plan, unfavourable weather conditions prevailed. In fact, in 1987-88 the country witnessed a very severe drought with the foodgrain production plummeting to 140.35 million tonnes. With favourable weather conditions, the country reached a level of 169.92 and 171.04 million tonnes during 1988-89 and 1989-90 respectively and, in

fact, achieved 176.22 million tonnes in 1990-91. The weather in 1991-92 turned out to be indifferent and the food production is unlikely to touch the targetted level of 182.5 million tonnes. The foodgrains production performance indicates that the bulk of the increases has been coming essentially from improvement in productivity. Another salient feature of the performance has been that a much greater resilience has been achieved on the foodgrains production front. This is evident from the fact that the fall in the production level in the severe drought year of 1987-88 has not been as sharp as compared to the drop in production in the earlier drought years. Production of rice and wheat has been much better than coarse cereals and pulses. In the case of rice, the productivity level has reached over 1750 kgs/ha. Another redeeming feature has been that the contribution of the States in the Eastern region has improved during the Seventh Plan, indicating that the special thrust on rice production in Eastern India has, to a degree, helped to improve the rice yields and consequently the production. Nevertheless, the yield levels in many of the Eastern States continue to be below the national average. Wheat production has also been steadily going up and the trend has been maintained during the Seventh Plan. Wheat yield has increased to 2244 kg/ha. in 1988-89. The special Foodgrain Production Programme (SFPP) was launched in 1988-89, following the severe drought of 1987-88. The Special Rice Production Programme (SRPP) launched m Sixth Plan for Eastern India was merged with the Integrated Programme for Rice Development (IPRD). The thrust was essentially on not only improving the productivity in areas where the yield levels were low, but also on maximising production even in high potential areas. Later, the SFPP was extended to cover other principal cereal crops such as maize, jawar, bajra and ragi. These programmes, with emphasis on spread of improved technology, efficient delivery of inputs such as seeds, fertilizers, pesticides and popularisation of improved agricultural equipments contributed in some measure to improved production during 1988-89 and thereafter. The production of coarse cereals peaked to a level of 34.76 million tonnes during 1989-90, despite the area remaining almost stagnant at a level of around 38 million hectares. Increases have been primarily due to improvement in productivity. Nevertheless, the current low levels of yield of coarse cereals is a matter of major concern.

1.2.3 **Pulses**: Pulses are essentially grown under rainfed conditions and hence the production is widely influenced by the rainfall pattern. The production of pulses reached a record level of 14.06 million tonnes in 1990-91. This has been partly due to the increase in area of tur (Arhar). However, the productivity of pulses especially tur of about 779 kg/ha and gram of 753 kg/ha can be substantially improved. Major efforts were made to intensify pulse production by taking up the National Pulses Development Programme and the Special Foodgrain Production Programme - Pulses. It was also decided to bring pulses under the Technology Mission during 1990-91.

1.2.4 **Oilseeds**: Production of oilseeds has shown substantial improvement during the Seventh Plan when it reached the level of 18.03 million tonnes in respect of principal oilseeds in 1988-89 and further increased to 18.46 million tonnes during 1990-91. The Technology Mission on Oilseeds was launched in 1986 with the objective of attaining self-sufficiency in edible oils. Apart from generation of appropriate technologies for maximising the oilseed production and their extension to farmers, the Mission also focussed on ensuring reasonable price to the producers through improved marketing as well as improving the processing technologies. The National Dairy Development Board (NDDB) was designated as the marketing agency for procurement, bufferstock operations and distribution of edible oil. An integrated oilseeds policy was adopted in 1989 to support the farmers with technology, inputs and remunerative price for their produce. This has resulted in significant increases in the area, production and yields of rapeseed, soyabean and sunflower. In many States, groundnut cultivation in the summer has been popularised. The area under coconut has shown steady increase and the production reached a level of 9283 million nuts. Red oilpalm, with its high oil content has been identified as a major potential source for the supply of edible oil in the country. The oil palm development scheme, implemented under the horticulture programme has been brought under ambit of the Technology Mission on Oil-

seeds. The Department of Bio-technology and the ICAR have undertaken demonstration projects in Andhra Pradesh, Karnataka and Maharashtra.

1.2.5 **Sugarcane**: The sugarcane production has exceeded the target in the last three years of the Seventh Plan. Increased prices, over and above the statutary minimum price offered by the State Governments, have contributed to the expansion of the area under sugarcane production. A number of sugar factories has been established in both the traditional and non-traditional areas. Sugarcane development was undertaken by the sugar mills with the help of loans provided under the Sugarcane Development Fund, administered by the Ministry of Food. The production of cane reached a record level of over 240 million tonnes in 1990-91.

1.2.6 **Cotton**: In the Seventh Plan, the average production of cotton was 8.43 million bales with a peak production of 11.42 million bales, achieved during 1989-90 against a target of 10 million bales. The marketing prospects of cotton has significantly improved due to sustained export. The Centrally Sponsored Scheme of Intensive Cotton Development Programme was implemented during the Seventh Plan to improve the productivity of cotton in the major cotton growing states.

1.2.7 **Jute and Mesta**: The average production of jute and mesta in the Seventh Plan was 8.8 million bales. Inadequate availability of improved seeds and retting facilities are the main constraints to increasing the production of quality jute and mesta. Development of jute and mesta during the Seventh Plan was undertaken through a Special Jute Development Programme, funded by the Ministry of Textiles. Use of natural fibre as the packing material is on the revival trail and diverse jute products are now exported. The minimum support price policy to the farmers and the role of Jute Corporation of India (JCI) need to be reviewed for their effective operation.

Horticulture crops

1.3.1 A wide diversity of climate and soils provide conducive environment for growing a range of horticultural crops with great scope for employment generation. Presently, horticulture crops are grown in 12 million ha. (i.e.7% of total cropped area of the country), of which 2% is under vegetables. The production in horticulture sector is estimated at 100 million tonnes per annum, contributing to over 18% of the gross agricultural output in the country. India is the third largest producer of fruits after Brazil and U.S.A. In respect of vegetables, India is only next to China.

1.3.2 Mango, Banana, Citrus, Guava and Apple account for about 75-80% of production. Against the target of 28 million tonnes, fruit production has reached a level of approximately 26.08 million tonnes, with estimated average yield of 8 tonnes per hectare. Production of vegetables is estimated at around 53.88 million tonnes in the Seventh Plan as against a target of 40 million tonnes. Production of Coconuts, cocoa, cashewnuts and spices has increased.

1.3.3 The National Horticulture Board, the Coconut Development Board, the Arecanut, Spices and the Cashewnut Boards along with the Indian Spices Development Council, Indian Arecanut and Coconut Development Council, and the Indian Cashewnut Development Council, have played a significant role in the promotion of these crops.

1.3.4 Credit institutions like NABARD and NCDC have supported Post-Harvest Management of horticulture crops. Import of seeds and planting material of all horticulture crops has been permitted to improve the seed supply. Mushroom has also been given importance along with floriculture and medicinal plants.

1.3.5 During the Seventh Plan, a sum of Rs. 21.94 crores was utilized for horticulture promotion implemented under ten schemes of National Horticulture Board, Coconut Development Board, Integrated Development of Tropical and Arid Zone Fruits, Development of Cashewnut, Arecanut, Cocoa etc. In 1990-91, the expenditure was Rs. 10.48 crores in respect of horticulture development schemes and for 1991-92 the approved outlay was Rs. 33.51 crores. Drip and sprinkler irrigation systems are being popularised for boosting production and productivity in rainfed areas.

Agricultural Inputs

1.4.1 **Seeds** :Many of the programmes initiated in the earlier years for increasing the avail-

ability of quality seeds were continued in the Seventh Plan. A new Seed Policy was announced in 1988 permitting the import of high quality seed and planting material after verification of the performance in the Indian conditions. The third phase of the National Seed Project supported by the World Bank was also launched. Except for some oilseeds like groundnut and linseed and a few of the pulses, by and large the targetted level of seed distribution has been achieved.

1.4.2 **Fertiliser** : The consumption of fertilisers (N+P+K) which increased from 5.5 million tonnes of nutrients to 8.2 million tonnes during the Sixth Plan further rose to a level of 11.3 million tonnes in the final year of the Seventh Plan. Programmes have been taken up to encourage the use of bio-fertilisers. Forty Blue Green Algae Sub-centres were established for production of algae culture through field multiplication programme under the National Project on Bio-fertiliser development. Five central sector schemes, including National Project on Development and Use of Bio-Fertiliser and National Project on Quality Control were implemented during the Seventh Plan. Schemes for Balanced and Integrated use of Fertiliser and a National Project on Development of Fertiliser Use in Rainfed Areas were introduced in 1990-91 and 1991-92 Annual Plans which are to be continued during the Eighth Plan.

1.4.3 **Plant Protection** : Though the use of pesticides in the country is relatively low, it was decided to launch an Integrated Pest Management Programme (IPM) based on the use of biotic agents for control of pests and taking up treatment based on need rather than as prophylatic action. Several biological surveillance stations were set up. The Integrated Pest Management has the objective of maximising the returns to farmers from their efforts to control diseases, and reducing the adverse effects of toxic chemicals. The IPM should become a major plank for effective pest management in the years to come.

1.4.4 **Agricultural Implements and Machinery** : Three Central sector schemes for Farm Machinery Training & Testing Institutes at Budni, Hissar and Anantpur were continued in the Seventh Plan. Efforts were also made to popularise improved agricultural implements. A beginning was made in 1991-92 to promote use of modern irrigation devices such as drip irrigation and sprinklers etc. As many as 637 Farmers' Agro Service Centres have been assisted during the Seventh Plan to provide custom hiring of improved agricultural implements and machinery.

Agricultural Extension

1.5.1 The main link between the farmers and the research workers is the extension personnel on whom rests the task of transfer of technology. The extension personnel regularly interact with the research system to get their knowledge upgraded, under the Training and Visit pattern of extension. The impact of extension activities has been varied in the country. Simple and meaningful reporting system could be evolved for improvement in monitoring the effectiveness of agricultural extension machinery. The World Bank assisted Agricultural Extension Projects, NAEP-I in the States of Madhya Pradesh, Rajasthan and Orissa, NAEP-II in the States of Haryana, Karnataka, Jammu & Kashmir and Gujarat and NAEP-III in Uttar Pradesh, Assam, Himachal Pradesh and Bihar have reinforced the training facilities for extension functionaries. A major agricultural extension effort has been to broadbase the extension activity i.e. moving away from narrow individual crop orientiation to farming system approach. This was initiated in the last year of the Seventh Plan.

Agriculture Credit

1.6.1 During the Seventh plan, disbursement of agriculture credit through cooperatives, commercial and regional rural banks increased from Rs. 5,810 crores in 1984-85 to Rs. 12,570 crores by 1989-90. The expansion in short-term, medium and long-term loans through cooperatives picked up only in the fourth year of the Seventh plan. The debt relief scheme, announced in 1990-91, affected the recovery climate resulting in a lower volume of credit flow. Several measures have been initiated by NABARD to increase the credit flow Separate lines of credit for oilseed growei were opened.

1.6.2 The Comprehensive Crop Insurance Scheme has been in operation since Kharif 1985. The General Insurance Corporation, act-

ing on behalf of Government of India, in collaboration with the State Governments, provide insurance cover to the farmers availing crop loans from cooperative credit institutions and banks for crops like paddy, wheat, millets, oilseeds and pulses. The premium rate to be paid by the farmers for rice, wheat and millets is 2% and in the case of oilseeds and pulses it is one percent. A subsidy is also provided by the State in respect of premium in the case of small and marginal farmers. Due to adverse climatic conditions and quantum jump in claims and heavy losses, the scheme was temporarily suspended in January, 1988, but was re-introduced in September, 1988 with limited insurance to a maximum of Rs.10,000/- and 100% value of crop loan per farmer. The scheme is currently in operation in 18 States and three Union Territories.

Cooperation:

1.6.3 Cooperatives are expected to play a major role in the distribution of inputs and services to the farmers on the one hand and in assisting marketing and processing of agricultural produce on the other. There are 76,000 fertilizer retailer outlets and 40 lakh tonnes of fertilizer nutrients were distributed during 1989-90. The National Agriculture Cooperative Marketing Federation (NAFED) has undertaken price support operations in respect of oilseeds, coarse grains, pulses, potatoes and onions. The National Agriculture Cooperative Marketing Federation exported 3,60,220 tonnes of onions during 1989-90 which helped maintain the price line in domestic market. The NAFED also procured 6,022 tonnes of copra as price support operation.

1.6.4 Cooperative godown/warehousing capacity increased from 80 lakh tonnes in 1984-85 to 100 lakh tonnes by 1987-88. By 1990-91, 141 lakh tonnes of storage capacity had been created mainly in Punjab, U.P., Maharashtra, M.P., Karnataka, Andhra Pradesh and Himachal Pradesh. The NCDC was established in 1963 as an organisation to plan, operate and develop the agricultural sector through cooperatives. Sustained efforts were made in promoting cooperative storage and processing units and in strengthening the cooperatives for distribution of inputs. A storage capacity of 114.47 lakh tonnes had been completed under the cooperative sector by 1989-90. In doing so, the Seventh Plan target for creation of additional capacity of 20 lakh tonnes had been exceeded by constructing storage capacity of 35.18 lakh tonnes. The NCDC promoted 239 cold storage units with capacity of 6.83 lakh tonnes of which 229 cold storages with 6.35 lakh tonnes capacity were installed. The capacity utilisation of the cold storages ranged between 80 and 100 per cent. The NCDC has so far promoted a total of 2442 number of processing units upto 1989-90.

1.6.5 The NCDC is presently implementing a World Bank assisted project called NCDC-III, under which a total assistance of Rs.575.67 crores has so far been sanctioned covering projects in the areas of storage, cotton spinning, oilseed processing, marketing of fruits and vegetables and training of project staff, etc.

Watershed Management

1.7.1 The National Watershed Development Project for Rainfed Areas(NWDPRA), initiated in the Sixth Plan, was continued during the Seventh Plan. Extensive changes were introduced in this major programme for the development of the rainfed agriculture during 1990-91. It was also decided that Central assistance for the implementation of the programme should be liberalised with 75 per cent of the amount to be given as grants to the States and 25 per cent as loans. The NWDPRA envisages that a micro watershed will be taken up for development in every block having assured irrigation of less than 30 percent. In developing the micro watersheds, a holistic approach is to be adopted including, inter alia, the diverse production systems, be that seasonal cropping, perennials like horticulture, forestry or animal husbandry activities. Use of vegetative barriers is the principal means to prevent soil erosion and to conserve moisture. Arable, non-arable lands as well as the drainage lines will be treated in an integrated manner. To the largest extent possible, the programmes contemplate enrolment of beneficiaries both in planning for development and execution of various activities. Extension support through local progressive farmers is another critical element. Training of all concerned has been emphasised.

Soil and Water Conservation

1.7.2 During the Seventh Plan, schemes on soil conservation in the catchments of inter-State

river valley projects, and the flood prone rivers, reclamation of alkaline (usar) soil, control of shifting cultivation and development of ravine areas were taken up. Soil and water conservation activity in 27 catchments taken up in 17 States covered 2.4 million hectares by the end of the Seventh Plan with a reported expenditure of Rs. 307 crores.

1.7.3 Watershed management schemes in the catchments of flood prone rivers are being implemented in eight catchments in seven States and one Union Territory. Upto the end of the Seventh Plan, 3.78 million ha. (10% of the priority area) have been treated at a cost of Rs. 91 crores. In view of the limited success of these programmes, these should be evaluated for cost effectiveness and replicability. People's participation should be encouraged and whereever possible, voluntary organisations should be engaged in such activities.

1.7.4 For the Central scheme of Control of Shifting Cultivation, Planning Commission extended assistance amounting to Rs. 52 crores to Andhra Pradesh, Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Orissa and Tripura during last five years. It benefited 26532 tribal families.

1.7.5 Under Central scheme on Ravine Reclamation Planning Commission assisted Uttar Pradesh, Madhya Pradesh, Rajasthan and Gujarat on year to year basis w.e.f.. 1987-88.

Animal Husbandry:

1.8.1 Animal husbandry is one of the important sub sector of agricultural economy and plays a significant role in the rural economy by providing gainful employment particularly to the small/marginal farmers, women and agricultural landless labourers. This sector also provides milk, eggs, meat, wool, hides and skin, dung, bones, hooves and draught power. Manures and slaughter house by-products are also sources of energy.

1.8.2 The contribution of the livestock sector has increased to about Rs. 27,700 crores in 1987-88 as compared to Rs. 10,600 crores in 1980-81 which constitutes 25.5% of the total agricultural output. The animal husbandry sector has made good progress in the livestock production and health. Several schemes of the Seventh Plan period were restructured for more effective implementation.

1.8.3 Achievements during the Seventh Plan (year wise) and annual Plans (1990-91 & 91-92) are as under :

Table-1.2

Year	Milk (mill.tonnes)	Eggs (mill.nos.)	Wool (m.kgs.)
1984-85	41.5	14252	38.0
1985-86	44.0	16128	39.1
1986-87	46.1	17310	40.0
1987-88	46.7	17795	40.1
1988-89	48.4	18890	40.8
1989-90	51.5	20204	41.7
1990-91	54.9	21342	42.0
1991-92(amt. ach.)	57.5	22751	43.6

1.8.4 An important aspect of the livestock development programme is the enhancement of the productivity of milch cattle through upgradation by cross breeding. Frozen semen technology based on progeny bulls is a major plank of the programme and has resulted in improved productivity.

1.8.5 Drought intensity during the Seventh Plan period has pointed to the need for integrating animal husbandry programme with the development of fodder. Programmes for improving availability of fodder and seeds, development of pasture lands, feed analytical laboratories for analysis of various nutrients and toxins were taken up.

1.8.6 Operation Flood Project was started in 1970 by the National Dairy Development Board (NDDB) and the number of dairy cooperative societies increased from 34,523 in 1984-85 to 64,000 in 1991-92. The peak milk procurement increased from 7.9 to 13.5 million kgs./day, fluid milk from 5 to 11 million litres/day and rural milk processing capacity from 8.8 to

17.8 million litres/day. The Technology Mission on Dairy Development was established to dovetail the activities of the Central and State Governments, NDDB and ICAR research institutes for better implementation of programmes.

1.8.7 The ICAR and the Central and State poultry breeding farm units supported and augmented productivity of quality layer and broiler birds and NAFED provided marketing support for poultry products.

1.8.8 Sheep and Wool Development Boards or federations in potential States assisted in ensuring remunerative returns to shepherds. Indigenous wool production is largely of carpet quality, apparel wool accounting for only about 10% of overall annual wool production. This has necessitated import of 20-25 million kgs.of fine wool every year.

1.8.9 Animal health care services were provided through polyclinics, hospitals, dispensaries and veterinary aid centres, besides mobile dispensaries under the Operation Flood Project. Disease diagnostic facilities at State laboratories were strengthened. Biological units for production of vaccines to prevent various animal diseases were set up. Bio-technology centres on animal health and production were established.

Fisheries

1.9.1 The average annual growth rate of fish production during the Sixth Plan was only 3.94 percent. The major constraints were over-concentration on shrimp fishing, non-exploitation of unconventional fishery resources in the marine sector and slow progress in the expansion of extensive and semi-intensive aquaculture systems in the inland and brackish-water fisheries. Processing and marketing facilities for sea food and inland fish were inadequate. To overcome these difficulties, adequate attention was paid during the Seventh Plan through incentives and regulatory measures and fish production rose to 36.77 lakh tonnes. By the end of the Seventh Plan, 22.75 lakh tonnes of marine and 14.02 lakh tonnes of inland fish were produced; indicating an average annual growth rate 6.25 percent. Banning of bull trawlers, motorisation of traditional craft and creation of National Welfare Fund for Development of Fishermen Villages to provide housing, sanitation and drinking water, Group Accident Insurance Scheme etc. have helped in some measure to improve the quality of life of fishermen. Introduction of Beach Landing Craft with assistance through cooperative societies was a success in Orissa and Andhra Pradesh.

1.9.2 In the inland water fisheries sector, the establishment of about 300 Fish Farmers Development Agencies (FFDA) and fish seed production by circular Chinese type of hatcheries etc. contributed to an increase in the average yield in FFDA districts to 1560 Kgs. per ha. per annum from the Sixth Plan level of 900 kg/ha. Fish seed production also rose to 12,000 millions from 5639 millions.

1.9.3 Other important programmes include brackish water fishery development by transfer of technology through Brackishwater Fish Farmers Development Agencies. The semi-intensive shrimp farming technology was upgraded under a UNDP assisted coastal aquaculture project (1986). In the deep sea fishing sector, considering the need for foreign technology to exploit non-shrimp resources, introduction of large number of resource specific vessels was considered. Schemes for leasing, test fishing and joint ventures were formulated. The Fishery Survey of India carried out studies on assessment of suitable craft and gears for marine fisheries and disseminated information about fishery resources availability. Deep sea fishing fleet increased to 171. Suitable credit facilities, technology for harvesting non-shrimp resources, skilled manpower and infrastructure facilities including storage and processing facilities were augmented.

1.9.4 The Central Institute of Fisheries Nautical & Engineering Training (CIFNET) catered to the development of trained manpower for the fishing industry and the Institute's vessels provided in-vessel training to the trainees. The Integrated Fisheries Project was engaged in experimental fishing activities for propagation of diversified fishing methods, besides introduction of processed fish products on semi- commercial scale. The Central Institute of Coastal Engineering for Fishery (CICEF) conducted pre- investment investigation, examination and designing of the facili-

ties required at fishing harbours etc. Besides, the Institute conducted investigation for brackishwater fish farm to obtain the desired culture results. Four major fisheries harbours, 18 minor harbours and 86 landing centres were commissioned by the end of Seventh Plan.

1.9.5 In July, 1988, the Government of India decided to create a separate Ministry of Food Processing Industries (MFPI) and some of the functions relating to fisheries were transferred to it. Primarily, the MFPI is to deal with the following areas, so far as fisheries are concerned:

i) Fishingand fisheries beyond the territorial waters including deep sea fishing station now called Fishery Survey of India,(Bombay).

ii) Processing of fish

iii) Technical assistance and advice to fish processing industry; and

iv) Establishment and servicing of Development Council for Fish Processing Industry.

1.9.6 For suitabl eoordination, a National Fisheries Advisory Board was set up in January 1989 with the objective of rendering advice in respect of development of fisheries and orderly development of fishing industry, export of marine products, etc.

1.9.7 The processing industry and internal marketing of fish require substantial infrastructural development. There are 216 freezing plants with capacity to handle 2200 tonnes per day, but these have limited use as these mainly have plate freezers which do not give sufficient value addition as compared to Individual Quick Freezing Plants (IQF). The cold storage facilities (5000 tonnes) are highly inadequate. Ice plants with cold storage facilities, establishment of retail fish marketing centres, fish handling sheds, insulated fish marketing centres, insulated fish transportation vehicles etc. are to be developed in a substantial way for sustained growth of the fishing industry.

1.9.8 Fish production during 1990-91 stood at 38.36 lakh tonnes, which was marginally above the target. The target for 1991-92 was 39.90 lakh tonnes consisting of 24.40 lakh tonnes of marine fish and 15.50 lakh tonnes of inland fish. No substantial increase from the coastal waters is possible as it is mostly over exploited. A new unit of Integrated Fisheries Project was installed in Visakhapatnam during 1990-91 to help the fishing industry to optimise utilisation of low value fish. Technical consultancy services and introduction of diversified fish products, reimbursement of central excise duty on HSD oil used by fishing vessels less than 20 m. in length was undertaken during the two Annual Plans. For brackish water culture, more areas have been supported through BFDAs. Under the National Welfare Fund Scheme, 72 fishermen villages and about 8.5 lakh fishermen have been insured under the Group Accident Insurance Scheme so far. The number of fishermen Primary Co-operative Societies stood at 8,170 having a membership of 6.6 lakhs. However, except in Maharashtra, Gujarat, Tamil Nadu and Orissa, the fishermen co-operatives in other States do not play any significant role in the development of fisheries.

1.9.9 The export of marine products during 1990-91 was 1,38,400 tonnes valued at Rs. 890 crores. The target of fish exports for 1991-92 is 1,65,700 tonnes valued at Rs. 1000 crores. Physical targets and achievements of Fisheries during the Seventh Plan as well as the annual plans of 1990-91 and 1991-92 are given in Table-1.3 .

Agricultural Research & Education

1.10.1 The Indian Council of Agricultural Research (ICAR) is the apex organisation for sponsoring, co- ordinating and promoting research, education and extension education in agriculture and allied fields in the country. Under the Council there are 43 Central Institutes, four National Bureaux, 20 National Research Centres, nine Project Directorates, 70 All India Co-ordinated Research/Improvement Projects (AICRPs) and 109 Krishi Vigyan Kendras in the country. The Council also assists 26 State Agricultural Universities (SAUs) and other leading institutions involved in agricultural education and research. A review committee was set up under the chairmanship

Table-1.3 Physical Targets & Achievements Fisheries

Sl.No	Item	Unit	Target (Seventh Plan)	Achievement	Target 1990-91	Achievement t990-91	Target 1991-92
I.	Fish Production						
	a)Marine	Lakh tons	17.90	22.75	23.52	23.00	24.40
	b)Inland	"	14.60	14.02	14.70	15.36	15.50
	T o t a l	"	32.50	36.77	38.22	38.36	39.90
II.	Fish Seed Production	Million	12000	12000	12500	12500	13000
III.	Water Area To Becovered Under Intensive Fish Culture	Lakh ha.(cum)	2.70	2.46	3.00	2.82	3.40
IV.	Fish/prawn Seed Hatcheries	Nos	45 (public sector)	39 (pubic sector)	5	3	2
V.	Traditional Craft To Be Motorised	000'Nos.	5000	4667	2000	2661	2000

of Shri G.V.K.Rao which has been, by and large accepted by the Government.

1.10.2 A number of new centres to conduct research on several specific problems and All India Coordinated Projects were established during the Seventh Plan. These cover many major areas such as Brackishwater Aquaculture, Post-Harvest Technology, besides issues connected with annimal husbandry, horticulture etc.

1.10.3 Three new Agricultural Universities, namely Dr. Y.S.Parmar University of Horticulture and Forestry, Solan, the University of Agricultural Science in Dharwad and Indira Gandhi Krishi Vishwa Vidyalaya, Raipur, were established during the Seventh Plan.

1.10.4 As many as 109 Krishi Vigyan Kendras have been set up in the country till March, 1992. Of them, 65 are under State Agricultural Universites, 25 being operated through Voluntary agencies, State Governments, and other institutions and the remaining 19 are under the ICAR.

1.10.5 For strengthening the regional research capability of State Agriculture Universites (SAUs), the National Agriculture Research Project (NARP) was launched by the ICAR in January, 1979 with the support of soft loan from the World Bank. It is now in the middle of its second phase. The NARP-II shall continue the process initiated under NARP-I, for strengthening the zonal and the regional research stations of SAUs and also include need-based strengthening of ICAR Institutes. Under NARP-I, extended to NARP-II phase, 117 sub-projects and about 250 zonal/regional stations have been strengthened.

Agro-climatic Regional Planning Approach

1.10.6 The Agro-climatic Regional Planning Approach (ACRP) was initiated by the Planning Commission in 1988 to formulate integrated development plans for agriculture and allied sectors differentiated by homogeneous agro-climatic regions. During the Eighth Plan, emphasis is on development of resources and their optimum utilisation in an integrated and sustainable manner for constituent subsectors. A macro-level strategy for the 15 broad agro-climatic zones, is proposed to be incorporated in operational integration in state plans covering activities in crop and non-crop sectors. ARPU teams are preparing Operational Plans for about 30 districts. These will be implemented in pilot block/watersheds during the Eighth Plan with the help of the State Agricultural University, ICAR, and State extension officials working at the district level.

Eighth Plan Strategy and Thrust

1.11.1 The Eighth Plan will aim at consolidating the gains from the base built over the years in agricultural production; sustaining the improvements in productivity and production to meet the increasing demands of the growing population; enlarging the incomes of farmers, and realising the country's potential by stepping up agricultural exports. While the production of several commodities has shown significant increases, a cause for major continuing concern is that the growth rates in agricultural production is highly skewed in terms of geographic areas as amongst crops. Rapid improvement in productivity and production of a few of the agricultural crops, since the introduction of high yielding varieties technology from the mid-sixties, has been conspicuous only in small pockets of well endowed irrigated areas. Eastern India in the heavy rainfall zone the vast rainfed tracts in the country and the hill regions have not been able to adopt the technologies for achieving high growth rates. It will be of crucial significance, not only on account of the need to reduce regional disparities, but also essentially to raise production levels, that far greater attention is devoted to bring about an accelerated growth in areas which have relatively lower growth. Efforts to concentrate on productivity of principal crops in these regions through programmes initiated in the Sixth and the Seventh Plans will have to be further intensified. Appropriate technologies designed to meet the specific location problems, need to be generated.

1.11.2 In the rainfed areas, farming system approach should be the basis for enabling farmers to make scientific and optimum use of their land and water resources to increase their incomes. Diversification of the agricultural production systems may be called for, together with scientific management of land, to prevent soil erosion and achieve better *in situ* moisture conservation. A holistic approach towards the development of rainfed areas, which forms the *raison d'etre* for the restructured National Watershed Development Programme for the Rainfed Areas, cannot be over emphasised. This programme will be adequately funded and implemented vigorously.

1.11.3 A preponderant proportion of land holdings is small or marginal. Even with the best of productivity of traditional crops cultivated by the small holders, the resultant incomes may not be sufficient to support a minimal standards of living. Agricultural production systems followed by this segment of farming community may have to be diversified into other allied activities, capable of generating higher returns and incomes such as animal husbandry, horticulture, both irrigated and unirrigated, sericulture, fisheries, agro-forestry etc.

1.11.4 Rural unemployment and under-employment are issues of serious concern in areas with relatively poor growth in agriculture. The treatment of rainfed areas on watershed basis may provide employment opportunities for unskilled labour by way of developing the potential of drylands, construction of water harvesting structures, plantation of horticulture, agro-forestry etc. Many of the alternative agricultural production systems can generate employment opportunities on a self-sustaining basis.

1.11.5 Even in the irrigated areas, there is potential for increasing productivity through dissemination of improved technologies amongst the entire farming community, when viewed in the context of the yield potential of varieties presently under cultivation and further improvements which agricultural research can engender. Effective water management, through timely application of the minimal re-

quired volumes of water in the light of the prevailing agro-climatic factors, can enhance the yields further. Continued emphasis in this area is a prerequisite for achieving higher level of agricultural production to ensure food security and meet the agricultural raw materials requirements of the processing units. Conjunctive use of surface and ground water will need to be promoted, especially in Bihar, West Bengal, Assam and Orissa.

1.11.6 Watershed management principles also address themselves to the environmental concerns in the ecologically fragile areas like the undulating rainfed lands, the hilly terrains etc. Efficient use of chemical fertilizers, recycling of organic wastes and use of bio-fertilizers have an important place in the sustainable agricultural development process. A major plank in recent years has been the Integrated Pest Management (IPM) for achieving control over pests and diseases affecting crops. Though the use of toxic pesticides is still relatively low, it is necessary from several angles to ensure that the use of pesticides is restricted only to those circumstances where it is inescapable. The use of minimal quantities of chemical pesticides in an effective manner will improve the returns to the farmers. Secondly, this will substantially reduce the environmental pollution. Use of cultural means, selection of pest resistant varieties and use of biotic agents for control of pests such as parasites and predators will have to be recommended and widely adopted. Effective surveillance of pest build-up is a critical aspect of IPM. The Eighth Plan will greatly increase the use of IPM in several major crops.

1.11.7 The marketing infrastructure has to be further augmented and streamlined, especially in respect of perishable commodities, if diversification is to succeed and primary producers are enabled to realise a fair share of the price paid by the consumers. As the country increases production beyond its own requirements, or where the country has comparative economic advantage in the light of technological gains, or to promote diversification, the marketing of agricultural produce within and outside the country assumes greater importance. Strengthening of the existing marketing infrastructure, besides improving the logistics in the movement and storage of goods is necessary to cut down losses at various stages of handling of the produce. This is vital from the view points of both the producers as well as the consumers. Efficient marketing by co-operatives of producers themselves and their Apex organisations will need to be intensively promoted.

1.11.8 Recent changes in the Industrial policy with de-regulation and lesser direction by the State, have thrown open opportunities for a rapid phase of expansion of the agro-based industries, particularly the processing units. Induction of the latest technologies in processing and better packaging can help Indian processed food products compete in the international markets, besides catering to the growing market within the country. Special efforts would have to be mounted to give a fillip to the production of fruits, vegetables, milk and meat for being processed in units established, including those in the rural areas. This can create jobs for the educated, the semi-skilled and the unskilled in the country-side. Increased value additions can also help larger realisations for the primary products produced by the farmers.

1.11.9 The changes in the trade policies have vastly improved the prospects for realising the full potential of the country with its varied agro-climatic conditions from tropical to temperate regions, in producing commodities for exports. Apart from maximising the production of the traditional export commodities, the new seed policy has created a climate for producing non-traditional commodities like flowers and different types of vegetables for exports. Systematic efforts to overcome, such constraints as may exist in the development of markets abroad will have to be launched and sustained in the coming years.

1.11.10 There can never be a stage where the effort to continuously monitor and ensure, through well conceived programmes, the availability of high quality inputs at reasonable prices can cease. Timely availability at as near the place of cultivation as possible vitally influences the farmers' ability to accept and adopt the recommended technologies. Further streamlining of delivery systems is necessary in many parts of the country where the current levels of consumption are very sub-optimal. Production and distribution of inputs have been undertaken by the public, the private and the cooperative sectors. Similarly, the require-

ments of short, medium and long-term credit need to be met in larger measure in several states to provide the required backing for intensive application of improved technologies.

1.11.11 Promotion of initiatives outside the Government to further socio-economic development is of cardinal importance and is central to the strategy of the Eighth Plan. The non-governmental initiatives may be in the form of those undertaken by the industry, formally or informally organised groups of individuals etc. In addition, over the years, efforts have also been directed towards decentralisation of the development administration. The Panchayat Raj institutions and the cooperatives need to be strengthened to facilitate much greater involvement of the people in the identification of the felt needs, plan formulation, implementation and monitoring. Many of the agricultural development programmes lend themselves to better administration through the closest involvement of the beneficiaries. The non-governmental organisations have begun to play an important role. This process will be further strengthened. In several areas like integrated development of the rainfed areas on watershed management principle, agricultural extension and organisation of provision of services, the association of NGOs can lead to far greater cost-effectiveness in the implementation of the programme.

1.11.12 Many of the programmes and schemes will have to be continued from the previous plans, with necessary refinements/modifications to address themselves sharply to the problems they seek to overcome. The changing scenario of agricultural development in different areas would require a periodic review based on continuous evaluation of the implementation of the programmes. A beginning has to be made particularly to promote and accelerate the diversification process. The following paragraphs deal with some of these aspects.

1.11.13. The importance of land reforms with respect to increasing agricultural production and productivity can not be overemphasised. The land reform measures through provision of security to tenants and consolidation of land holdings, etc., apart from other things, can help bringing land under profitable agronomic practices. In West Bengal, land reform measures comprising vesting of ceiling surplus land, distribution of vested land among the landless and the submarginal farmers, providing tenurial security to share croppers, updating of records of rights, etc. has significantly contributed to augment productivity of major crops.

1.11.14. The procurement and support prices for important agricultural crops will be fixed by taking into consideration factors like cost of production, change in market prices, input-output parity, inter-crop price parity, effects on industrial cost structure, etc. A suitable price policy could play a vital role in giving appropriate signals to farmers and also help in providing incentives for stepping up agricultural investments. A major aspect of this policy will be to ensure adequate return on investment made by the farmer. In this, the recommendations of various expert committees will be considered by government and necessary modifications effected. The price policy will be reviewed keeping in view the major objectives of moving towards commercialisation of agriculture, achievement of food security and generation of adequate surplus for export.

Crop Production Oriented Programmes:

1.12.1 Many of the important programmes to maximise production of several crops will be continued during the Eighth Plan. Those include: the Special Foodgrains Production Programme in respect of rice, wheat, coarse cereals, as well as programmes like the oilseeds, pulses, cotton development, etc. The focus of these programmes is to extend improved technologies amongst the farmers. Demonstrations of the latest technologies constitute a critical element of these programmes. These will have to be streamlined, systematised and closely monitored to get the optimum results. The farmers' acceptance of the technologies will be facilitated through successful demonstrations. A far greater planning in the organisation of demonstrations will be sought to be achieved. Special efforts will be made to reorient the programmes to address themselves to the basic constraints faced by the farmers in the States/areas where the current yield levels are low, as in the case of rice in Eastern India, wheat in Bihar, Madhya Pradesh and Eastern UP and coarse cereals in the Central and Western parts of India. A further intensification of measures to improve productivity and produc-

tion of pulses and oilseeds will be achieved under the programmes through linkage with the technologies being generated by the Indian Council of Agricultural Research State Agriculture University (ICAR-SAU) research system.

1.12.2 In particular, the emphasis will be on production of Basmati rice which is one of the top foreign exchange earners. The prospects of exports of hard wheat (durum) are also bright and production will have to be improved. Coarse cereals not only constitute the staple diet in several regions but also have industrial use as well as in the manufacture of cattle/poultry feeds.

1.12.3 For accelerated production of oilseeds, the production programmes will seek to expand the area under oilseeds through (a) diversion of upland rice in many States like Madhya Pradesh and Orissa to groundnut cultivation, where the yield levels of rice are very low and the crops often suffer from moisture-stress condition; (b) larger coverage of soyabean in Orissa, Gujarat, Maharashtra, Bihar and Uttar Pradesh, partly through substitution of less remunerative crops or taking soyabean as an inter-crop in several cropping situations; (c) further enlarging the area under rapeseed-mustard in place of rainfed wheat or in place where assured irrigation is not easily feasible with consequent impact on wheat yields and (d) extension of groundnut, and. sunflower to be grown in summer season.

1.12.4 The production of cotton has to be increased in the coming five years at rates higher than the long-term trends keeping in view the much larger exports which the country can achieve in the form of raw cotton, yarn and garments. Significant increases in yields through provision of life saving irrigation, better agronomic practices in the traditional rainfed cotton tracts of the country i.e. Madhya Pradesh, Maharashtra, Gujarat, can improve the economic lot of the farmers and enlarge employment opportunities, as cotton generates large number of mandays per unit of land. The Intensive Cotton Development Programme will have to be stepped up.

Targets of Production of Principal Crops:

1.12.5 The targets of crops production as well as likely area of the principal crops or groups of crops are given in the Table 1.4.

1.12.6 Targets of major agricultural crops for the Eighth Five Year Plan have been projected on the basis of agricultural sub-model which takes into account factors, such as gross irrigated area, gross cropped area, fertiliser consumption, area expansion, rainfall index and outputs in a regression frame work.

The targets proposed above would call for much higher efforts in the Eighth Plan than the earlier Plans.

Horticulture Crops

1.13.1 During the Eighth Plan, the emphasis in respect of horticultural crops will be on production of quality planting materials, area expansion, improvement in quality and increase in productivity. Popularisation of modern agro-techniques, especially of growing horticultural and floricultural crops in controlled conditions such as green/glass houses, will be vigorously promoted. Strengthening of infrastructure facilities for grading, sorting, storage, packing and marketing, together with the propogation of post-harvest technology will be the major thrust in the area of horticulture development. The Agricultural Products Export Development Authority (APEDA), The NAFED and the National Horticulture Board will continue to support marketing and establish facilities for vapour, heat and cold treatments etc. Joint ventures can be encouraged to obtain technology for processing purpose. A standing export promotion committee should be set up to promote infrastructural development for facilitating export of horticulture products.

1.13.2 Fruits, vegetables and cut flowers will receive greater attention. For export of horticulutral products, suitable selection of varieties of fruits, vegetables and flowers including orchids in the potential areas will be identified and supported. Modern technologies like plasticulture, drip irrigation, and tissue culture will be encouraged for speedy development of horticulture.

Table-1.4 Areawise Break-up Of All India Targets Of Principal Crops

P- Production-million tonnes

A - Area - million hrctare

Y - Yield - kgha

Crop	1991-92$			1996-97		
	A	P	Y	A	P	Y
1.Rice	42.50	72.50	1706	43.50	88.00	2023
2.Wheat	23.50	56.00	2383	24.25	66.00	2722
3.Coarse Grains	37.50	30.00	800	37.75	39.00	1033
4.Pulses	23.50	14.00	596	24.50	17.00	694
5.All Foodgrain	127.0	172.5	135	130.0	210.0	1615
6. Oilseeds	23.5	17.5	74	24.5	23.0	939
7.Sugarcane	3.70	235.00	63514	3.90	275.00	70513
8.Cotton *	7.40	10.50	241	7.50	14.00	317
9.Jute & Mesta **	1.00	9.00	1620	1.00	9.50	1710
10.Other Crops	19.60			23.70		
11.All Crops	182.20			190.60		

$ Likely Achievement

* In million bales of 170 Kg each

**In million bales of 180 Kg each

Plantation Crops

Tea

1.14.1 Tea production in the country has increased from 652 million Kgs in 1985-86 to 703 million Kgs in 1989-90. There is need for a further increase in the production and productivity of tea to meet the growing domestic consumption and also to increase our share in the global tea export. During the Eighth Plan, a high priority will be accorded to the scientific management of small tea gardens, replanting of old and uneconomic tea bushes by high yielding planting material, reduction in regional disparity in tea productivity, extension of tea cultivation in traditional and non-traditional areas through encouragement at family tea gardens, tea co-operatives and group farming system and popularisation of Indian tea in the global market.

Coffee

1.14.2 The average production of Coffee during the Seventh Plan is estimated at 1,55,000 tonnes against the target of 163,000 tonnes. Coffee production was of the order of about 1,73,000 tonnes in 1990-91. The Coffee Board has substantially increased the production base and built up infrastructure in the field of research, extension, marketing and promotion. Sustained export promotion efforts will be made to establish India as a major supplier of quality coffee.

Rubber

1.14.3 India is the fourth largest natural rubber producer in the world. Production of natural rubber was satisfactory during the Seventh Plan period. It has significantly increased from 201,000 tonnes in 1985-86 to 297,000 tonnes in 1989-90. It is expected to be about 364,000 tonnes in 1991-92, showing an increase of 10.3% over the level of 330,000 tonnes recorded in 1990-91. The Eighth Plan strategy for development of rubber plantation will focus on (i) expansion of rubber cultivation in non-traditional areas; (ii) replanting of old and low yielding plants with high yielding planting materials; (iii) increasing productivity of existing plantation through promotion of irrigation and adoption of improved cultural and crop exploitation practices; (iv) adoption of improved processing techniques/methods and practices and (v) quality improvement. Though rubber is not included under "forest" under the Forest Conservation Amendment Act, 1988, in areas like North-East Region, Andaman and Nicobar Islands, Orissa, Madhya pradesh, West Bengal, Andhra Pradesh and Western Region covering Karnataka, Goa and Maharashtra it could do well as major afforestation species.

Spices

1.14.4 At present, the country produces around 20.0 lakh tonnes of different spices valued at about Rs.3500 - Rs.4000 crores. India's share in the global trade of spices is 22% in volume and 10% in value. Among the major spices, Cardamom suffered a serious set back during the Seventh Plan period. The export of pepper declined to about 32,000 tonnes in 1990-91 from 37,000 tonnes in 1986-87. The export of spice oil and oleoresins exhibited a rising trend. The main thrust in the development and export programmes will be on identification of better export markets and cultivation of improved high yielding varieties, improved post-harvest technology and storage facilities. Some spices varieties are imported to meet the domestic demand in the country. These include clove,cinnamon, nutmeg, mace and cassia. Efforts will be made to achieve import substitution by encouraging cultivation of these spices in the country.

Tobacco

1.14.5 Tobacco as a commercial crop, is one of the major export items. During the Eighth plan, the focus will be on (i) intensification of R & D activities for developing alternate use of tobacco for medicinal purposes, etc. and (ii) diversion of the tobacco area to some other crops, giving higher returns.

Targets of Plantation Crops :

1.14.6 The targets for production and export of plantation crops for the Eighth Plan are given in Table-1.5.

Table 1.5 Eighth Plan Production & Export Targets for Plantation Crops.

Crop	Unit	VIII Plan(1996-97) Production	Exports
Tea	(million kg)	950	300
Coffee	(000 tonnes)	220	125
Spices	(000 tonnes)	2076	163
Cardamom	(tonnes)	6000	2250
Tobacco	(mill kg)	175	80
Rubber	(000tonnes)	600	

Agricultural Inputs:

Seeds:

1.15.1 Despite the steps taken in the earlier Plans, seeds production and distribution arrangements would require continuing attention. The private sector has increasingly expanded its operations in seed production and marketing, particular by the high value materials such as the hybrid seeds of several crops like vegetables, cotton, oilseeds etc. However, in many areas, State intervention through its own undertakings has to play a critical role in meeting the requirements of quality seeds in every part of the country. Varietal replacement follows in the trail of coninuing research on evolution of better varieties from the point of view of yield or quality of grains or relative tolerance to pest/diseases. Multiplication of the recent varieties has to be streamlined, if the demands

built up through extension efforts are to be met in full.

Fertilizers:

1.15.2 To support crop production at the levels contemplated, the fertilizer consumption will have to be pushed up and can be expected to attain a level of 18.3 million tonnes in terms of nutrients. The emphasis will be on ensuring balanced application of nutrients and on improving the application practices to get the maximum benefits. Fertilizer use efficiency will, in addition, be contingent upon ensuring that absence or deficiency of micro- nutrients will not act as a drag on getting high response in terms of incremental production from application of principal nutrients viz. the Nitrogen, Phosphate or Potash - Use of bio-fertilizers, algae and recycling of organic wastes need to be promoted in an intense manner.

Plant Protection:

1.15.3 Integrated Pest Management (I.P.M), built around effective surveillance to study the pest buildup so that pesticidal chemicals are resorted to only when the economic threshold lines are crossed and the use of predators and parasites to control crop damaging pests will have to be spread amongst the farming community. Pest Management may also gain from the use of seed varieties with in-built resistance through genetic engineering. Systematic production of bio-control agents should become an important element of the total IPM effort. Some of the targets of key inputs in the Eighth Plan are indicated in Table 1.6.

Extension Services:

1.15.4 Agricultural extension services have to play a key role in disseminating the improved technologies amongst the farmers. While agricultural extension machinery was augmented and strengthened in previous plans, the emphasis will be on the continuous upgradation in technical knowledge and communication skills for effective transfer of technology. Linkage with research and training programmes will have to be strengthened. Besides, the extension work carried out by the State machinery and the ICAR-SAU research system, progressive farmers, voluntary organisations and extension work done by industry can be effective instruments in taking technology to the farmers. State support can enlarge their areas of operations. The special needs for

Table 1.6 Targets of Key Inputs Use/Consumption in Eighth Plan

S.No.	Item	Unit	Assumed Base Level 1991-92	Plan Target 1996-97
I	Certified Seeds Distribution	Lakh Quintals	49.00	70.00
II	Fertiliser Consumption	Million Tonnes		
	i)Nitrogenous		8.50	11.50
	ii)Phosphatic		3.60	5.00
	iii)Potassic		1.40	1.80
	iv)N+P+K		13.50	18.30
III.	Pesticides(Tech Grad Material)	'000 tonne	80.05	97.80
IV.	HYV Programme	Million Hectares	62.60	78.00

agricultural extension for women may call for a larger number of women extension workers to meet their requirements especially in areas where there are large number of women-headed farm families. Many projects have been taken up with external assistance for providing improved extension services to women as also their training. This has to become a critical area of agricultural planning.

Watershed Development Programme:

1.16.1 The National Watershed Development Programme for Rainfed Areas is one of the most important programmes as it seeks to usher in agricultural development in the resource-poor vast tracts of rainfed and dry lands. Identification of micro-watersheds and preparation of detailed development plans have been completed by most of the State Governments and vigorous implementation of the integrated approach for developing both infrastructure as well as production systems will be of utmost importance in the Eighth Plan. It is only by making NWDPRA, a truly peoples' movement that the problems of the rainfed region can be successfully overcome.

1.16.2 The Seventh Plan Centrally Sponsored Scheme of National Watershed Development Programme for Rainfed Agriculture (NWDPRA) has been modified on the basis of findings of evaluation studies for implementation of the Eighth Five Year Plan. The modified scheme provides 100% finance (75% grant and 25% loan to States). The revised guidelines entitled "WARASA" have been circulated to all the States/Union Territories. A list of blocks with less than 30% irrigation has been prepared for Rainfed Agriculture Technology with emphasis on people's participation.

1.16.3 An integrated and sustainable approach for development of natural resources has been studied in terms of agro-climatic zones and subzones. In this direction, the Department of Space, which has developed a technology for rapid planning with Geographic Information System (GIS), plans for watershed development with the help of agricultural experts and local administration.

1.16.4 India is the second largest producer of fruits, vegetables and flowers. Other economic activities relating to silk, aquaculture products and processed foods have vast scope for raising self-employment opportunities in rural areas. Export of agricultural commodities is a major thrust area in the Eighth Plan. Programmes for development of appropriate post-harvest technology, provision of infrastructure at exit points of Airport/Seaport, modernisation of slaughter houses, creating large size cold- storage facilities and rationalisation of taxes and duties on imports and exports will be taken up during the Eighth Plan. Emphasis will also be placed on creation of a favourable climate for accelerating investment in development of infrastructure for export.

Western Ghats Development Programme

1.16.5 The general approach adopted during the Seventh Plan has been of taking up integrated development programme on compact watershed basis. Watersheds are identified and prioritised and activities like soil conservation, horticulture, fishery, animal husbandry, plantation etc. are taken up in the Western Ghats Development Programme (WGDP), taking taluka as the unit of development. During the Eighth Plan, the sub-plan approach to the talukas under WGDP with active involvement and participation of the people would be sought.

Agricultural Credit & Cooperation:

1.17.1 Development of cooperatives has been envisaged as a significant strategy to build strength in the people with limited means. The cooperative movement aims at saving the rural poor, small farmers, marginal farmers, agricultural labourers and small artisans from exploitation by money lenders. Today, India has a wide network of primary agricultural credit societies (PACS) at village level. At district and state level, cooperative federations have also been set up in almost all states.

1.17.2 Cooperatives have, over the years, significantly diversified their activities to include credit, banking, input distribution, agro-processing, storage and warehousing. In dairying and oil processing activities, cooperative sub sector has emerged as an important counterveiling factor to the private traders, for the benefit of both producers and consumers. At present, nearly 60% of the handlooms accounting for 30% of the total textiles production in the country are in cooperative sector. Nearly 30,000 artisans and industrial cooperatives are

functioning. Cooperatives have also contributed significantly in the sphere of consumer protection. Given adequate freedom of action in their management, cooperatives can emerge strong and efficient.

1.17.3. Growth of cooperatives sector has not been uniform in all parts of the country. The primary reasons for this situation are control of cooperatives by dominant vested- interest groups, poor management, dependence of cooperatives on higher tiers and government for financial assistance and limited range of business activities. The function of thrift has not been given due importance by cooperatives leading to resource crunch and ultimately to their inability to serve the poor. The Agricultural Credit Review Committee (ACRC) and the Committee for Implementation of Recommendation of ACRC stressed on a programme of business development planning in respect of each PACS with a view to diversifying loan operations, generation of internal resources through deposit mobilisation and enlarging package of profitable non-credit services. The Working Group on Promotion of Self-Help Groups as sub-system in Primary Agricultural cooperatives have made important recommendations relating to the improvement of functioning of cooperatives. There is a need to strengthen the resource base of PACS to enable the group members to undertake investments necessary for expanding their production levels.

1.17.4. Cooperative efforts of small and marginal farmers in Kerala to organise procurement of inputs, their timely distribution and marketing of products have yielded rich dividends. The model can be extended to organise the weaker sections for investment in inputs for production, processing, storage and marketing, etc. through cooperative organisation during the Eighth Five Year Plan.

1.17.5 The strategy for cooperative credit development in the Eighth Plan would be as follows:

(i) Building up the cooperative movement as a self managed, self regulated and self reliant institutional set-up by giving more autonomy to cooperatives and by democratising the movement.

(ii)Enhancing the capabilities of cooperative for enabling them to play a significant role in improving the productivity of the economy and in creating employment opportunities for the people living in rural areas for service of weaker sections viz. small farmers, labourers, workers, artisans, the scheduled castes scheduled tribes and women.

(iii)Strengthening cooperative credit and organised structure in accordance with model laws and to make it competitive and viable.

(iv)Extend adequate credit support to the programmes of national priority and poverty alleviation such as the Special Rice/food-grains Production Programme, National Oilseeds Development rogramme, Oilseeds Production Thrust Programme, etc. Larger flow of funds for thrust areas i.e to dryland areas, minor irrigation, and wastelands development through non farm sector activities would be considered on prority.

(v)Appropriate linking of consumer cooperatives for implementing Public Distribution System for the benefit and protection of consumers interest will be ensured.

(vi) Development and training of cooperative functionaries in professional management and introduction of suitable personnel management policy would meet the demand for professional managerial personnel in the cooperatives.

(vii) Review of cooperatives with a view to liberalise the working of cooperative institutions and freeing them from bureaucratic control.

1.17.6 One of the major issues concerning the cooperative sector is the professionalisation of management. If the cooperatives have to compete in a more open economic regime, the State Governments will have to professionalise the management of cooperatives and especially the cooperative processing units, This is crucial for overall cooperative development vis-a-vis other sectors. For achieving this, it will be necessary

to convince the State Governments of the need for granting functional autonomy to cooperatives.

1.17.7 Institutional finance is to be ensured for the thrust area activities to be undertaken in the Eighth Plan; some of the thrust areas are: (i) Livestock improvement, soil and water conservation measures, reclamation of water-logged, saline, fallow land, etc. (ii) Minor irrigation and development of shallow tublewells, dugwells, desilting of tanks/ponds. (iii) Agro-processing of horticultural produce and (iv) promotion of high yielding plantation crops in traditional and non-traditional areas. (v) animal husbandry & dairy development (including poultry, piggery and sericulture) and fisheries development. (vii) financial and other technical support to the non-farm sector and encouraging rural artisans and small rural enterprises. (viii) Measure for smooth and efficient functioning of the agricultural and rural development banks and adequate and timely availability of finance from the national level to the Primary Land Development Banks (PLDBs).

1.17.8 Demand for term loans in the agricultural sector, will be met with efforts to maintain smooth and efficient functioning of the agricultural and rural development banks. The National Bank for Agriculture and Rural Development has also made a beginning to finance the non-farming sector covering artisans, agricultural labourers, cottage industries and small rural enterprises. This activity has to be intensified in the Eighth Plan so that the rural people, particularly women and youth, will be able to get gainful employment besides traditional agriculture.

1.17.9 The ACRC has critically examined the working of all the three credit structure and suggested that RRBs be merged with commercial banks as the commitee felt that they were "built-in non-viable", and proposed a National Cooperative Bank of India to replace the existing NABARD.

Storage & Warehousing

1.17.10 The total covered storage capacity available with FCI, CWC and SWCs and State agencies as on 1-7-1991 is estimated at 42.9 million tonnes as per the break-up given in Table 1.7.

Table-1.7 Covered Storage Capicity Agency-wise (Million Tonnes)

Agency	Owned	Hired	Total
F.C.I.	12.0	7.6	19.6
C.W.C.	5.0	1.8	6.8
S.W.Cs	6.8	2.7	9.5
State Agencies	N.A.	N.A.	7.0
TOTAL			42.9
Less storage capacity of CWC/SWCs, already included under hired capacity of FCI.			3.7
Net Capacity:			39.2

1.17.11. Additional storage capacity for foodgrains proposed to be constructed during the Eighth Plan by FCI, CWC & SWCs has been estimated at 14.0 lakh tonnes. Besides, additional storage capacity of 20.0 lakh tonnes for storage of fertilisers and agricultural inputs, jute, cotton etc. would have to be created during the Eighth Plan. Specialised storage facilities for specific commodities including horticulture and other agricultural products for exports will have to be built up.

Rural Godowns

1.17.12 A scheme for rural godowns was launched by Dept. of Rural Development with the objective of prevention of distress sales of agricultural produce. By March 1991, 3354 rural godowns were reported to have been completed with a storage capacity of 18.33 lakh tonnes.

Cooperative storage and cold storages

1.17.13 In order to equip the cooperative with adequate godown facilties for promoting distribution of inputs and consumer goods and also to facilitate marketing of agricultural produce, efforts would be made to provide each viable primary agricultural credit society and marketing society with a godown of its own. It is proposed to set up additional storage capacity of 21 lakh tonnes and additional 70 cold storages

with 3.0 lakh tonnes of additional capacity during the Eighth Plan period.

Cooperative Processing

1.17.14 NCDC is assisting in the setting up of agro- industries - cooperative sugar factories, spinning units, dal and rice mills and many others. Yet, much more is left to be done. Sugarcane growers cooperatives, now account for about 60% of the total sugar production in the country. Cooperative processing of cotton and oilseeds has also made rapid progress. Forty-nine new cooperative sugar factories, 28 additional cooperative spinning mills and 21 integrated oilseeds processing units are proposed subject to availability of financial resources.

1.17.15 Agro-Processing of fruits and vegetables is a potential area for development of cooperatives of the farmers. These processing units should, ideally be part of integrated projects linking production with agro-processing and supporting by- products. The major weakness of the cooperative fruit & vegetable processing units are under utilisation of capacity and efficient technical and financial management. Efforts are to be made during the Eighth Plan for improvement of these cooperatives to secure a view to better return for the agricultural producers with higher value additions.

1.17.16 The recent changes introduced by the Government in several fields provide an opportunity for co-operatives to play a much larger role in several areas such as marketing of agricultural produce, creation of marketing infrastructure, establishment agro-processing units etc. Many schemes taken up in the past will be continued with greater vigour. Targets envisaged for the Eighth Plan under some of the selected programmes involving the co-operative movement are indicated in Table 1.8.

1.17.17 The National Bank for Agriculture & Rural Development (NABARD), which provides refinance support to base level financial institutions for lending to rural sector envisages acceleration of rural credit, specifically in the thrust areas. During the Seventh Five Year Plan, the extent of refinancing assistance was of the order of Rs 6980.04 crores. The projected refinance support from NABARD is estimated to be about Rs 16,600 crores during the Eighth Five Year Plan.

Table-1.8 Cooperative Sector Targets

Sl. No.	Programme	Base level 1991-92 anticipated Achievement	Eighth Plan targets 1996-97
1.	Short term loans (Rs. crores)	4350	7050
2.	Medium term loans (Rs. crores)	360)))	615
3.	Long term loans	965)	1625
4.	Coop. marketing of agri. produce (Rs. crores)	7130	9500
5.	Value of Fertilisers retailed by coops. (Rs. crores)	2475	4000
6.	Value of consumer goods distributed in rural areas (Rs. crores)	2725	4500
7.	Value of consumer goods distributed in urban areas (Rs. crores)	2700	5000
8.	Coop. Sugar factories installed (No.)	220	269
9.	Coop spinning millss installed (No.)	130	158
10.	Capacity of coop. godowns constructed (lakh tonnes)	121	142
11.	Cold storages (No.)	239	309

1.17.18 The Eighth Plan Central Sector Outlay for sub sector Crop Husbandry is Rs. 4681 crores, Soil & Water Conservation Rs. 800 crores, Plantations Rs. 190 crores, Food, Storage & Warehousing Rs. 424 crores, Agricultural Financial Institutions Rs. 234 crores, Coopera-

tion & Credit Rs. 1550 crores Food Processing Industries Rs 126 crores and other Agricultural Programmes Rs.100 crores.

Animal Husbandary and Dairy Development

1.18.1 Considering the importance of the livestock development and Dairy Development subsector in improving the economic lot of especially the small and marginal farmers, the landless agricultural labour, rural women and its ability to create large employment opportunities, the programmes launched in the previous plans will be continued and systematically implemented. Attention will be focussed on the technologies being developed to make activities in this sub sector economically more remunerative. Research in the frontier areas, such as genetic engineering, provides for rapid upgradation of cattle through the use of Embryo Transfer Technology, development of more effective vaccines, in vitro reproduction etc. Increasing the livestock production and productivity is constrained by inadequate availability of feed and fodder. While the treatment of common property resources and their effective management under watershed development programmes will constitute,an important element, it is to enable the farmers to produce fodder and feed stock material. Extension of the programme is a must for systematic development of livestock sector. Production of quality seeds of fodder and forage especially of improved varieties has to be put on a sound basis for meeting the increasing demands of cultivated fodder and grasses. Efforts would also be made to utilise crop and cellulosic wastes through treatment and enrichment by uromol supplementation techniques.

1.18.2 High yield layers/broilers will be developed and private enterpreneureship encouraged. Incentives will be given to these organisations in terms of finances, appropriate training and guidance. The poultry rearing activities by private units or on cooperative basis will be promoted. An efficient structure will be established at the village, district, State and national levels which, apart from ensuring remunerative prices to the producers, will help in providing all the requisite inputs to the producers including credit, training, processing and marketing. Quail, duck and guinea fowl rearing farms will be established at State Poultry Centres. Additional cold storage facilities for storing eggs and broiler at selected districts will be created to overcome variation in production and demand. Proper prophylaetic measures for better health care will be provided for increasing production.

1.18.3 The Livestock Importation Act is required to be amended as Animal Quarantine and Certification Act in order to make it broad-based and to provide for regulating export and import of livestock and livestock products. Diagnostic services and development of immunobiologicals using biotechnological tools will be increased for improvement of animal health. Strategies like "Operation Rinderpest Zero" and mass vaccination in endemic areas will be incorporated in the ongoing rinderpest eradication scheme.

1.18.4 Quality constraints, unhygienic slaughter houses, inadequate transportation system and prevalence of infectious animal diseases have impeded the realisation of the potential in the export of meat and meat products. The modernisation programme consists of diversification of bacon factories to process all types of meat, incentives to entrepreneurs to set up modern abattoirs for export and partial modernisation of slaughter houses in 50 district towns. Cross-breeding in indigenous pigs will be intensified to improve the socio- economic status of backward, rural and urban communities.

1.18.5 Sheep, goat and rabbit production will be encouraged and superior stock for breading purposes will be developed. Strengthening of marketing infrastructure and processing will be created through central coordinating Agency.

1.18.6 Encouragement will be given to develop pack animals for drought purposes during the period at various State farms by providing financial assistance through Centrally Sponsored Scheme.

Dairy Development

1.18.7 During the Eighth Plan, the "Operation Flood" project will be continued for replicating Anand ' pattern of milk cooperatives and special emphasis will be laid on consolidating the earlier achievements through (a) enhancing productivity, (b) optimising efficiency of milk cooperatives, (c) strengthening their institutional base/management, and (d) ensuring the

long-term sustenance of the financially strong farmer-owned and farmer-managed organisations. Efforts also need to be focussed on areas which have had relatively tardier growth in dairy development through special programmes. The Central Sector outlays for the Eighth Plan, 1992-97, for Animal Husbandry and Dairy Development are Rs. 400 crores and Rs. 900 crores respectively.

The Table 1.9 indicates the targets of major livestock products for the Eighth Plan against achievements in 1989-90.

Fisheries

1.19.1 Against the estimated total potential of about 4.5 lakh tonnes of inland and brackish water fish, it is proposed to reach a production level of 2.7 lakh tonnes by the end of Eighth plan. The water area to be covered under fresh water aquaculture would reach more than 4 lakh ha. against the total area of 15 lakh ha. of ponds and tanks. In the case of brackish water aquaculture an estimated 65000 ha was brought under aquaculture till the end of Seventh Plan and another 20,000 ha. is expected to be brought under semi intensive culture during the Eighth Plan period. Steps would be taken for increasing the availability of fish/ prawn seeds through construction of suitable hatcheries especially in the private sector, training of fish farmers, provision of adequate infrastructure such as feed mills, aquaculture implements etc.

1.19.2 A World Bank Project for development of prawn and fish production from inland and brackish water areas is to be taken up at an estimated cost of US$ 100 million. The programme would cover five States over a period of seven years. Brackish water culture would be taken up in 8 districts of Andhra Pradesh, Bihar, Orissa, U.P. and West Bengal. It is expected that this project would provide employment to 14,000 shrimp and fish farmers.

1.19.3 In the marine sector the major thrust would be on motorisation of traditional craft and introduction of intermediate craft of 12-16 metre size for exploiting the off-shore resources. Suitable infrastructure for processing of this fish would also be developed. This would require new post-harvest techniques for product development and value addition in order to have better utilisation of these resources. In the deep sea sector, organised development of tuna fishery is to be given a thrust. Other important schemes include setting up of "Cold Chain" scheme and encouragement of diversified fishing activities. Joint venture programmes and leasing of fishing vessels will be streamlined, making them more acceptable to private entrepreneurs. Management and maintenance of fishing harbours would receive adequate support to utilise existing capacity of the landing and berthing facilities. Suitable harbour facility would also be developed for accommodation of deep sea tuna vessels. Export of marine products is expected to reach a level of about 2,69,800 tonnes valued at Rs.3,077 crores.

1.19.4 The welfare of fishermen would continue to receive priority attention.A new programme namely, savings- cum-relief would be introduced under which fishermen would make saving of a fixed amount everyday during good fishing season and this would be supplemented

Table-1.9 Eighth Plan Target for Selected Livestock Products.

Sl. No.	Item	Unit	Achievements			EighthPlan Targets	Annual Growth Rate (%)
			1989-90	1990-91	1991-92		
1.	Milk	mill. tonnes	51.5	54.9	57.5	70.0	4.01
2.	Eggs	millions	20204	21342	22751	30,000	5.69
3.	Wool	milli. kgs	41.7	42.0	43.6	50	2.78

by additional contribution from State and Centre. These would be utilised to disburse a monthly amount to each fishermen family during the lean months.

1.19.5 The main thrust would be on increasing employment opportunities and sustained fish production by adopting an integrated approach. An additional employment potential of the order of 1.8 lakh persons per year during the Eighth Plan is expected. Fish production target for Eighth Plan is fixed at 5.5 million tonnes (28.5 lakh tonnes marine & 26.5 lakh tonnes inland). Promotion of aquaculture activities would help in achieving a higher fish production target from inland and brackish water sources. The growth rate from aquaculture is expected between five and six percent at a modest level although this may go up in certain states where conducive atmosphere prevails for taking up intensive fish farming. The fishery resources potential of the Exclusive Economic Zone (EEZ) has been revalidated as 3.9 million tonnes aganist the earlier estimation of 4.5 million tonnes. The envisaged fish production target may help to increase the per capita availability of fish at least to 5 kg per annum aganist the present 3.5 kg per annum.

Agricultural Research and Education:

1.20.1 As recommended by the ICAR Review Committee, the Eighth Plan will seek to consolidate the research effort and facilities created to evolve location-specific and problem solving technologies to give a fillip to agricultural development programmes. Work in pure sciences and their integration with agricultural research will call far more attention. The thrust areas would include application of the research in frontier areas of sciences such as bio-technology, space technology, plasticulture, etc. A computerised data base for agricultural research findings will be fully developed and operationalised. Space research and technologies, being generated for remote sensing applications in the management of natural resources as well as work done in agro- meterology will have to be integrated fully with the agricultural research programmes. The major sector-wise priorities will be as indicated briefly in the following paragraphs.

Crop Sciences:

1.20.2 The focus will be on collection of germ plasm of agriculturally important crops, their conservation, evaluation and utilisation with a view to developing promising varieties of a host of crops, particularly oilseeds, pulses, cereals, cotton with inbuilt resistance/tolerance to economically significant pests/diseases. Development of hybrid varieties in several of the crops mentioned will be intensified. Breeding crops tolerant to abiotic stresses, specially drought, salinity, pests and for location-specific problem areas such as deep water and rainfed conditions will be necessary to accelerate growth in areas which have in the past not benefitted as much and as well as the endowed irrigated areas. This is vital from the point of view of the need to reduce regional disparities in growth. Another area of concern is to develop Integrated Pest Management (IPM) techniques and to develop capabilities for forecasting and forewarning of the build-up of pests/disease incidence. Continuing emphasis will be placed on including tissue culture to evolve new and superior genotypes. In the field of horticultural crops, apart from development of suitable planting materials for different agro-climatic zones, the main task would be development of post-harvest technologies. The latter should encompass efforts to standardise harvesting practices, treatment of fruits and vegetables for marketing, processing, preservation and transportation to reduce losses at various stages. Specific areas of research would also have to be on packaging of cut flowers for exports.

1.20.3 Development of small tractors, tools, and appliances for use by small farmers will be a major task in agro-engineering design. Development of energy-efficient water-lifting devices from animal/mechanical farm power sources is another significant area. On the post-harvesting side, the development of equipment for cotton handling, processing and packaging is important with a view to upgrading the quality of cotton lint coming into market. These are but few illustrative examples.

Animal Sciences:

1.20.4 The focus will be on: (i) animal genetic resource conservation and evaluation through extensive field surveys and supported by studies on gene marker character - *ex.- situ* and *in-situ*, conservation of threatened breeds.

(ii) genetic studies on drought species, viz., cattle, buffaloes, equine, camel and yak. (iii) survey of animal feeds and their utilisation and development of new non-conventional feed resources, determining incriminating agents, and their incorporation in livestock feeding system as well as mycotoxicosis and mineral imbalance in animal production and health. (iv) standardisation of new-reproduction technologies, viz. embryo-transfer technology and cryo-preservation for cattle, buffaloes, sheeps and goats; in-vitro reproduction, etc. (v) basic research in immunology to help in better understanding of immune responses, especially to parasitic diseases. (vi) development of new biotechnologies related to immuno diagnostica and prophylactics and animal disease surveillance and monitoring to allow forecasting and taking up strategic control and eradication measures.

Fisheries

1.20.5 The priority areas of research under Fisheries include research on brackish water fish farming and commercial exploitation of oceanic fish like `Tuna' and exploitation of shell fish, sea-cucumber etc. The other areas which will need concentrated research efforts are post-harvest technology for fish, control of fish diseases and development of high yielding cold water fisheries. Research in Post-harvest technology in cultured fish can prevent a lot of wastage of fish.. Reservoir ecology and management, particularly with respect to fish diseases and their control, can increase fish production to the desired level.

Agricultural Education

1.20.6 During the Eighth Plan, emphasis in the field of agricultural education will be on improving the quality of education without adding to the number of agricultural colleges. Institutional capacity already established is quite adequate to meet the scientific/technical manpower requirements in various areas of agriculture and allied activities. The newly established colleges for fisheries in Agricultural Universities need to be provided with necessary infrastructural facilities. The syllabus for various disciplines of agriculture and allied subjects need to be reviewed and updated.

1.20.7 Many of the ongoing externally assisted projects will spill-over to the Eighth Plan. They cover a large number of diverse areas of vital concerns to achieve rapid agricultural growth such as building facilities at ongoing research schemes on watershed management, fisheries, pulses and fodder development etc. Effective implementation will be instrumental in providing the necessary research back-up to the developmental efforts.

Krishi Vigyan Kendras (KVK)

1.20.8 Krishi Vigyan Kendra (farm science centre) was started by ICAR in 1974 and till Seventh Plan, 109 such Krishi Vigyan Kendras have been established in 107 Districts. At present, KVKs are funded on 100% basis from the ICAR budget. However, in the Eighth Plan, a new approach is being given for the implementation of the KVKs. Greater emphasis would be given on implementation of KVKs by NGOs for better peoples' participation.

1.20.9 The Central Sector outlay for the Eighth Plan (1992- 97) for Agricultural Research and Education is Rs. 1300 crores.

Small Farmers' Agri-Business Consortium

1.21.1 In order to generate employment, Planning Commission intends to give an employment and income generation orientation to the crop-husbandry, animal husbandry, agro-forestry, fisheries, agro-processing and agro-based industries/sectors during the Eighth Plan period. On the basis of recommendations of experts, ten areas have been identified where India has comparative advantages by global standards namely, Food-crops, Oilseeds, Cotton, Sugarcane, Horticulture, Sericulture, Dairy Development, Poultry, Aqua-culture and Agro-Forestry.

1.21.2 If we improve the efficiency of production and post- harvest technologies and develop suitable marketing network then our products can become highly cost-competitive in the international market. This can be achieved through decetralised production supported by few key centralised services, preferably operated by educated youth belonging to landless rural families. Not only will it generate employment for persons who will otherwise migrate to towns and cities but will also lead to nationwide spread of improved and scientific methods of land and water use.

1.21.3 With this end in view, Government has decided to set up a Small Farmers' Agri-Business Consortium, as an autonomous corporate body. In addition to Government-sponsored organisations like the National Dairy Development Board, National Horticulture Development Board, National Wasteland Development Board, National Seeds Corporation and State Farms Corporation etc., the Consortium will have the participation of interested private sector companies, banks like NABARD, IDBI, RBI, insurance companies, farmers' organisations and scientific organisations like ICAR, CSIR, CAPART, Department of Bio-Technology and the Indian Council of Forestry Research and Education. The Consortium will be headed by a whole-time Managing Director. There will be high-level policy and planning body at the central level to provide direction and Government Support.

1.21.4 The Small Farmers' Agri-Business Consortium will function on the principles of economic efficiency and viability, environmental soundness and social equity. The members of the Consortium will contribute financial and technical resources necessary to make the programme a success.

1.21.5 The Consortium will identify, to begin with, about 15 Small Farmers' Agri-Business Programme areas, each based on a contiguous agro-ecological area surrounding a designated district. Each programme area will have an appropriate mix of enterprises. For example, the coastal area programme may place considerable emphasis on capture and culture fisheries, coastal forestry and agro-forestry and export oriented enterprises. The enterprise-mix will have to be determined for each programme area in consultation with farm workers, since in the ultimate analysis it is only farmers and fishermen who toil to produce food and other commodities. Training, re-training, the supply of new material, introduction of ecologically sound management procedures to receive careful and detained attention. Discussions have already taken place with representatives from Banks, Government Corporations, scientific community and farmers/users associations.

Allocations

1.22.1 In line with the priority attached to the agricultural sector the total outlay proposed for Agriculture and Allied Programmes for the Eighth Plan is Rs. 11105 crores. The allocations for Crop Husbandry include cropwise programmes under Ministry of Agriculture and development of tobacco under the Ministry of Commerce. The Ministry of Food is having the schemes for food storage and warehousing which includes construction of storage/warehousing facilities through FCI and Central Warehousing Corporation, post-harvest operations and allocation for National Sugar Institute, Kanpur. The Ministry of Rural Development is involved in the construction of agricultural marketing yards, operations relating to quality control, Agmark grading, etc. Programmes for plantations are implemented by the Ministry of Commerce. Credit for the agriculture & allied activities, both farm and non-farm related, are being routed through NABARD, RRBs and NCDC.

Table 1.10 Central Sector Outlays for the Eighth Plan (1992-97) Agriculture & Allied Activities*

(in Rs Crores)

Sl.No.	Sub-Head of Development	Total Outlay
1.	Crop Husbandry	4681
2.	Soil & Water Conservation	800
3.	Animal Husbandry	400
4.	Dairy Development	900
5.	Fisheries	400
6.	Plantations	190
7.	Food Storage & Warehousing	424
8.	Agricultural Research & Education	1300
9.	Agricultural Financial Institutions	234
10.	Cooperation & Credit	1550
11.	Food Processing Industries	126
12.	Other Agricultural Programmes	100
	TOTAL	11105

* Excludes forestry & wildlife.

Annexure-I

Target of Key inputs-Eighth Plan

SI NO	ITEM	UNIT	7th Plan (1985-90) Target	7th Plan (1985-90) Achievement	1990-91 Achievement	Assumed base level (1991-92)	Plan Target 1996-97 (8th Plan)	Plan Target 1992-93 Annual Plan
I.	Certified Seeds Distribution	Lakh Quintals	70.00	*57.04	57.10	49.00	70.00	53.00
II.	Fertiliser Consumption							
i)	Nitrogenous	Million tonnes	9.1-9.3	7.39	7.87	8.33	11.50	8.95
ii)	Phosphatic	"	3.00-3.20	3.01	3.20		5.00	3.97
iii)	Potassic	"	1.40-1.50	1.17	1.22		1.80	1.55
	Total N+P+K	"	13.50-14.00	11.5	12.29	13.5	18.30	14.47
III	Pesticides (Technical grade material)	000 tonnes	75.00	72.47	79.40	80.05	97.80	84.00
IV.	HYV Programme							
i)	Paddy	millon ha	32.00	27.7	27.50	27.0	33.9	30.40
ii)	Wheat	"	22.00	20.7	21.0	21.4	23.8	23.00
iii)	Jowar	"	6.50	6.8	7.0	5.70	8.60	7.90
iv)	Bajra	"	6.50	5.2	5.6	4.70	6.60	5.90
v)	Maize	"	3.00	2.8	2.5	2.60	3.80	2.80
vi)	Other (Ragi)	"			1.2	1.2	1.30	1.20
	Total HYV	"	70.00	63.1	64.8	62.6	78.00	**71.20

* Includes 41.00 lakh quintals of certified seeds

** Target for area under HYV for 1992-93 including pulses is fixed at 75.00 million ha.

CHAPTER 2

RURAL DEVELOPMENT AND POVERTY ALLEVIATION

Overview

2.1.1 Alleviation of rural poverty has been one of the primary objectives of planned development in India. Ever since the inception of planning, the policies and the programmes have been designed and redesigned with this aim. The problem of rural poverty was brought into a sharper focus during the Sixth Plan. The Seventh Plan too emphasised growth with social justice. It was realised that a sustainable strategy of poverty alleviation has to be based on increasing the productive employment opportunities in the process of growth itself. However, to the extent the process of growth bypasses some sections of the population, it is necessary to formulate specific poverty alleviation programmes for generation of a certain minimum level of income for the rural poor.

2.1.2 Rural development implies both the economic betterment of people as well as greater social transformation. Increased participation of people in the rural development process, decentralisation of planning, better enforcement of land reforms and greater access to credit and inputs go a long way in providing the rural people with better prospects for economic development. Improvements in health, education, drinking water, energy supply, sanitation and housing coupled with attitudinal changes also facilitate their social development.

2.1.3 Rural poverty is inextricably linked with low rural productivity and unemployment, including underemployment. Hence, it is imperative to improve productivity and increase employment in rural areas. Moreover, more employment needs to be generated at higher levels of productivity in order to generate higher output. Employment at miserably low levels of productivity and incomes is already a problem of far greater magnitude than unemployment as such. It is estimated that in 1987-88 the rate of unemployment was only 3 per cent and inclusive of the underemployed, it was around 5 per cent. As per the currently used methodology in the Planning Commission, poverty for the same year was estimated to be 30 per cent. This demonstrates that even though a large proportion of the rural population was 'working' it was difficult for them to eke out a living even at subsistence levels from it. It is true that there has been a considerable decline in the incidence of rural poverty over time. In terms of absolute numbers of poor, the decline has been much less. While this can be attributed to the demographic factor, the fact remains that after 40 years of planned development about 200 million are still poor in rural India. In 1987-88, the rural poverty line in terms of per capita monthly expenditure was Rs.131.80. The average incidence of rural poverty conceals wide inter-state differences which suggests that greater attention needs to be paid to the regions which have a greater concentration of the rural poor. In recent years, several issues have been raised about the methodology of poverty estimation, both by professionals and State Governments. An Expert Group appointed by the Planning Commission is looking into these issues relating to the definition and measurement of poverty.

2.1.4 The decline in rural poverty is attributable both to the growth factor and to the special employment programmes launched by the Government in order to generate more incomes in the rural areas. Hence, in its more limited interpretation, rural development has been confined to a direct attack on poverty through special employment programmes, area development programmes and land reforms. These will be reviewed in this chapter. In addition, the role of the Panchayati Raj Institutions and voluntary organisations in the implementation of these programmes has also to be kept in view. A review of the on-going programmes is presented in the first part of the Chapter. In the second part, the approach and strategy for the Eighth Plan are spelt out.

Review of the Existing Programmes

Integrated Rural Development Programme (IRDP)

2.2.1 Under the IRDP, those living below the defined poverty line in rural areas are identified and given assistance for acquisition of produc-

tive assets or appropriate skills for self-employment, which in turn, should generate enough income to enable the beneficiaries to rise above the poverty line.

2.2.2 This scheme was launched in the Sixth Plan. Its assessment at the end of the Sixth Plan period revealed several shortcomings. Keeping this in view and the feed-back received from the State Governments, suitable changes were introduced in the guidelines for the IRDP in the Seventh Plan. The poverty line was based at Rs.6400, but those eligible for assistance under the IRDP had to have an average annual income of Rs.4800 or less. It was assumed that those households with income levels between Rs.4800 and Rs.6400 would be able to rise above the poverty line in the process of growth itself. It was targetted that 20 million families would be assisted under IRDP during the Seventh Plan of which 10 million were new households and 10 million old beneficiaries who had been unable to cross the poverty line and required a second dose.

2.2.3 During the Seventh Plan, the subsidy expenditure on IRDP was Rs.3316 crores which was in excess of the target of Rs.3000 crores. The total investment including the institutional credit amounted to Rs.8688 crores. In quantitative terms, the physical achievement of about 18 million households fell short of the original target of 20 million households but exceeded the cumulative target which was only 16 million families. The sectoral composition indicates that, of all the schemes selected under IRDP, 44 per cent were in the primary sector, 18.5 per cent in the secondary sector and 37.5 per cent in the tertiary sector. The salient features of the IRDP performance during the Seventh Plan and 1990-91 are given in Appendix I.

2.2.4 A system of concurrent evaluation of the IRDP programme was also introduced under which data were collected by independent research institutions for the entire country on a sample basis. Statewise details of performance are available. The findings suggest that the IRDP was quite successful in terms of providing incremental income to poor families. However, the number of households able to cross the poverty line was relatively small. It may be partly due to the low levels of initial investment. On the other hand, it is also difficult to expect banks to raise the per capita loan assistance to beneficiaries, given the excessive overdues pending. In order to enhance the economic returns from an asset, it is necessary to integrate this scheme with the development plans of an area so that select activities become viable. This aspect will be discussed in Part B.

Training of Rural Youth for Self Employment (TRYSEM)

2.3.1 TRYSEM was introduced in 1979 to provide technical skills and to upgrade the traditional skills of rural youth belonging to families below the poverty line. Its aim was to enable the rural youth to take up self- employment ventures in different spheres across sectors by giving them assistance under IRDP. Later, in 1987 the scope of the programme was enlarged to include wage employment also for the trained beneficiaries.

2.3.2 During the Seventh Plan about 10 lakh youth were trained under TRYSEM, of which 47 per cent took up self- employment and 12 per cent wage employment. The remaining 41 per cent could not avail of either. On the other hand, a sizeable proportion of IRDP beneficiaries who needed training could not receive it. In fact, only 6 to 7 per cent of IRDP beneficiaries were trained under TRYSEM. During 1990-91 the number of youth trained were 2.6 lakhs, of which 70 per cent got employed.

Development of Women and Children in Rural Areas (DWCRA)

2.4.1 In 1982-83 an exclusive scheme for women was launched in the IRDP, as a pilot project, in 50 districts. In the Seventh Plan it was extended to more districts and at the end of the Seventh Plan period it was in operation in 161 districts. Under DWCRA, a group of women are granted assistance to take up viable economic activities with Rs.15,000 as a one-time grant to be used as a revolving fund. In the Seventh Plan about 28,000 groups could be formed against the target of 35,000 with a membership of 4.6 lakh women. During 1990-91, against a target of 7,500 groups, 7,139 were actually formed.

2.4.2 While, in principle, this scheme is a sound one, in operationalising it the impact has been inadequate. This is perhaps due to a lack of cohesion among women groups formed under

DWCRA and their inability to identify activities that could generate sustained incomes. In this sphere, the role of voluntary organisations would be crucial in organising women to take up group-based economic activities which are viable within the context of an area development plan. Experiments in some States to form women's thrift and credit societies first, and then start them on economic work have been successful.

Wage Employment Programmes

2.5.1 In 1989, the erstwhile National Rural Employment Programme (NREP) and the Rural Landless Employment Guarantee Programme (RLEGP) was merged into a single rural wage-employment programme called the Jawahar Rozgar Yojana. However, given that in the first four years of the Seventh Plan, the NREP and RLEGP were in operation, a brief review of these two programmes is given below.

National Rural Employment Programme (NREP)

2.6.1 The entitlement of each State to the Central fund was based on the incidence of poverty and the population of agricultural labourers, marginal farmers and marginal workers with 50 per cent weightage to each. However, the Centre and State shared the expenditure equally on a 50:50 basis. Some broad indicators of the performance both physical and financial are set-out in the table below:

2.6.2 A concurrent evaluation of NREP revealed that several types of assets were created, with 24.6 per cent expenditure on rural roads and 19.1 per cent on social forestry. Construction was a main activity with 11.9 per cent on schools, 12.1 per cent on houses and 6.4 per cent on panchayat ghars; 6.5 per cent was directed to minor irrigation and 3.3 per cent to wells for drinking water.

Rural Landless Employment Guarantee Programme (RLEGP)

2.7.1 This was a totally Centrally financed programme introduced in 1983. While most of the objectives and stipulations under this were similar to those of NREP, it was to be limited only to the landless, with guaranteed employment of 100 days. Moreover, there was earmarking of funds specifically for certain activities- 25 per cent for social forestry, 10 per cent for works benefitting only the Scheduled Castes/Scheduled Tribes and 20 per cent for housing under Indira Awaas Yojana. In the Seventh Plan, Rs.2412 crores were spent and 115 crore mandays were generated with an average expenditure of Rs.21.00 per manday. Only 16 per cent had been spent on social forestry but 22 per cent had been spent on housing, with over 5 lakh houses created for SC/ST and freed bonded labourers. Rural roads accounted for 22 per cent while other construction, minor irrigation, soil conservation etc. each had a small share.

Performance of NREP in the Seventh Five Year Plan

Year	Resource availability (Rs. crores)	Expenditure (Rs. crores)	Employment Generation (in million mandays)	Manday Cost(Rs.)	Wage-Non-Wage Ratio
1985-86	593.08	531.95	316.41	16.81	60:40
1986-87	765.13	717.77	395.39	18.15	60:40
1987-88	888.21	788.31	370.77	21.26	59:41
1988-89	845.68	901.84	394.96	22.83	57:43

The physical and financial achievements, are presented below:

Performance of RLEGP in the Seventh Plan

Year	Resource availability (Rs. crores)	Expenditure (Rs. crores)	Employment Generation (in million mandays)	Manday Cost (Rs.)	Wage/Non-Wage Ratio
1985-86	580.35	453.17	247.58	18.30	57:43
1986-87	649.96	635.91	306.14	20.77	57:43
1987-88	648.41	653.53	304.11	21.49	58:42
1988-89	761.55	669.37	296.56	22.57	58:42

Jawahar Rozgar Yojana (JRY)

2.7.2 In the last year of the Seventh Plan, JRY was launched with a total allocation of Rs.2600 crores to generate 931 million mandays of employment. The primary objective of the programme is generation of additional employment on productive works which would either be of sustained benefit to the poor' or contribute to the creation of rural infrastructure. Under this programme, Centre's contribution is 80 per cent, and 20 per cent is the State's share. The JRY is implemented in all villages in the country.

2.7.3 Central assistance is provided to the States on the basis of proportion of the rural poor in a State/UT to the total rural poor in the country. From the States to the districts, the allocations are made on an index of backwardness which is formulated on the following basis:

(i) 20 per cent weightage for the proportion of agricultural labourers in the total workers in the rural areas.

(ii) 60 per cent weightage to the proportion of rural scheduled castes and tribes population in relation to the total rural population; and

(iii) 20 per cent weightage to the inverse of agricultural productivity.

2.7.4 Of the total allocations at the State level 6 per cent of the total resources are earmarked for housing under the Indira Awaas Yojana (IAY) which are allotted to the scheduled castes and scheduled tribes and freed bonded labour. In addition, 20 per cent are earmarked for Million Wells Scheme (MWS). In fact, this scheme was launched as a special feature both under NREP and RLEGP in 1988-89. The objective is to provide open wells, free of cost, to poor SC/ST farmers in the category of small and marginal farmers, and to free bonded labourers. However, where such wells are not feasible, the amounts allotted may be utilised for other schemes of minor irrigation like irrigation tanks, water harvesting structures and also for development of lands of SCs/STs and freed bonded labourers including ceiling surplus and bhoodan lands. A maximum of 2 per cent of JRY funds are to be spent as administrative costs inclusive of any additional staff.

2.7.5 After providing for the above earmarking, 20 per cent of the remaining funds are retained at the district level and 80 per cent are allocated to village panchayats by giving 60 per cent weightage to SC/ST population and 40 per cent to the total population of the village panchayat. The responsibility of implementation of JRY in respect of district share of funds is that of DRDA/Zilla Parishad, but at the village level it is that of the Gram Panchayat. In case two or more districts/gram panchayats decide to pool the resources together to take up a work for the common benefit of the concerned district/panchayat, the arrangement is permissible.

2.7.6 Works can be taken up for execution during any part of the year whenever the need for generating supplementary employment is felt, preferably during the lean agricultural season but could continue during the busy agricul-

tural period too, if required. A maximum of 10 per cent of the annual allocation can be used for incurring expenditure on maintenance of such assets at the district/gram panchayat levels which have been created under the erstwhile programme of NREP/RLEGP or have been created under JRY and have not to be taken over by a department of the State Government.

2.7.7 There is earmarking of resources at the district level too but after deducting for administrative and maintenance costs, the funds available for sectoral works are untied. However, there is no sectoral earmarking of resources at the village panchayat level except that 15 per cent of the annual allocation must be spent on works directly beneficial to SCs/STs. The types of works to be taken up under the village panchayats are to be based on the felt needs of the people. There is 30 per cent reservation for women. Sixty per cent of the total unit cost is to be spent on wages and 40 per cent on materials. Contractors and other intermediaries are not permitted in the execution of the works. Minimum wages, fixed by the State, are required to be paid. There are considerable inter- State variations in the minimum wage - rates, ranging from Rs.13.70 to Rs.34.00 per day for unskilled work. These differences account for variations in the Statwise unit cost of generating one manday of employment ranging from Rs.22.83 to Rs.56.67. While in the earlier wage-employment programmes, part of the wage payment had to be in kind, in terms of certain quantity of foodgrains, under the JRY this was made optional. Consequently, while in 1986-87 the offtake of foodgrains was as high as 22 lakh tonnes, in 1990-91 it was only 1.36 lakh tonnes.

2.7.8 The financial and physical performance during 1989-90 and 1990-91 are given below:

2.7.9 The assets created under JRY and the expenditure under each head is given in Appendix-4. Road construction was the primary activity accounting for a little less than 30 per cent of the expenditure while minor irrigation, housing, construction of school and community buildings, wells and social forestry were the other sectors where JRY funds flowed. The expenditure on housing and wells increased between 1989-90 and 1990-91, while that under social forestry declined. The earmarking for housing under Indira Awaas Yojana and for wells and the MWS would definitedly have contributed to this. Under the IAY, 8.6 lakh houses have been constructed and 2.6 lakh wells have been dug under MWS. These would have benefitted the scheduled castes and the scheduled tribes.

2.7.10 A concurrent evaluation has been initiated which will be completed by the end of the year. In the meantime, a quick evaluation of JRY has also been undertaken.

Selected State level Employment Programmes

Maharashtra Employment Guarantee Scheme (EGS)

2.8.1 The Maharashtra Employment Guarantee Scheme (EGS) is a unique experiment which was started in 1971-72 for providing gainful employment in rural areas and "C" class muncipal areas. Guaranteed unskilled manual work is provided to adults who register themselves for work. Only productive works with unskilled wage component of more than 60% are taken up under the scheme. In the last two to three years, the EGS has been improved and modified. Under the "Shram Shakti Divare Gram Vikas", individual beneficiary's scheme will be taken up at the cost of the Government in the case of lands owned by small and marginal farmers, but for other categories 50 per cent of the expenditure

			Employment (lakh mandays)	
Year	Allocation	Utilisation	Target	Achievement
	(Rs. Lakhs)			
1989-90	2,63,066.60	2,45,853.76	8757.25	8643.87
1990-91	2,62,780.27	2,60,002.82	9291.04	8745.59

will be borne by the concerned cultivator/beneficiary. Again, a horticulture programme with the target of covering a total of 10 lakh ha. during the Eighth Plan has been launched at Government cost on lands of SC/STs/small farmers/NTS. On other lands, Government and the beneficiaries bear the expenditure on materials in the ratio 75:25.

2.8,2 The resources for the scheme are raised by the State Government by (i) levying a number of taxes/additional taxes/surcharges on profession, trade, motor vehicles, sales tax, irrigated agricultural land, land revenue and non-residential land and (ii) a contribution equal to the net collection of these levies made by the State Government.

2.8.3 The expenditure on the EGS has varied over the last six years from about Rs.288 crores in 1987-88 to an anticipated expenditure of Rs.200 crores in 1991-92 and employment generation from 18.95 crore mandays to an anticipated level of 7.50 crore mandays. Wages paid under the scheme are not lower than the minimum wages for unskilled agricultural labour.

2.8.4 The scheme has resulted in a significant reduction in the incidence of unemployment in rural areas. Average daily unemployment rates in rural Maharashtra have declined from 7.20% in 1977-78 to 3.17% in 1987-88. It would also have contributed to some extent towards the decline in rural poverty from 60.4 per cent in 1977-78 to 36.7 per cent in 1987.88. The scheme has also helped in keeping an upward pressure on wages in rural areas. The EGS has benefitted a large number of women too, with nearly 60 per cent of the workers on EGS sites being women.

2.8.5 In view of the significant positive impact of this scheme on employment, earnings and levels of living of rural people in Maharashtra, the experiment could well be a model for similar schemes in other States.

Special Employment Programme of Gujarat

2.9.1 A special employment programme was introduced in Gujarat in 1991 under which two districts, Dang and Gandhinagar, were selected for achievement of zero unemployment and, in the remaining districts, additional employment opportunities will be created in the rural areas. A plan is being worked out with the objective of providing self-employment to those below poverty line, as well as opportunities for wage employment for those who seek it.

Drought Prone Area Programme

2.10.1 The DPAP was launched in 1973 in arid and semi-arid areas with poor natural resource endowments. The objective was to promote more productive dryland agriculture by better soil and moisture conservation, more scientific use of water resources, afforestation, and livestock development through development of fodder and pasture resource, and in the long run to restore the ecological balance. The DPAP covers 615 blocks of 91 districts in 13 states.

2.10.2 Given the objectives of the programmes, the sectoral earmarking of funds are as follows:

Sector	% allocation
1. Land shaping and soil conservation	30
2. Afforestation and pasture development	25
3. Water resource development	20
4. Other activities	15
5. Project administration	10

2.10.3 Under DPAP, funds are allocated on the basis of the number of blocks covered under the programme in each district at the rate of Rs.15 lakhs per block, having a geographical area upto 500 sq. kms., Rs.16.5 lakhs per block with an area between 500-1000 sq. kms., and Rs.18.5 lakhs for blocks with an area exceeding 1000 sq. kms. The allocations are shared between the Centre and the States on a 50:50 basis. The financial and physical achievements under the programme are given below.

DPAP Achievements

	Seventh Plan	1990-91
Allocation (Rs. lakhs)	46276.0	10223.0
Expenditure (Rs. lakhs)	46185.91	9389.1
Physical Achievements in Key Sectors (00 hectares)		
LandDevelopment	4774.8	1430.3
Water Resources	2095.8	215.2
Forestry	3741.66	800.0

2.10.4 The Programme Evaluation Organisation of the Planning Commission has been entrusted with the task of evaluating the DPAP. These programmes have been running for many years and there is no evidence that drought - proofing has been achieved in any of the DPAP blocks. Yet there are cases where voluntary effort has succeeded in achieving this objective at a micro-level. A more concerted and coordinated effort would be required with greater use of scientific data, detailed working of cost norms for different activities and efficient planning along micro watershed lines. Emphasis is laid on training of project staff at the district/watershed level for preparation of plans and creating awareness among the people of the project areas. Stress is also laid on the need for developing effective liaison between agricultural research agencies and implementing agencies for effective transfer of technology. To ensure participation of people in planning and implementation of the programme, various measures have been taken, such as preparation of watershed development plan with the help of the people in the watershed itself under the guidance of technical experts, and adequate local representation in the Watershed Development Committee set up for implementation of the project. In the Eighth Plan renewed thrust along these lines will be given to the DPAP.

Land Reforms

2.11.1 The land reforms policy has consisted of the following:

a) Abolition of intermediaries;

b) Tenancy reforms with security to actual cultivators;

c) Redistribution of surplus ceiling land;

d) Consolidation of holdings; and

e) Updating of land records.

2.11.2 In the first stage of the programme there was, in the early fifties, the abolition of `Zamindari', which covered 40% of the land area of the country benefitting 20 million cultivators. Fifteen lakh areas of wasteland were also vested in the State. In the process of implementing this measure, old Zamindars succeeded in retaining large tracts for self-cultivation.

2.11.3 There are tenancy laws in all the States except Nagaland, Meghalaya and Mizoram. They provide for conferment of ownership on the tenant by the State, acquisition of ownership by tenants on payment of reasonable compensation, security of tenure and fixation of fair rent. Certain categories such as widows, members of armed forces, minors, etc. are treated specially under these laws. In certain other cases, provision is also made for limited right of resumption. However, the implementation of these laws in States has been quite varied. West Bengal, Karnataka and Kerala have achieved more success than the other States. In West Bengal, 14 lakh share- croppers have been recorded under the `Operation Barga'. Karnataka set up land tribunals to settle tenancy issues and these decided in favour of 3,00,000 tenants involving 11 lakh acres of land. In Kerala, through the tenants' association, applications of 24 lakh tenants for conferment of ownership were accepted. However, on the whole, tenancy reforms have not achieved the desired results as the incidence of informal oral or concealed tenancies is very high. In fact, it was envisaged in the Sixth Plan that legislative measures to confer ownership rights to tenants would be introduced in all States by 1981-82. This is still an issue that has to be tackled.

2.11.4 Ceilings legislation were enacted by all the States except Goa and the North East region in accordance with the National guidelines of 1972. However, success has been limited due

to poor enforcement. Of the 72.2 lakhs acres of land declared surplus, 46.5 lakh acres had been distributed by the end of the Seventh Plan and 25.7 lakh acres are still to be distributed.

2.11.5 Consolidation of holdings has made progress in some States while in others it is yet to make a beginning. Fifteen States have passed laws for consolidation of holdings. Those not having laws are Andhra Pradesh (in select areas of Andhra Pradesh), Tamil Nadu, Kerala, Pondichery and the North-Eastern States. Tenants, share croppers and small landowners, have a fear that consolidation favours the larger farmers. So far, about 1494 lakh acres have been covered.

2.11.6 The allotees of surplus ceiling land require assured access to inputs. This is being done under a scheme wherein Rs.2500/- per hectare are provided for land development, purchase of inputs and for meeting other needs. States have been asked to make 40% allotment of surplus land to women and the remaining in joint names of husbands and wives.

2.11.7 The Centrally Sponsored Scheme for the strengthening of revenue administration and updating of land records was introduced during the Seventh Plan. Under this scheme, by the end of the Seventh Plan Rs.25.57 crores have been allocated to 29 States and Union Territories for purchase of equipment and strengthening of training infrastructure.

2.11.8 Nineteen pilot projects for computerisation of land records have been taken up, one in each major State. These are fully financed by the Central government at the rate of Rs.25 lakhs each. The project envisages computerisation of the record of rights in the first stage, and both input and output will be in the local language. Computers are being installed at the Tehsil and district headquarters, with the objective of online updating and making available a copy of the record of rights to cultivators on demand. The project is nearing completion in Morena district of Madhya Pradesh and Dungerpur of Rajasthan. The progress in other States needs to be expedited.

Development Administration

2.11.9 During the Seventh Plan, the various rural development programmes were planned and implemented by a single agency at the district level called the District Rural Development Agency (DRDA). However, at the block level there was an attempt to return to the earlier community development pattern. But this was not easy, as the BDO had lost effective control over the Extension Officers who were functioning under their own departmental heirarchies. Also, there had been a tremendous increase in the volume of work and in the funds flowing at the block level. As against Rs.17 lakh per year in the sixties, it became Rs.1 crore per block per year. This put an enormous burden on the administrative system.

2.11.10 A Committee was set up to review the existing administrative arrangements for rural development, which submitted its report in 1985. It reemphasised the need for decentralised planning at the district level and below. It opined that where Zila Parishads were in existence rural development programmes should be transferred to them. This would ensure participation of local representatives in planning and they in turn would reflect the needs and aspirations of the local people. Of course, they would also be accoutable to the people they represent. In States where Zila Parishads are not in existence, the setting up of District Development Councils with Government officers as the Chief Executives was suggested. In either case, it was envisaged that planning and implementation of sectoral activities would be decentralised and integrated into a unified activity, with horizontal coordination at the district level. Similarly, at the block level too, an integrated area plan was imperative, based on availability of local skills and resources. However, no uniform pattern was adopted across States. In 1989-90, the introduction of the Jawahar Rozgar Yojana, wherein it was stipulated that the funds would be placed at the disposal of the village panchayats, marked a shift towards democratic decentralisation, with certain funds and powers vested in the gram panchayats for development.

Panchayati Raj

2.12.1 Panchayati Raj Institutions are in existence in almost all the States and UTs but with considerable variations in their structure, mode of election, etc. In 14 States/UTs, the three-tier system exists, while four States have two-tier and nine states/UTs have one-tier system. In Nagaland, Arunachal Pradesh, Meghalaya, Mi-

zoram, a large part of Manipur and some other hilly areas of North-Eastern States, these institutions are established in accordance with the traditions and customs of the village. At the end of the Seventh Plan, there were 2,17,300 Gram Panchayats, 4525 block Panchayati Samities and 330 Zila Parishads in the country. The tenure of the elected bodies is between 3 and 5 years.

2.12.2 However, Panchayati Raj Institutions suffer from inadequate resources, both financial and technical. In most of the States, they are not entrusted with enough powers and financial responsibilities. With a view to strengthening the Panchayati Raj Institutions and making them a vibrant instrument of local self-Government, a process of grassroot level consultation was initiated towards the end of the Seventh Plan period. For the first time, Panchayati Raj Sammalens were held in the different regions during 1989 wherein delegates comprising Sarpanches, Taluka/Block Panchayati Samities President, Chairman of Zila Parishad and Chariman of Muncipal Committees/Town Area Committees and Notified Area Committees participated. The main objective is to make these institutions strong, reflecting the felt needs of the people.

2.12.3 To revitalise the Panchayats, a Constitution Amendment Bill (Constitution 72nd Amendment Bill, 1991) was introduced in Parliament in 1991. The Constitution Amendment Bill itself provides for, inter-alia, a 'Gram Sabha' in each village, constitution of panchayats at village and other level or levels, direct elections in all States to Panchayats at the village level and intermediate levels, reservation for scheduled castes and the scheduled tribes in proportion to their population and reservation of not less than one-third of the seats for women, fixing tenure of five years for local authorities, and holding elections within a period of six months in the event of supersession of any such authority. The State legislatures are required to devolve powers and responsibilities on the panchayats for preparation of plans for economic development and social justice and for implementation of development schemes. Grants-in-aid to panchayats from consolidated fund of the State as also conferment of powers for levy of taxes, duties, tolls and fees are provided for. Further, it envisaged the setting up of a Finance Commission within one year of the Amendment Bill and, thereafter, every five years to review the financial position of local authorities. While the Bill has been introduced in Parliament, it is yet to be debated and passed. Once enacted, democratic decentralisation will be achieved through the Panchayati Raj Institutions.

Voluntary Action

2.13.1 Recognising the important role of voluntary agencies in accelerating the process of social and economic development, the Seventh Plan placed a great deal of emphasis on people's participation and voluntary action in rural development. The role of voluntary agencies has been defined as providing a basis for innovation with new approaches towards integrated development, ensuring feed-back regarding impact of various programmes and securing the involvement of local communities, particularly, those below the poverty line. The need for a cadre of trained animators and social organisers was recognised and a massive programme for training the identified persons was prepared with the help of establishing Voluntatry Organisations.

2.13.2 Further, the scheme of organisation of beneficiaries of anti-poverty programmes which was undertaken on a pilot basis for two years from 1986-87 was continued during the Seventh Plan period. This scheme was intended to increase the awareness and strengthen the bargaining position of the beneficiaries of anti-poverty programmes so as to help them get the maximum benefits from the programmes meant for their economic uplift. This was to be done through awareness generation camps, which were organised with the assistance of voluntary organisations.

2.13.3 At the Central level, the Council for Advancement of People's Action and Rural Technology (CAPART) is the agency for providing and assisting voluntary action in the area of rural development. Its funds comprises mainly grants from the Government of India. Programmes of the Ministry of Rural Development including, IRDP, JRY, DWCRA, TRYSEM, Organisation of beneficiaries, Accelerated rural water supply, Central rural sanitation programme etc. are implemented by voluntary agencies through the assistance of CAPART. In addition, CAPART has taken the initiatives in promoting a variety of activities for transfer of technology, people's participation,

development of markets for products of rural enterprises and promotion of other developmental activities and delivery systems in the non-government sector.

Eighth Plan Approach

Special Employment Programmes

2.14.1 Elimination of poverty continues to be a major concern of development planning. Expansion of employment opportunities, augmentation of productivity and income levels of both the underemployed and employed poor would be the main instrument for achieving this objective during the Eighth Plan. However, even an employment oriented growth strategy will achieve this goal only in the medium and long-term. In the meantime, short-term employment will have to be provided to the unemployed and underemployed, particularly among the poor and vulnerable sections, through the existing special employment programmes namely the IRDP and JRY. However, it must be recognised that while they meet the short-term objective of providing temporary work to the unemployed they must contribute to the creation of productive capacity of areas and/or individuals. This would be better achieved by a greater integration of the existing special employment programmes with other sectoral development programmes, which, in turn, would generate larger and more sustainable employment.

2.14.2 Given the enhanced outlay for `rural development' in the Eighth Plan, it is necessary that resources are utilised for building up of rural infrastructure, which is an essential pre-requisite for a more sustained employment and development. All weather roads need to be given priority, particularly in tribal, hill and desert areas, where inaccessibility to markets and to information and input is a severe bottle-neck. Minor irrigation works and water harvesting structures are vital in order to conserve the scarce water and schemes for soil conservation and social forestry would go a long way in reducing soil erosion and top soil water cup - off as well as wherever required school buildings and primary health centres and sub-centres need to be constructed. The demand for these would vary between regions and even districts. Hence, a certain degree of flexibility would have to be built into the programme, leaving the choice to the people at the local level based on their needs and priorities.

2.14.3 In addition, the planning and implementation of the rural development programmes must enable greater self-help by the people and their participation in programmes through panchayati raj institutions, cooperatives and other self-managed institutions. This will mark a reduction in the dependence on the present development administration for delivery. However, this should not be interpreted as a greater move towards 'privatisation' or leaving the rural poor to look after themselves. State intervention will have to continue, in fact, on an expanded scale so as to protect the poor and vulnerable sections from some of the burdens of structural adjustment. Viewed in this context, certain changes would be required in the broad strategy for rural development during the Eighth Plan. In addition, this may also necessitate the reworking of some of the earlier guidelines with respect to specific poverty alleviation programmes.

2.14.4 Experience indicates that while poverty alleviation programmes have been successful in providing a certain quantum of employment to people and have led to the creation of some durable assets in the village, there is a perception that the achievements have not been commensurate with the resources spent on them. Under the IRDP, the very fact that about half the number of beneficiaries have overdues raises doubts about their ability to come out of the debt syndrome. This, it is argued, is due to a low level of assistance which does not generate enough income to repay the loan and for subsistence. However, banks are reluctant to raise the credit limit because of scepticism regarding the repayment capacity of the target groups. It is estimated that about one-third of them do not even have the original asset that was given to them. The beneficiaries may be forced to sell the asset as they require the money. What is more, even those who have generated sufficient additional income to cross the poverty line may relapse into the category of poor, with additions to the family, loss of assets and non-viability of the activity chosen by him.

2.14.5 Similarly, under the Jawahar Rozgar Yojana, some employment is provided in the lean season and the supplementary incomes thus

generated are critical for the survival of many poor families. But the wages earned under JRY are a very small proportion of the amount required to help him to cross the poverty line. Moreover, while some productive assets are created, which add to the infrastructural facilities available in a village their quality could be improved. Also, often they do not reflect the priorities of the local people but of the panchayat functionaries and their maintenance is lacking.

2.14.6 Under the JRY any additional allocation must be linked to certain backward districts/ blocks, with an element of guarantee of at least 90-100 days of employment per person as under the Maharashtra Employment Guarantee Programme. Only then will it provide the `safety net' for the poor unemployed who may find it difficult to subsist in lean seasons. Providing employment of only 15-25 days per person is grossly inadequate. There is no doubt that a wage-employment programme like the JRY requires to be better targetted. A quick evaluation of the JRY conducted by the Programme Evaluation Organisation supports these observations. The survey shows that on an average, about 15 days of employment was generated per person in 1990-91. At an average wage-rate of Rs. 20.00 to Rs. 25.00, this would yield a supplementary income per person of about Rs. 300 - 400 per anum. This is rather meagre in the context of the poverty line of Rs.6,400 during the Seventh Plan, which has been revised upwards for the Eighth Plan. Also, wage- material ratio of 60 : 40 was not sustainable, as the rising material costs meant more capital for creating durable assets. However, the beneficiaries were happy with the assets created, though their maintenance was somewhat lacking.

2.14.7 These findings, and discussions with implementing agencies and State Governments lead to the consensus that there is a need for integrating the various anti-poverty programmes with the sectoral programmes in a specified area so as to ensure a sustainable increase in employment and income of the rural poor and the infrastructural and environmental development of the area.

2.14.8 Also, certain relaxation and changes in the stipulation and guidelines incorporated both in the IRDP and JRY would be required to make them more effective. Under the JRY a certain degree of flexibility with regard to the earmarking of funds must be introduced. Clearly, priority should be given to soil and water conservation, waste-land development and social forestry followed by rural roads and rural housing. No doubt, inter-se importance will vary from place to place. The present system of earmarking a certain quantum for Million Wells Scheme and for housing under Indira Awaas Yojana would have to be relaxed, since several State Governments are not in a position to fulfil these stipulations. Furthermore, given the paucity of resources, one would perhaps have to concentrate the resources under the JRY to the more backward districts so as to reach the poorest. This would require an assessment of the extent and nature of unemployment and underemployment and the local level requirements at the village level. Even though a large proportion of the JRY funds flow directly to the village, activities undertaken should be such as to fulfill local needs within the overall framework of the village plan.

2.14.9 Under the IRDP, assistance is given to individual beneficiaries for acquisition of an asset. While one-third is in the form of subsidy, two-thirds are in the form of bank loans. Hence, the banks need to assess the economic viability of an asset before giving assistance. However, the entire focus on targetting makes such an exercise futile. Actually, the matter should be viewed not from the supply side but from the demand side i.e. identifying activities which are appropriate, given the skills of the beneficiaries, the infrastructure and the linkages available. Wherever necessary skills are not of the required standard, this upgradation should be facilitated under TRYSEM. In other words, IRDP needs to be viewed as a credit based self-employment programme with an element of subsidy rather than as a programme based on subsidy supplemented by bank credit.

2.14.10 Under DWCRA, the results have not been quite satisfactory. While the idea of organising women into groups to take up activities which yield supplementary income is a sound one it has suffered on account of lack of adequate investment and selection of unviable activities. Therefore, it may be worthwhile to encourage formation of thrift and credit societies which will be entitled to receive matching contributions

from the Government. This is already being attempted in some States. There is also an urgent need for conscientisation of rural women through activists, social workers and voluntary agencies. Women need to be encouraged to form cooperatives or institutions of self-employed women in order to become viable groups. In addition, child care, reduction in drudgery and organisation of women beneficiaries need to be pursued more vigorously. Marketing of products made by women's groups is an important aspect and State Governments must make provisions for purchase of their products by various Government departments, emporia, and through melas and fairs.

2.14.11 Upgradation of skills and technology need to be given a special thrust with the aim of generating employment in new areas where demand is expanding. The target for TRYSEM trainees has been doubled from about 20 to 40 lakhs per annum. However, in order that those trained could find employment it is necessary that (a) training needs are assessed in terms of activities which can be either started under IRDP or in such fields where there is likely to be an increase of wage employment opportunities. (b) the quality of training should be such as to bring about improvement in the skill endowment of the trainees. (c) groups of persons can be organised in a particular trade or productive venture and these can be brought together for training.

Integration of Poverty Alleviation Programmes for Rural Development

2.15.1 The programmes themselves need not be changed but the manner of implementing them would need some modification. A high degree of convergence can be attempted in a few districts on a pilot basis by an integration of the poverty alleviation programmes, the area development programmes and sectoral schemes. Taking a district as a unit of planning, a district plan would need to be prepared, taking into account the physical and human endowments of that area, the felt needs of the people and the funds available . Projects and schemes would be selected for implementation based on these. Using scientific methods now available, the geographical area of the district would have to be mapped from photogrammetry and satellite data. The maps would then be subjected to analysis for identification of water harvesting structures such as nalabands, gulley plugs, infiltration galleries and terraces. Such a strategy would ensure that soil erosion would be minimised and surface run off is virtually eliminated, with conservation of every drop of rainfall. This district map would then have to be disaggregated at the village level. Viable activities particularly in agriculture and allied sectors including animal husbandry, pisciculture, horticulture forestry and agro-processing would have to be selected. Village and small industries with potential can also be identified for priority. In addition, development of infrastructural support and forward and backward linkages will have to be ensured which are essential prerequisites for the viability of the selected activities. Emphasis on human resource development would have to be placed, as productivity depends both on natural resources and on the level of human resource development. Therefore, it will be necessary to integrate the social aspects of development including education, health and access to safe drinking water with the plan for economic development. Briefly, therefore, the strategy would consist of creating the right environment for success of family plans rather than the present practice of farming them out and assuming that the infrastructure would look after itself.

2.15.2 For planning and implementation of the district plan, the responsibility would vest in the Zilla Parisahds where they exist and/or in the DRDAs. However, this should not preclude the involvement of people's representatives both elected and non-elected and voluntary organisations from taking on the planning and implementation of various schemes and programmes. In fact, it would be ideal to form committees involving representatives from both the Government and non-Governmental organisations. While surveys have been conducted in every village to identify those living below the poverty line, it is also important to have a registration of the unemployed and underemployed who are willing and able to work. This is essential in order to have an idea of the number of people to be covered under the various anti-poverty programmes.

2.15.3 The above are the broad parameters of the Integrated Rural Development approach the details of which would vary from place to place. It is proposed in the Eighth Plan that one district per State is selected for the implementation of this programme in the manner described earlier.

This would require district planning on the basis of land and water surveys. Initially, one could concentrate on some of the erstwhile DPAP districts and plan on a micro watershed basis. The village plans would have to be dovetailed into the district plan which would be prepared at the level of the DRDA or Zilla Parishad. For its success it should be ensured that the Project Directors of the DRDA are given a tenure of not less than three years so as to inculcate in them a sense of commitment to the programme. The various Government departments, with specialised expertise and banks should work in close cooperation with the district planning unit in order to have a coordinated and scientific plan, assessing the needs of the people, the availability of local resources, the potential for alternative productive works and of viable schemes.

Voluntary Sector

2.16.1 Voluntary organisations have worked in various areas and some have matured into fairly efficient delivery mechanisms for developmental programmes. A major step towards enlisting their support for rural development was taken while formulating the Seventh Plan, wherein it was stated that serious efforts would be made to involve voluntary agencies in developmental programmes.

2.16.2 By its very definition, voluntary action suggests doing something without looking for personal gain. The scope for voluntary action is, therefore, unbounded. Its heightened dedication makes it possible for voluntary organisation to do more efficiently the work done by formal organisations. They operate over a wide range of activities, including the Government's anti-poverty programmes, training of rural youth, promotion of safe drinking water, rural housing, promotion of science and technology, wasteland development, health care and family welfare, education, welfare of women and children and programmes for scheduled castes and scheduled tribes. The Seventh Plan document had anticipated that voluntary effort would be forthcoming in a massive way for better implementation of anti-poverty and minimum needs programmes. It is not easily possible to assess the extent to which they have been realised because voluntary agencies interact separately with various inistries/Departments. Absence of a common mechanism to monitor the progress of voluntary effort in various sectors is conspicuous. At the same time, there is need to provide voluntary organisations with a forum to raise and resolve their problems. CAPART (Council for Advancement of People's Action and Rural Technology) was created with a view to tackle both these aspects. It was constituted in 1986 by the merger of the then existing bodies namely PADI (People's Action for Development India) and CART (Council for Advancement of Rural Technology).

2.16.3 Voluntary effort will no doubt continue to grow in the coming years but it can accelerate if the environment is more cogenial to its growth. If the professional and managerial capabilities of voluntary organisations are built up in a systematic manner they can make tremendous contributions in bringing about people's participation both in financial terms and through beneficiary support. Generation of awareness, inculcation of appropriate skills and convergence of developmental programmes are essential pre-requisites for the overall development of an area. In this, the voluntary organisation can act as a catalyst and can organise beneficiaries, involve people in planning and development and provide the necessary support to make development a reality.

2.16.4 A group set-up by the government to examine some of these issues and simplify procedures for processing grants-in-aid proposals to voluntary agencies recommended: a) greater dissemination of information about the schemes through newspaper and the media, and designation of CAPART as a clearing house for rural development information; b) simplified procedures and time-bound disposal of applications for assistance; c) preparation of a grant-in-aid code and a manual giving details of procedures.

2.16.5 More recently, the Planning Commission has set up a Task Force to study and develop appropriate self- managing institutions for integrated development at the village/block and district levels. The recommendations of the Report are being processed. Broadly, it has recommended the setting up of village institutions with the entire community's membership for the purpose of development, with no political overtones, and the identification of the existing voluntary agencies with a good track record so that they can be replicated. It has also suggested that a national grid of voluntary institu-

tions be set up at the central level to provide a forum for them.

2.16.6 In the Eighth Plan, a greater emphasis will be put on th role of voluntary organisations in rural development. A nation-wide network of NGOs will be created. In order to faciltate the working of this network, three schemes relating to the creation/replication/ multiplication and consultancy development have been worked out by the Planning Commission.Efforts will be made to evolve a system for providing one window service to NGOs wrking in the area of integrated development.

Land Reforms

2.16.7 Land is still the single most important asset in rural India and given the present state of agricultural technology even a small farm can be viable, both in terms of employment and income of a family. The need for land reforms was recognised at the time of independence and has been reiterated in the successive Five Year Plans. The Seventh Plan enunciated land reforms to be an intrinsic part of the anti-poverty strategy.

2.16.8 The importance of land reforms continues to be significant. Its main tenets are abolition of intermediaries, security of tenure for tenant - cultivators, redistribution of land by imposition of a ceiling on agricultural holdings, consolidation of holdings and updating of land records.

2.16.9 The Eighth Plan would therefore address itself to the factors that have come in the way of realising the goals of land reforms policy. First, it would aim at ensuring that an atmosphere is created whereby the actual cultivators are made aware of their rights and enabled to claim their benefits. Secondly, it would encourage steps to be taken for early detection of surplus lands. Thirdly, it would be necessary to ensure that the newly acquired lands are brought under profitable agronomic practices, thus meeting the twin objectives of poverty alleviation and output growth. The management of land records and the skills and capabilities of the lower level official machinery would need to be given the necessary support of resources and modernisation so that they help, rather than hinder, the evolution of an equitable agrarian order.

2.16.10 The objectives of land reforms can briefly be stated as follows:

1. Restructuringof agrarian relations to achieve egalitarian social structure;

2. Elimination of exploitation in land relations;

3. Actualisation of the goal of "land to the tiller";

4. Improvement of socio-economic conditions of the rural poor by widening their land base;

5. Increasing agricutural productivity and production;

6. Facilitating land-based development of rural poor; and

7. Infusion of a greater measures of equality in local institutions.

2.16.11 On the question of tenancy, there are three aspects which need to be examined in some detail. First, the need to inculcate among tenants a degree of solidarity so that they can, at a time, counter the dominance of the landed classes as well as make the revenue administration accountable to themselves. Secondly, the mechanisms for transfer of title to the actual cultivator will require to be professional and sensitive. The third, and perhaps the most important aspect, is to make the gains real by getting from the land the quickest returns via access to a package of modern input. Measures would be taken to make real the gains of tenancy laws by restricting the right to resumption; tackle absentee landlordism by defining personal cultivation more precisely and reviewing the provisions for regulating voluntary surrender. The National Commission on Revitalisation of Revenue Administration will take up all issues relating to land record management in the States. Organisations of tenants and sharecroppers will engine detection of informal and concealed tenancies, bring on record the tenants and share croppers.

2.16.12 On the question of land ceilings, the two aspects needing urgent attention are; a) detection of surplus lands, hitherto unavailable because of recourse to evasive methods like benami transfers, partitions, fraud, collusion with official machinery etc., and b) ensuring that

the allottees retain possession and there is severe penalty for dispossession. The lacunae in the laws will have to be removed so as to help resolve both these issues. Suitable creative options need to be built into the law so that once the land is declared surplus, unless mala fide is established against the official machinery concerned, the land would vest in the Government, and it would be open to the Courts to award only compensation to the landlord. Another option is to set up Land Tribunals under Article 323-B to deal with litigation and elimiate court jurisdiction. Some of the policy interventions will be to reduce the exemptions and review the provisions for major sons to have independent shares. The existing limits will be reviewed.

2.16.13 In respect of consolidation of holdings, two aspects that need attention are; a) The smaller farmers harbour strong apprehensions about getting a raw deal in the process of exchanging parcels of land towards the consolidation of holdings and b) The process of breaking up of holdings is a continuous one and a one-time settlement does not really solve the problem. The solution will therefore lie in making the farmer recognise that it is advantageous to share income from land rather than the land itself. The modality of bringing these aims into the land-related customs and practices will be more effective than the passing of laws.

2.16.14 The common property resources have traditionally been a source of economic sustenance for the weaker sections of society. Measures will be taken to survey their extent so that the encroachments by more influential sections can be removed. This is an area where voluntary organisations and local democratic institutions will be associated with the administrative machinery to restore to the panchayat/community the ownership of common property resources so that further encroachments do not take place. Efforts will be made to develop these resources so that the option is once again open for the poorer sections to exploit for supplementing their income.

2.16.15 In order to create a reward system for the better performing States in these matters, it is proposed to set up an index of performance with regard to land reforms. Based on this indicator it will be possible to provide a portion of the general pool of Central Assistance to the states.

Minimum Needs Programme

2.17.1 The Minimum Needs Programme was introduced in the Fifth Plan with the objective of providing the rural population, particularly the rural poor, with access to certain items of social consumption which form an integral part of the basic needs. It was envisaged that certain national level norms would be fixed with respect to each of these items and that within a specified time frame all areas in the country would achieve these national goals. Initially, there were eight components under the MNP - Elementary Education, Rural Health, Rural Water Supply, Rural Roads, Rural Electrification, Rural Housing, Environmental Improvement of Urban Slums and Nutrition. During the Sixth Plan, Adult Education was added. In the Seventh Plan the list was further expanded with three more components namely Rural Domestic Energy, Rural Sanitation and Public Distribution System. These components form part of the programmes of individual sectors and the allocations for these are part of the sectoral allocations.

2.17.2 A review of these programmes has been made in the relevant chapters. However, given the need to focus on certain items which affect the quality of life of the poor, the selected components need to be more effectively monitored and implemented. Hence, the rationale for a separate section on the minimum needs to emphasise the importance and significance of these as part of the strategy of poverty alleviation.

2.17.3 A review of the programme reveals that in most cases, the physical and the financial targets have been achieved satisfactorily except in the area of rural sanitation. The details are given in Appendixes 3 and 4. However, the quantitative achievements do not mean much in themselves. The following examples will help clarify this.

a) In the case of elementary education, over 90 per cent of the children were enrolled and had access to a school. However, the literacy rate is about 50 per cent. This is due to the high rate of drop-outs at the primary level itself. The aim is eradication of illiteracy. Hence the achievement should

be judged in terms of literacy rates and retention ratios and these have to be monitored.

b) In the case of rural health, there is an extensive network of primary health centres and sub- centres but these have not been operationalised in terms of adequate staff or medicines. In any case, `Health for All' means reduction in both birth and death rates and control of diseases. Hence, the performance with respect to rural health should be judged in terms of a decline in the death rate, the infant mortality rate and the birth rate besides a reduction in morbidity due to illnesses and diseases.

Similarly, under the rural water supply programme the coverage of villages is not enough by itself. It is necessary to ensure that 40 litres of potable water per capita per day is available on a sustained basis and to ensure its quality upgradation by making it free from salinity and chemical and bacteriological contamination.

d) In the case of rural domestic energy, lack of coordination between the fuel wood and improved chulha/ stoves, sub-components was found to be a major constraint. It is proposed to take up this programme in the IREP blocks where effective coordination and monitoring will be ensured for families below the poverty line in the Eighth Five Year Plan. Further details are given in the section on IREP in this chapter.

e) Electrification of villages may be achieved as per targets, but it is necessary to ensure that beyond the minimum quantum of power needed to meet domestic use and street lighting there is other economic uses of power such as energisation of pump sets, running small units of production etc.

In the Eighth Plan, the emphasis should shift from mere targetting to achieving qualitative results.

2.17.4 Another issue requiring consideration is the existence of considerable inter-state variations with respect to different components. By way of illustration, the following examples will help to clarify the issues.

a) The literacy rate is as high as 90 per cent in Kerala and as low as 38 to 39 per cent in Bihar and Rajasthan, with the All India average at 52. With respect to female literacy rate, Kerala has an average rate of 87 per cent with Rajasthan and Bihar of less than 25 per cent. In the first instance, those States which are below the all India average need to be brought up to this average. Thereafter, the focus will have to shift towards bridging the gap between the top ranking States and the rest.

b) While the All India average death rate is 11.9, in States like Himachal Pradesh, Bihar, Orissa and UP it is above 13.5. The infant mortality rate ranges between 26 in Kerala and 135 in UP. Birth rates are as low as 19.4 per thousand in Goa and as high as 39.2 per thousand in UP.

c) In the case of rural roads, only about 10 per cent of the villages with the population of 1500 and above still remain unconnected, though in Bihar, Mizoram and West Bengal their proportion is 34, 42 and 40 per cent respectively. In the population category of 1000 - 1500, the target of covering 50 per cent of the villages would have been exceeded with the exception of Mizoram covering 44 per cent.

2.17.5 Similarly, with respect to other components, there are certain inter-State variations. Attention needs to be given to the States lagging behind in order that they achieve the national norms, and some mechanism needs to be devised for this. Some additional funds may also need to be provided to the States that have not achieved the national norms. However, the State Governments may have a tendency to withdraw their normal assistance from a sector if it is being funded by additional resources from the Centre. This needs to be guarded against.

2.17.6 The planning and implementation of these programmes should be integrated with other on-going rural development programmes at a decentralised level with the district as the unit of planning. In addition, some provision

should be made for basic village amenities as an integral part of the MNP with a certain amount of `untied' funds allocated to the local level bodies for the implementation and maintenance of these amentities. These can include street lighting, a primary school building, community centres, hand pumps, fish ponds, social forestry, bio-gas etc. The list can be an exhaustive one with the flexbility of spending funds left to the discretion of the village level organisation.

2.17.7 Provision of energy for subsistance and development in the rural areas have to be closely linked with the programme for rural development. The following section discusses the importance of Rural Energy and the details of the Integrated Rural Energy Programme which was started as a plan scheme in the Seventh plan, and is being intensified and expanded in the Eighth Plan.

Rural Energy

Integrated Rural Energy Programme (IREP)

2.18.1 Despite the high priority being given in successive plans to the development of the rural areas, the quality of life in the rural areas continues to be much below the desired levels, with continuing stark disparities between rural and urban living conditions. A major constraint in improving the living conditions in rural areas is the non-availability of energy for meeting subsistance and production needs. Rural areas are often the worst affected due to present all round scarcity of commercial energy, including petroleum products and electricity. While increasing share of plan funds are being invested in the production of commercial energy, the share of the rural areas in the total commercial energy produced in the country has been only of the order of about one-fifth, though the rural areas account for nearly three-fourth of the total population.

2.18.2 Even basic energy needs for the rural people are not being met because of widespread scarcity of commercial energy. Non-commercial energy consisting of fire-wood, cowdung and agricultural wastes continue to provide from 80 to 90% of the total energy consumed in the rural areas for the subsistance activities of cooking and heating. Energy needs for production purposes in rural areas, including agricultural requirements, are met mainly from draught animal energy and human labour, both of which are most inefficiently utilised. A major proportion of the energy used in the rural areas is also secured by individuals at almost zero private cost. Fiscal and administrative measures, as well as controls on energy distribution, have so far made little impact in the rural areas.

2.18.3 While commercial forms of energy such as electricity, kerosene and diesel oil are now making inroads in the rural areas, their consumption is still largely confined to the more affluent households. Though kerosene is used by many low-income rural households for lighting, the majority of the rural households cannot afford to utilise commercial fuels for other end-uses, due to their low purchasing power.

2.18.4 Most of the energy consumed in rural areas do not enter the organised market place and therefore there are no accurate data on patterns of supply and consumption of energy in the rural areas. These patterns also often vary from one agro-climatic region to another. There is, therefore, need to understand the patterns of energy consumption at the micro- level, through decentralized energy planning exercises, in order to provide sustainable and affordable supply of energy sources for meeting the growing energy needs of the rural population. In this context, it may be noted that, while locally available renewable energy sources based on non-conventional technologies will have to play an increasingly important role in the coming years in meeting rural energy needs, the rural population will also have to be provided their due share of commercial energy especially for productive income generating activities, for building rural infrastructure and for the overall economic development and modernisation of the rural areas.

2.18.5 The Integrated Rural Energy Planning Programme (IREP) which was taken up as a plan scheme in the Seventh Plan has been a major effort in this direction for planning for energy for rural development, taking into account the concerns for equity and social justice.

IREP Experience and Eighth Plan directions

2.19.1 The IREP programme was developed as a plan scheme in the Seventh Plan on the basis

of the experience of a pilot Rural Energy Planning Exercise taken up in the Sixth Plan. Under this , pilot projects were set up in a few selected blocks in different parts of the country for developing the methodology for decentralised integrated rural energy planning and for developing institutional arrangements for preparing and implementing integrated rural energy plans and projects, through which the least cost mix of various energy options, conventional as well as renewable and non-conventional energy, were provided for meeting the energy needs of subsistance and development at the block level. On the basis of the experience of this exercise, the Integrated Rural Energy Planning (IREP) programme was prepared and taken up as a regular plan scheme in the Seventh plan, with components for developing institutional mechanisms, project preparation and implementation, financial incentives, training, R&D including computer modelling and monitoring.

2.19.2 The implementation of the IREP programme in the Seventh Plan was funded through outlays provided under the Central and State Plans. The Central Plan component was utilised for setting up the institutional mechanisms in the State/UT through funds for professional and support staff in the IREP cells at the State level and in the selected districts/blocks, as well as for the training. The State component of IREP funds was utilised for project preparation and implementation and financial incentives for the promotion of rural energy technologies, as part of the block level IREP projects.

2.19.3 During the Seventh Plan and subsequent two annual Plans in 1990-91 and 91-92, around 250 blocks have been covered under IREP programme. Block level project documents have been prepared for most of these blocks.The major conclusions drawn on the basis of the IREP programme in the IREP blocks situated in the different agro climatic zones of the country in the Seventh Plan are discussed below.

2.19.4 Wide variations in energy consumption levels were found in different agro climatic zones, ranging from 830 to 2868 Thousand Kilo Calories per capita, per annum, gross energy consumption for cooking (Annexure-I). Annexure II gives the average per captia use of non-commercial fuels, i.e., firewood, dung cake and crop residues, in various agro-climatic zones. This also brings out the variation in use of non-commercial fuels in the different agro-climatic zones, thereby further confirming the need for decentralised energy planning.

2.19.5 It was also found that in all the agro climatic zones, non-commercial sources of energy contribute more than 90% of total energy consumed for cooking, except in the case of the Middle Gangetic zone and the zones of East Coast Plains & Hills, where it is 78.9% and 86.8% respectively.

2.19.6 The analysis of block level data from the IREP blocks in different agro-climatic zones further brings out that there is similarity in the amount and type of energy used, particularly for cooking within an agro climatic zone. However, there are significant variations in these two factors - quality and quantity of energy- across the various agro climatic zones (Annexure I).

2.19.7 Wide variations have also been observed in the energy consumption levels for agriculture, transport and industrial sectors, which again brings out the necessity of micro-level planning and implementation of rural energy programmes. Animate sources of energy were found to constitute more than 50% of the energy consumed for agriculture activities. This source of energy is used most inefficiently and needs to be substituted with more efficient commercial and renewable energy forms whose mix would have to be area-specific and have to be estimated by decentralised energy planning.

2.19.8 While the above conclusions are based on the planning data for the IREP programme in the Seventh Plan, the implementation experience of this programme in the Seventh Plan has also provided many useful lessons for improving and modifying the programme in the Eighth Plan.

2.19.9 A major implemention problem so far encountered in the implementation of the IREP programme has been the existence of sectoral barriers and lack of coordination between the different concerned energy supply and user departments and agencies at the different levels including the National, State, district and grassroots levels. At the grassroots level, in particular, the involvement of potential beneficiaries in the planning and supply of different energy

resources and technologies is still very limited and needs to be strengthened through the framework of the IREP programme.

2.19.10 In this context, another limitation in the implementation of this programme so far has been the lack of suitable extension mechanisms at the grassroots level that would create awareness among the people about the programme and would organise and provide technical and financial support in the installation, operation and maintenance of different types of energy devices.

2.19.11 The problem of affordability among the potential beneficiaries is another major constraint in the implementation of IREP projects. For this purpose, mechanisms are required for mobilising resources not only from the budgetary support provided by the Central and State Plan funds but also through local self government bodies, including panchayats and other people's organisations and through the direct involvement of the people.

2.19.12 People's participation has thus, to be effectively organised not only by the Government machinery but also by the active role in this programme of voluntary organisations, various local non-official groups and bodies including educational institutions, mahila mandals and charitable organisations, who should work in coordination with the panchayats and IREP cells for this purpose.

2.19.13 The involvement of potential beneficiaries will be further ensured by linking IREP with the other existing and new rural development programmes including IRDP, JRY, TRYSEM, and rural housing among others. The active association of women in this programme could be ensured by linking IREP with DWCRA, as well as with the programmes of health and family welfare, ICDS and other women and child welfare schemes. The literacy programme, which has started picking up in many States, would also provide major support in spreading awareness about IREP and its components.

2.19.14 Awareness building, however, has to be followed by education and training of the potential beneficiaries, as well as of those directly and indirectly involved with the planning and implementation of the IREP programme. In the Seventh Plan, a major component of training was taken up for training professional IREP staff in the preparation and implementation of IREP programme in the States/UTs.

2.19.15 This training component involved national, regional, and State level academic professional institutions besides technical colleges / Universities which were provided technical and financial support for conducting training courses on various aspects of the IREP programme. The setting up of one national and four Regional training cum R&D centres was also taken up under the programme in the Seventh Plan. The first national level training cum R&D centre [Centre for Integrated Rural Energy Planning (CIREP)] was set up in Bakoli village in Delhi in cooperation with Delhi Administration and with the technical and financial support of the Planning Commission under the centrally sponsored scheme for IREP. The other four regional centres are located in Lucknow (UP), Bangalore (Karnataka), Kheda (Gujarat) and Shillong (Meghalaya). The Delhi and Lucknow centres have already become fully operational and are organising regular training programmes and R&D activities under the IREP programme. The other centres are in the process of being set up and should become fully operational during the Eighth Plan. Besides the national and regional training cum R&D institutions, State level technical back-up units have been set up in selected State level institutions for providing technical support in the planning and implementation for the IREP programme. Also, district level IREP technical back-up units have been set up through ITI/polytechnics in selected IREP blocks to provide technical assistance especially in the selection, operation and maintenance and follow up applied R&D on rural energy technologies in the IREP projects.

2.19.16 While this training programme, taken up in the Seventh Plan, has now become well established, attracting and retaining professional staff in IREP cells at different levels continues to be a major problem. The staff recruited on deputation basis for IREP cells and trained in the training courses or in the training centres often go back to their parent departments and training exercises have to be repeated for the new incumbents. Due to lack of a regular cadre and promotional avenues, qualified professionals are

often reluctant to join and continue to work in the IREP programme. The linkage of IREP programme with various Rural Development, Energy and Other related Programmes, as envisaged in the Eighth Plan would alleviate this problem to some extent.

2.19.17 Another institutional problem that needs to be tackled is the functioning of the IREP cells in nodal departments in the State/UTs. The IREP programme is now being implemented through various nodal departments in the State. These departments are burdened with other programmes and often tend to give low priority to the IREP programme. Moreover, the staff allocated to the IREP cells as part of the present centrally sponsored scheme are given several other tasks and do not often find time to concentrate on the implementation of the IREP programme. In many cases, the block staff function from district headquarters resulting in lack of regular grassroots-level interaction between the IREP staff and the potential beneficiaries. Suitable guidelines would have to be formulated and implemented to ensure the effective functioning of IREP cells in coordination with other development programmes.

2.19.18 However, despite the problems and constraints discussed above, a sound base for the implementation of the programme has now been created. The demonstration and extension efforts have resulted in awareness at all levels in the Goverenment and non-goverenmental set-up about the widespread interest which has been generated among the rural people especially in IREP blocks on various alternative and existing energy sources and their effcient utilization for meeting their needs. With these positive acheivements the IREP is now ready after some reorientation and modification to become a major operational programme in the Eighth Plan.

2.19.19 The areas that call for emphasis in the Eighth Plan on the basis of experience so far, include increasing attention and linkages with the agricultural and rural development programmes, increasing focus on the environment problems and promoting large scale people's participation by ensuring involvement of the beneficiaries at all stages in the preparation and implementation of the programme.

IREP in Eighth Plan

2.20.1 Based on the experience so far and in keeping with the broad objectives of the Eighth Plan, the Integrated Rural Energy Programme will focus on the following two major areas:

(a) Provision of energy for meeting the basic needs of cooking, heating and lighting, especially for the weaker section, by utilising locally available energy resources to the extent possible;

(b) Provision of energy as the critical input in the economic development of the rural areas which would result in the creation of employment, increasing productivity and income, and accelerating the process of decentralised development. In this category will be included energy for sustainable agricultural production, as well as promoting sustainable rural development activities.

2.20.2 This programme has now sufficient experience in micro-level energy planning for meeting subsistence and production needs. But the extension and intensification of the programme has to be carried out by effective linkage of the programme and its implementation, with the State and District planning setup on the one hand and with the agricultural and rural development programmes on the other hand. The IREP in the Eighth Plan has also to ensure sustainabilility of energy supply to the rural areas in view of the growing gap between energy demand and supply and the grave damage that is being done to the eco-system because of steady depletion of the biomass cover. The environmental aspect has, therefore, to be be suitably incorporated in the micro and macro level rural energy planning framework.

2.20.3 The expansion of the programme, however, would be taken up in a phased manner so that its growth is in step with the development of local capabilities, awareness building, readiness of the community to actively participate in the programme and the availability of institutional mechanisms to provide for the regular flow of energy resources and technologies, including their installation and maintenence for the sustainable agricultural and rural development.

2.20.4 In keeping with the above directions, the IREP in the Eighth Plan will have the following major features :-

(a) Extension of the programme to cover atleast 100 blocks per year;

(b) Provision of minimum energy needs of cooking, heating and lighting in each IREP block, so as to ensure 100% coverage for the economically weaker sections;

(c) Provision of the most cost-effective mix of various energy sources and options for meeting, to the extent possible, the requirements for sustainable agriculture and rural development by giving due weightage to the environmental considerations;

(d) Ensuring large scale people's participation in the planning and the implementation of the programme by direct involvement of panchayats, voluntary and non-official bodies and institutions and the establishment of self-managed organisations and other appropriate people-oriented arrangements wherever feasible at the micro-level for the implemention of the IREP projects.

(e) Setting up and strengthening of the mechanisms and coordination arrangements that would effectively link micro-level planning for rural energy with national and State level planning and programme for energy and economic development so as to ensure regular and planned flow of energy inputs and especially of the commercial energy sources for meeting to the extent possible, the requirement of various end uses in the IREP projects.

(f) Financing of the programme by supplementing available Central and State budgetary support mobilized by the panchyats and other local bodies and peoples participation. Financial institutions including NABARD, other Development Financial Institutions (DFIs) and the banking system will be actively involved in financing the IREP projects and its components for which suitable new schemes will be developed in the Eighth Plan.

2.21.1 A provision of Rs. 500.00 crores has been made for the minimum domestic energy needs of the economically weaker sections in the IREP blocks. A separate provision of Rs. 250.00 crore has been made for development of capabilities for the planning and implementation of Integrated Rural Energy Programme in States / UTs, which will consist of institutional mechanisms in the Centre and State, including the setting up of IREP cells at the State and district / block levels, training programmes, technical back-up units, national & regional training cum R&D centres, research and development activities, demonstration and extension among other activities.

Outlays

2.22.1 The Eighth Plan outlay for rural development is as follows:

Centre	Rs. 24,320 crores
States	Rs. 11,677 crores
Total	Rs. 35,997 crores

This includes the outlays for IRDP, JRY, DPAP, DDP, Land Reforms , Community Development and Panchayats , Rural Energy and other miscellaneous rural development programmes including some new schemes.

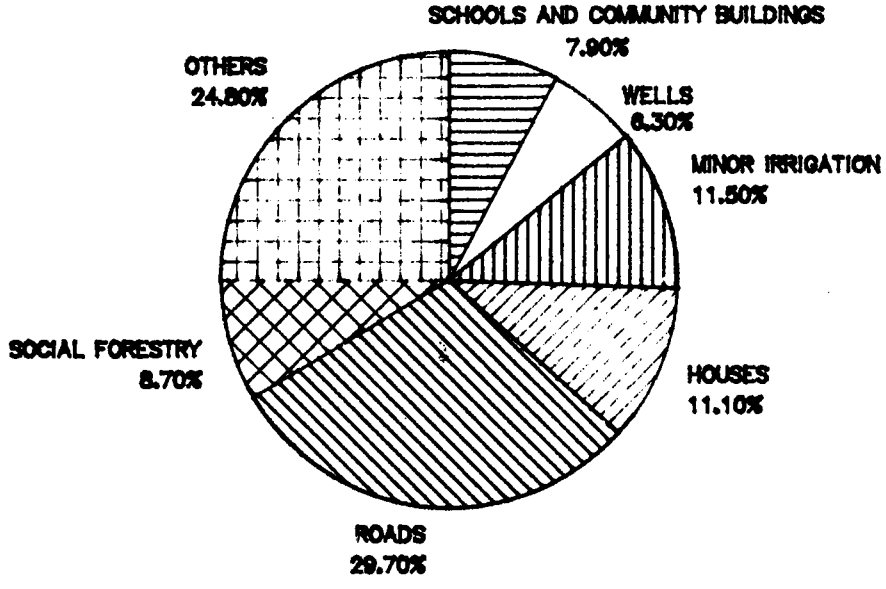
Appendix.1

Integrated Rural Development Programme Performance In The Seventh Five Year Plan And 1990-91

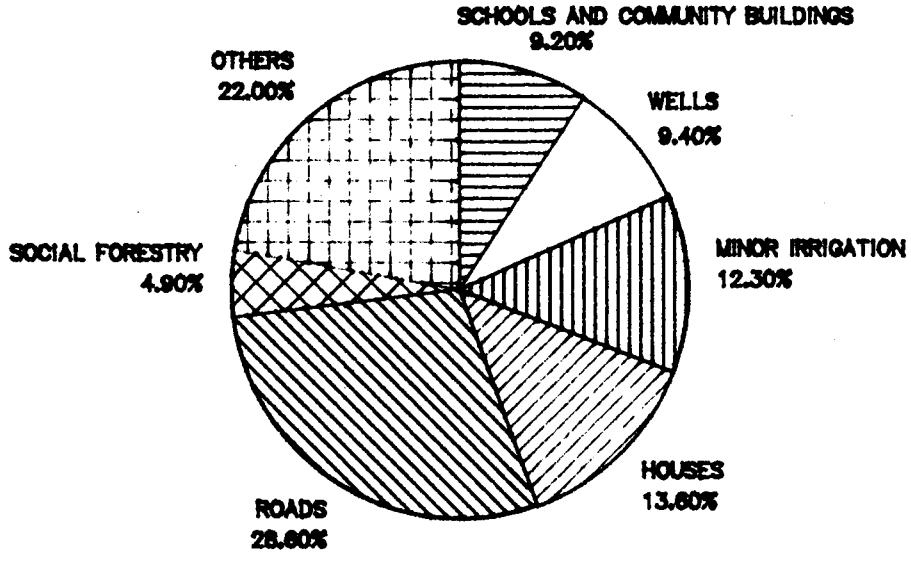
S.No.	Items	Unit	7th Plan Target	7th Plan Achievement	1990-91 Achievement
1.	Total allocation	Rs. crores	2358.81	3000.27	747.31
2.	Central allocation	- do -	1186.79	1513.84	374.56
3.	Central releases	- do -	-	1465.26	346.59
4.	Total expenditure	- do -	-	3315.81	809.49
5.	Total term credit mobilised	- do -	-	5372.53	1190.03
6.	Total investment	- do -	4000.00	8688.34	1999.52
7.	Total No. of families covered				
	Old	Lakh Nos.	100.00	51.80	0.82
	New	- do -	100.00	129.97	28.16
	Total	- do -	200.00	181.77	28.98
8.	No. of SC/ST Beneficiaries	-do-		81.97	14.46
9.	Percentage of SC/ST total			45.10	49.90
10.	No. of women beneficiaries covered	- do -		34.33	8.95
11.	Percentage of women to total			18.92	30.89
12.	Per capita subsidy (Gross)	Rs.		1824	2793
13.	Per capita credit(Gross)	Rs.		2956	4106
14	.Per capita investment (Gross)	Rs.		4780	6900
15.	Subsidy credit ratio			1:1.98*	1:1.78*
	Sector-wise coverage (%)				
16.	Primary sector			43.75	47.76
17.	Secondary sector			18.64	18.91
18.	Tertiary sector			37.61	33.33

* Net Subsidy credit Ratio.

PERCENTAGE OF SECTORAL EXPENDITURE UNDER JRY(1989–90)



PERCENTAGE OF SECTORAL EXPENDITURE UNDER JRY(1990–91)



Appendix - 3

Physical progress under Minimum Needs Programme (MNP)

Sl.No.	Components	Unit	7th Plan		1990-91	
			Target	Achieve-ment	Target	Achieve-ment
1.	Elementary Education	Lakh Nos.	278.22	251.20	57.73	57.73
2.	Adult Education	-do-	470.55	448.35	173.33	116.57
3.	Rural Health					
	i) Sub-Centres	-do-	51921	47942	4977	496
	ii)PHCs	-do-	12002	10366	1396	1648
	iii)CHCs	-do-	1442	1348	281	76
4.	Rural Water Supply	No. of villages	186180	219965	38288	37699
5.	Rural Rads					
	i) Population Group	1000-1500	5247	7125	1103	812
	ii) Population Group	1500-above	11033	10190	1084	173
6.	Rural Electrification					
	i) Villages electrified	Nos.	31380	36726	3120	3120
	ii) Pumpsets energised	Nos.	43828	48626	9200	9200
7.	Rural Housing					
	i) House sites	Lakh Nos.	28.97	43.05	5.76	7.74
	ii) Construction Assistance	-do-	19.02	22.59	3.27	4.24
8.	Environmental Improvement of Urban Slums	- do-	77.62	99.39	15.40	19.34
9.	Nutrition					
	i) SNP (Total coverage)	Million	59.05	82.81	23.72	15.40
	ii) MDM (Total coverage)	Nos.	58.67	97.15	21.50	21.32
10.	Rural Domestic Cooking Energy					
	i) Improved Chullaha	Lakh Nos.	61.50	75.76	18.27	19.88
	ii) Rural Fuelwood Plantation Scheme	000 Hect.	467.29	400.61	60.00	60.00
11.	Rural Sanitation	Lakh Nos.	5.29	0.41	1.18	0.60
12.	Public Distribution System	No. of Fair Price shops	10860	21851	1887	2427

Appendix 4

Outlay and Expenditure on Minimum Needs Programme (MNP) by components during Seventh Plan period

S.No.	Name of the scheme	Seventh Plan (1985-90)	
		Outlay	Expenditure
1.	Elementary Education	3001.98	3002.12
2.	Adult Education	525.28	462.45
3.	Rural Health	1065.35	943.13
4.	Rural Water Supply	4235.23	4467.37
5.	Rural Roads	1461.62	1565.04
6.	Rural Electrification	510.24	551.98
7.	Rural Housing	605.70	629.77
8.	Environmental Improvement of Urban Slums	236.50	242.49
9.	Nutrition	1421.42	1172.71
10.	Rural Domestic Cooking Energy		
	i) Improved Chullha	47.02	45.39
	ii)Rural Fuelwood Plantation Scheme	222.77	164.36
11.	Rural Sanitation	93.02	43.58
12.	Public Distribution System	144.32	127.01
	Grand Total	13670.45	13417.40

Annexure - I

Average Gross Per Capita Consumption In Cooking Sector In Various Agro Climatic Zones.

Sl. No.	Agro-climatic Zone	Average per (Th K Cal)	Capita Consumption	
			Commercial %	N.C.E %
1.	Western Himalayan Zone	2868.892	0.946	99.054
2.	Eastern Himalayan Zone	2418.005	7.761	92.239
3.	Lower Gangetic Zone	2449.548	6.559	93.441
4.	Middle Gangetic Zone	2700.552	21.071	78.929
5.	Upper Gangetic Plains	1311.296	1.945	98.055
6.	Trans-Gangetic Plains	2212.953	4.640	95.360
7.	Eastern Plateaus & Hills	2377.319	9.070	90.930
8.	Central Plateaus & Hills	829.558	0.028	99.972
9.	Western Plateaus & Hills	1934.094	1.005	98.995
10.	Southern Plateaus & Hills	1493.914	4.682	95.318
11.	East Coast Plain & Hills	1212.854	13.128	86.872
12.	West Coast Plain & Ghats	2258.902	3.836	96.164
13.	Gujarat Plains & Hills	1673.442	2.288	97.712
14.	Western Dry Regions	2106.535	3.399	96.601

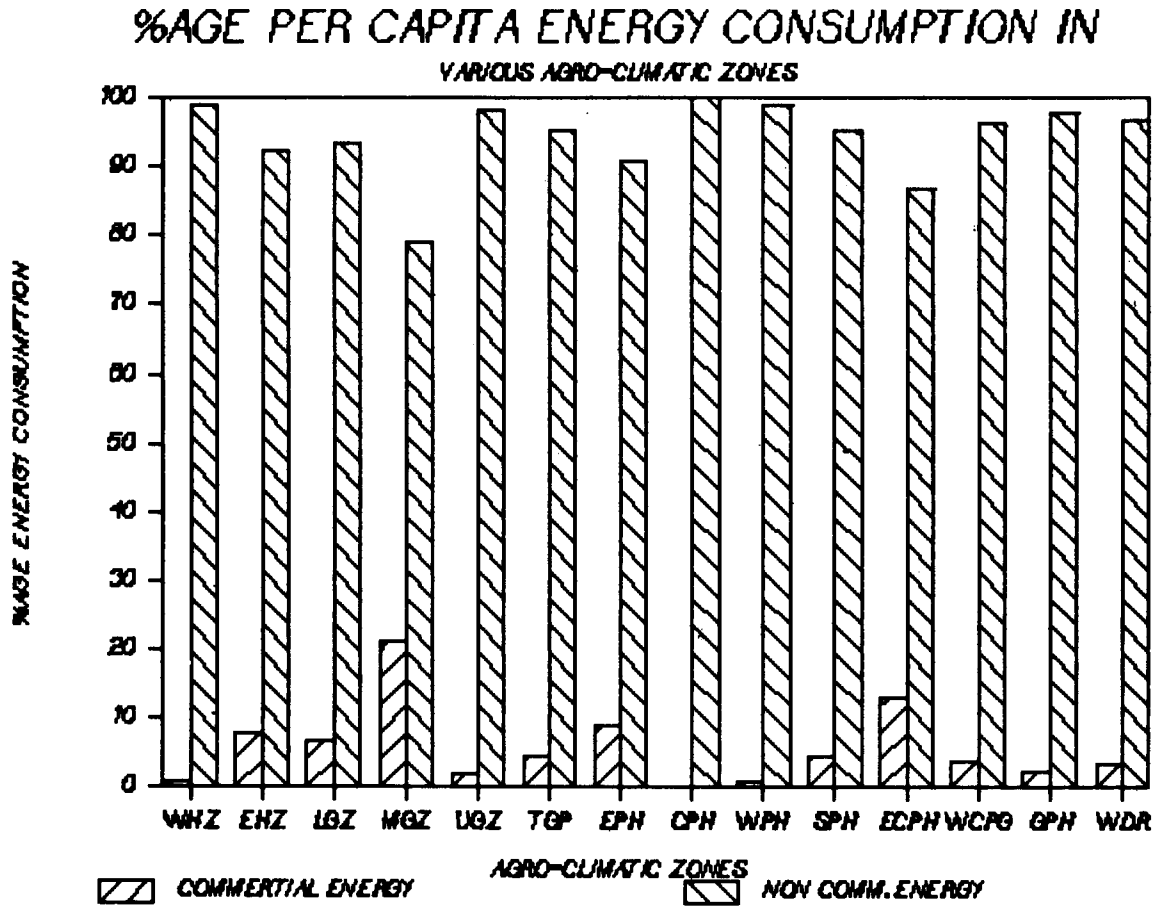
SOURCE: IREP Report Planning Commission

Annexure - II

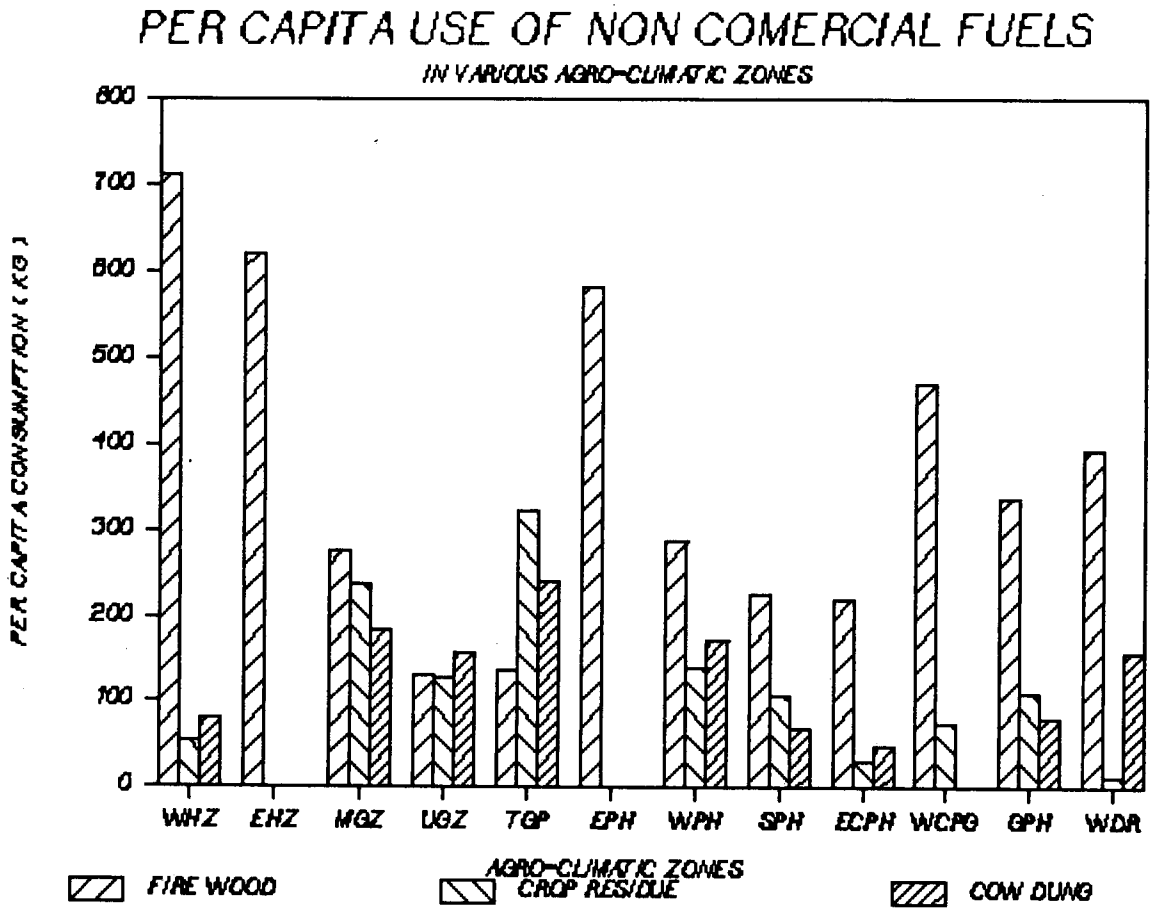
Average Per Capita Use Of Non Commercial Fuels In Various Agro Climatic Zones

Agro-climatic Zone	Fire Wood (KG)	Crop residue (KG)	Cow Dung (KG)
Wester Himalayan Zone	710.45	52.41	79.131
Eastern Himalayan Zone	621.419	-	-
Middle Gangetic Zone	274.568	238.401	182.325
Upper Gangetic Zone	129.991	127.308	156.008
Trans-Gangetic Plains	136.173	321.762	238.924
Eastern Plateaus & Hills	582.193	-	-
Western Plateaus & Hills	288.212	139.461	172.068
Southern Plateaus & Hills	225.485	108.305	69.208
East Cost Plain & Hills	218.308	30.422	47.031
West Cost Plain & Ghates	469.464	76.009	-
Gujrat Plains & Hills	336.464	111.104	79.952
Western Dry Regions	393.913	11.17	156.942

Source: IREP Report Planning Commission



WHZ	Western Himalayan Zone
EHZ	Eastern Himalayan Zone
LGZ	Lower Gangetic Zone
MGZ	Middle Gangetic Zone
UGZ	Upper Gangetic Zone
TGP	Trans-Gangetic Plains
EPH	Eastern Plateaus & Hills
CPH	Central Plateaus & Hills
WPH	Western Plateaus & Hills
SPH	Southern Plateaus & Hills
ECPH	East Cost Plains & Hills
WCPG	West Cost Plains & Ghates
GPH	Gujarat Plains & Hills
WDR	Western Dry Regions



WHZ	Western Himalayan Zone
EHZ	Eastern Himalayan Zone
MGZ	Middle Gangetic Zone
UGZ	Upper Gangetic Zone
TGP	Trans-Gangetic Plains
EPH	Eastern Plateaus & Hills
WPH	Western Plateaus & Hills
SPH	Southern Plateaus & Hills.
ECPH	East Cost Plains & Hills
GPH	Gujrat Plains & Hills
WDR	Western Dry Regions
WCPG	West Cost Plains & Hills.

CHAPTER 3

IRRIGATION, COMMAND AREA DEVELOPMENT AND FLOOD CONTROL

Overview

3.1.1 Availability of adequate, timely and assured irrigation is a critical determinant of agricultural productivity. Over the past 40 years around Rs.45,000 crores have been directly invested by the public sector in various categories of water control works- about Rs. 28,000 crores of it in major and medium irrigation works (including Command Area Development); Rs. 14,500 crores in minor irrigation, and Rs.2,500 crores in flood control. Table-1 summarises the position.

Table-1 Magnitude & Composition of Investment Through Plan periods in Irrigation and Flood Control Sectors

(Rs. in crores)

Plans	Major & Medium Irrgn.	Minor Irrigation			CAD	Flood Control	Total
		Public Sector	Insttutional Finance	Total			
1.	2.	3.	4.	5.	6.	7.	8.
First (1951-56)	380	66	Neg.	66	-	13.77	459.77
Second (1956-61)	380	142	19.15	161.15	-	49.15	590.30
Third (1961-66)	581	328	115.29	443.29	-	86.00	1110.29
Annual (1966-69)	434	326	234.74	560.74	-	43.61	1038.35
Fourth (1969-74)	1237	513	661.06	1174.06	-	171.78	2582.84
Fifth (1974-78)	2442	631	780.24	1411.24	122.49	298.61	4274.34
Annual (1978-80)	2056	497	490.40	987.40	88.20	228.47	3360.07
Sixth (1980-85)	7516	1802	1437.55	3239.55	520.78	596.07	11872.40
Seventh (1985-90)	11107	3115	3311.91	6426.91	1427.64	941.58	19903.13
Total	26133	7420	7050.34	14470.34	2159.11	2429.04	45191.49

Source : Reports of Working Group on Eighth Five Year Plan on Malor & Medium Irrigation, Minor Irrigation , Command Area Development & Flood Control

3.1.2 Besides the above, there had been other direct investments from the public sector mainly as subsidies to minor irrigation development through other programmes.

3.1.3 Taking the last four decades as a whole, the public and the publicly funded outlays in irrigation and flood control sector have risen steadily and there has been corresponding increase in physical benefits as given in Table- 2 below.

Review of Major and Medium Irrigation

3.2.1 The Statement 3.1 gives the Statewise review of outlay and expenditure during the Seventh Plan and during 1990- 91 and 1991-92. The average annual outlay on major and medium irrigation projects (including CAD) has risen from around Rs. 75 crores in the First and Second Plans to nearly Rs. 2,500 crores in the Seventh Plan. The corresponding addition to potential has, however, been between two to three million hectares per five year plan with the exception of Second Plan (1.05 m.ha.) and Fifth Plan (4.02 m.ha.). The average cost per hectare of potential created has, thus, risen steeply from around Rs. 1060 during the First Plan to over Rs. 42,700 in the Seventh. Among the factors that have reportedly contributed to such increase in real costs are the following: availability of comparatively better sites for construction in earlier Plans; inadequate preparatory surveys and investigations leading to substantial modifications in scope and design during construction;

Table - 2 Development of Irrigation Potential through Plan period

Plan	Major/Medium Irrigation		Minor Irrigation		Total Irrigation		Gross Irrigated Area as per Land Utilisation Statistics
	Potential	Utilisasation	Potential	Utilisasation	Potential	Utilisasation	
Pre-Plan	9.70	9.70	12.90	12.90	22.60	22.60	22.56
First (1951-56)	12.19	11.00	14.06	14.06	26.25	25.06	25.64
Second (1956-61)	14.33	13.30	14.79	14.75	29.08	28.05	27.98
Third (1961-66)	16.57	15.20	17.00	17.00	33.57	32.20	30.90
Annual (1966-69)	18.10	16.80	19.00	19.00	37.10	35.80	35.43
Fourth (1969-74)	20.71	18.70	23.50	23.50	44.21	42.20	40.28
Fifth (1974-78)	24.72	21.20	27.30	27.30	52.02	48.50	46.08
Annual (1978-80)	26.61	22.70	30.00	30.00	56.61	52.70	49.21
Sixth (1980-85)	30 01	25.33	37.52	35.25	67.53	60.58	54.67
Seventh (1985-90)	31.52	27.77	46.60	43.12	78.12	70.89	N.A.

Source : Reports of Working Group on Eighth Five Year Plan on Major and Medium Irrigation and Minor Irrigation.

the tendency to start far too many projects than can be accommodated within the funds available for irrigation; extension of distribution system from 200 ha. block to 40 ha. block and further to to 5-8 ha. block at project cost; larger provision for measures to rehabilitate people affected as well as for preservation of environment and ecology; revision of hydrology following the Machchhu Dam disaster in 1979; and adoption of more sophisticated but expensive criteria for irrigation project planning in conformity with requirements of external aid agencies. The precise contribution of each of these factors to the observed increases in real costs is not clearly established. But inordinate delays in completing the projects are a well recognised fact.

3.2.2 The biggest single malady in the major and medium irrigation sector right from the First Plan has been the continued tendency to start more and more new projects resulting in wanton proliferation of projects, thin spreading of resource and consequent time and cost overruns. Though all the Plans, without exception, declared their intention to give priority to complete the ongoing schemes, the addition of new schemes continued unabated. Table-3 summarises the Plan-wise number of new major and medium irrigation projects started.

3.2.3 At the end of the Seventh Plan, there were as many as 182 major, including the mega, projects like Sardar Sarovar, Indira Gandhi Nahar and Indira Sagar Projects and 312 medium ongoing irrigation projects requiring, according to latest estimates, a huge amount of Rs.39,044 crores (at the 1990-91 price level) to complete them. A list of on- going major and medium irrigation projects is at Statement 3.2. The frequency distribution of expenditure incurred up to the end of Seventh Plan on such ongoing major and medium projects is as given in Table-4.

3.2.4 Given this background, the option during the Eighth Plan is clear : not to take up any new projects unless the needs of the ongoing

Table-3 No. of new schemes taken up in different Plans

Plan	Major	Medium
First (1951-56)	24	212
Second(1956-61)	23	116
Third (1961-66)	27	74
Annual(1966-69)	10	38
Fourth (1969-74)	33	94
Fifth (1974-78)	73	331
Annual (1978-80)	15	53
Sixth (1980-85)	41	141
Seventh (1985-90)	18	29

Source : Report of the Working Group on Eighth Five Year Plan on Major and Medium Irrigation

Table-4 Distribution of projects by extent of expdr. already incurred

(Rs. Crores)

Sl.No.	Expenditure as percentage of total cost	Major		Medium	
		No.	Spillover cost at the beginning of the 8th Plan	No.	Spillover cost at the beginning of the 8th Plan
1.	2.	3.	4.	5.	6.
(i)	More than 75%	56	2056.65	128	359.94
(ii)	Between 30-75%	65	10936.39	102	1031.72
(iii)	Less than 30%	61	23298.05	82	1371.36
	Total	182	36281.09	312	2763.02

ones are fully met. Even among the ongoing projects, there should be emphasis on completion of projects which are in an advance stage i.e. those projects with an expenditure level at 75 per cent or more. In respect of bigger projects, which cannot be completed during the Eighth Plan, we must envisage a sub- project approach on the five years' time slice basis on a critical review of remaining works. Action programme should be drawn up by States with a fixed timeframe not only for expeditious completion of ongoing projects but also for achieving better utilisation from completed projects.

3.2.5 It has also become imperative to tighten the standards of project preparation and design which should be satisfied before proposals qualify for appraisal. In particular, there is need to pay much greater attention at the planning stage to systematic surveys of soil conditions, land use capability, crop water requirement, irrigation efficiency, and conjunctive use of surface and ground water to ensure that the command area, the distribution network and crop patterns are based on firm data and are mutually consistent. The impact of a proposed project by way of displacement of people, submergence of forests and other environmental features need to be explicitly taken into account with necessary compensatory or corrective action built into the project design. The project proposal submitted for approval must also examine various options for use of water in a project and choose the optimal alternative keeping both efficiency and equity in view.

Potential Utilisation

3.3.1 The Statewise position of irrigation benefits from major and medium irrigation projects is given in the Statement 3.3. One of the most widely discussed features of major and medium irrigaion works is the lag between the creation of potential and its utilisation. Table-5 summarises the position in this respect at the end of successive Plans.

3.3.2 According to these data the rate of utilisation in terms of increments to area actually irrigated in addition to capacity during Fifties was about 78% and reached close to 92% in the next decade. But during the Seventies the increase in actual area irrigated comprised only 59% of the additional potential created followed by an improvement in the Eighties to around 80 percent.

3.3.3 However, the above data does not give a correct picture of utilisation of irrigtion potential. This is becuase different States adopt different criteria for reporting. For example, Kerala reports the same figure for potential utilisation and creation. Maharashtra gives the

Table-5 Potential created and utilised from Major & Medium Projects

(Million Ha)

At the end of	Potential*	Utilisation*	% of Utilisation
Pre-plan	9.70	9.70	100.0
First Plan(1951-56)	12.19	11.00	90.2
Second Plan (1956-61)	14.33	13.30	92.8
Third Plan (1961-66)	16.57	15.20	91.7
Annual Plan (1966-69)	18.10	16.80	92.8
Fourth Plan (1969-74)	20.71	18.70	90.3
Fifth Plan (1974-78)	24.72	21.20	85.8
Annual Plans (1978-80)	26.61	22.70	85.3
Sixth Plan (1980-85)	30.01	25.33	84.4
Seventh Plan (1985-90)	31.52	27.77	84.7

Source :Report of the Working Group on Eighth Five Year Plan on Major & Medium Irrigation.

* These are cumulative figures as reported to Planning Commission

utilisation as achieved and irrigated, while U.P gives the maximum area irrigated since inception during any Rabi or Kharif period. A correct picture can emerge only if the States follow the criteria laid down by the Planning Commission in 1973.

3.3.4 On the other hand, estimates of irrigation potential and its utilisation are themselves open to question. There are differences in the interpretation of the concept by the reporting agencies. The system of monitoring and verifying information provided by executing agencies on both potential and actual irrigation is inadequate and casual and there are susbtantial reporting and compilation errors in the data. The traditional system of compiling data on land use, irrigation and cropping by the village Patwari which in principle provides an independent source of data has deteriorated. The potential area which can be irrigated in a system depends on several factors including, besides the availability of distribution networks, the volume and seasonal pattern of water supply, the losses in conveyance, distribution and application, the extent to which the conjunctive use is developed and the crop pattern on ground. In so far as the assumptions in respect of these parameters, underlying the project design, are not realised in full, there is bound to be a divergence between the actual area irrigated and the potential created. There is considerable evidence to show that the crop patterns actually adopted by farmers are often much more water-intensive than assumed and this is one important reason why the actual area irrigated is less than the designed potential. In judging the performance of irrigation systems, we should move away from potential or actual area irrigated and instead focus on the amount of water made available through a system, both overall and in each main crop season, the frequency and predictability of water supply and its effect on cropping intensities, crop patterns and yields.

3.3.5 A lag of a few years between the introduction of irrigation and its full utilisation is unavoidable as it takes time for the farmers to construct the field channels and to prepare the land for irrigated farming. Also the switch over from rainfed agriculture to irrigated agriculture involves a major change in agricultural techniques which farmers take time to master. But even allowing for these, the pace of utilisation has been far too slow. This has been generally attributed to delays in the construction of distribution network, especially field channels and in getting the command areas properly prepared for effective use of water.

Command Area Development

3.4.1 The Command Area Development Programme (CADP) started in 1974-75 as a Centrally Sponsored Scheme, envisaged execution of on-farm development works like field channels, land levelling, field drains and conjunctive use of ground and surface water; the introduction of Warabandi, or the rotational system of water distribution to ensure equitable and timely supply of water to each holding; and evolving and propagating crop patterns and water management practices appropriate to each command area. Other ancilliary activities like construction of link roads, godowns and market centres, arrangements for supply of inputs and credits, agricultural extension and development of ground water for conjunctive use are also taken up as part of the relevant sectoral programmes in the State Plan. Initially, the emphasis of the programme was on the development of infrastrucuture required to deliver the water to the farmers' field. At the time of formulating the Sixth Plan, the progress in implementing the full package of on- farm development works was found to be very limited. A variety of constraints were identified. These included: absence of upto-date land records, resistance of farmers to land consolidation, inadequate flow of institutional credit and organisational weaknesses. Experience had also shown that once the farmers are assured of timely and adequate supply of water, they take up some of the OFD works such as land levelling. By the end of March, 1990, an area of about 4.96 million hectares were under Warabandi; land levelling and shaping had been done on 1.92 million hectares; and field channels constructed for 11.1 million hectares. The Statewise details of outlays and expenditure during Seventh Plan is at Statement 3.4.

3.4.2 On the whole, the scope of CAD programmes has turned out to be considerably narrower than orginally envisaged. The progress in terms of land improvement and development of drainage facilities has been meagre and so has the effort and research in evolving and propagating cropping patterns and agricultural practices

for optimum use of water under the conditions prevailing in each irrigation command.

3.4.3 There is, therefore, a need to review the approach to command area development in the light of the experience gained so far. A decision has to be taken to include the CAD activities as integral part of the project in the construction, operation and maintenance stages.

3.4.4 Secondly, the organisational and manning arrangements need to be thought out more carefully. A Command Area Development Authority type of arrangement can be considered initially for carrying out the on-farm development works but in close consultation with and involvement of the farmers. Eventually, the farmers can take over the maintenance and operation of the system themselves.

Improvement of Existing Systems

3.5.1 Apart from improving the organisations for promoting speedier and more efficient use of water in the recently completed systems, there is scope and need for improvement of existing systems through substantial investments in rehabilitation and modernisaion such as lining of channels, more and better regulatory structures and communications combined with changes in the way the water deliveries are regulated. This aspect began to receive greater attention during the last decade when the National Water Management Project for modernisation of selected old systems were taken up. These projects now cover systems with a command area of 0.54 million hectares. Considering that about 13 million hectares of irrigated area are from projects completed before Independence and 8 million hectares from schemes completed 25 years ago, there is clearly a case for covering more area under this programme.

3.5.2 Improvement in physical facilities is clearly an essential and important component of such a programme.The old planning and design criteria for the system adopted at the time of formulation of the scheme do not hold good any longer. The modernisation programme undertaken has not picked up adequately. The criteria for review and analysis of existing systems as well as for taking various measures, like engineering, agronomical and administrative-cum-legal, need to be evolved on the basis of modernisaion projects implemented such as Periyar-Vaigai scheme which has been completed with assistance from the World Bank.

3.5.3 The States need to be encouraged and assisted to set up organisations to undertake a proper study of existing systems to identify deficiencies and formulate a specific package suited to the needs of each project.

3.5.4 So far, all the large irrigation systems are wholly State-managed, the deployment of personnel, collection of water rates and allocaions for maintenance of each system being centralised in the State Government. There is very little users' participation. There have, however, been various experiments by official and non-official agencies in organising Farmers' Cooperatives for regulating water allocations, maintenance and revenue collection. These experiments need critical study to evolve a programme to strengthen and extend such cooperative effort.

Minor Irrigation

3.6.1 All irrigation schemes having upto 2000 ha. of culturable command area have been classified as minor since 1978. Under the new definition all ground water structures are classified as minor irrigation. Ground water development is under private sector to the extent of 90% and is financed by loans from the land development and commercial banks with re-finance facility from NABARD. The plan funds are used for construction of surface minor irrigation schemes, for provision of technical assistance in case of ground water projects and for payment of subsidy to weaker section of farmers.

3.6.2 As per 1986-87 Minor Irrigation Census, 95 lakh wells, 0.64 lakh deep tubewells and 4.75 lakh shallow tubewells have been dug; 4.22 lakh surface works completed and the number of pumpsets energised rose from 0.2 million in 1950-51 to 11.2 million by 1989-90.

3.6.3 Minor irrigation schemes like dugwells, shallow tubewells, borewells, filter points, small surface water lift up to 10 HP are generally within the reach of individual farmers. The construction period is hardly 15 days to 1 month. The farmer thus becomes the proud owner of his own irrigation system and gets assured supply of water at his command.

3.6.4 The Plan estimates of potential created by minor works, computed from reports of State Governments are at variance with data compiled by the Minor Irrigation Census from the village records.

Surface Works and Traditional Local Systems

3.7.1 The Minor Irrigation Census of 1986-87 enumerated some 676,000 surface water-based minor works. These include around 178,000 tanks and 96,000 diversion schemes currently in use. The large majority of these have been constructed, maintained and managed by the local communities for several decades and some for centuries. The traditional knowledge and institutional arrangements in respect of these facilities have weakened. The repair of these systems has been neglected by users for various reasons and the State has not paid much attention to these. The capacity of these local systems has been reduced and a large number have, in fact, gone out of use. According to the land use statistics, the area under tank irrigation reached an all-time high of 4.78 million ha. in 1962-63 and progressively came down to 3.07 million ha. in 1985-86. It is clear that the maintenance of tanks is being neglected due to which about 17 lakh ha. area has gone out of irrigation in 15 years. Most of them need substantial investment for renovation and improvement. These traditional works have not received much attention in the last 40 years of planned development. The investments in this area have been meagre and almost exclusively for constructing new works.

3.7.2 There is clearly a strong case for a major effort at renewing and improving the traditional local systems. This can be quite easily fitted into the employment guarantee and other schemes of land and water improvement as part of local area planning by Panchayats with technical help from Irrigation Departments.

3.7.3 It may be wrong to assume that expansion of minor surface storage irrigation is inherently and everywhere superior to large storage systems. Comparison of cost per hectare does not reflect the total picture as it does not allow for differences in the quantum, duration and reliability of water supplies as between large storage systems fed from large catchments and small works depending on small catchments. A more promising approach would be to explore the complementarities between small, local storages and large reservoirs. The integrated operation of these would give greater flexibility at the local level and more scope for meaningful user involvement in management.

3.7.4 Surface lift irrigation schemes are less expensive compared to major, medium or minor surface schemes with storage systems. These can be quickly constructed and can be taken up on individual or cooperative basis. When water is there in canals, drains, streams, rivers and power is also available these should be preferred.

3.7.5 Development of new small scale water control works as part of the integrated watershed development programme holds vast promise. Intergrated watershed development which has to be planned at different levels from small micro watershed covering a village or part of it to large sub-basins and basins provides an effective medium for integrating afforestation, soil conservation and percolation ponds and other moisture conservation works. Such integrated planning helps to make the investments far more effective, functionally and economically than the present fragmented approaches to the problem. But it is also more demanding on both the Government and the beneficiaries.

Groundwater

3.8.1 This is a dependable source provided it is not over-exploited. In most of the States there is no mechanism to keep statistics for the number of wells and area irrigated. The estimates are generally based on reported number of wells of different types constructed, pumps installed and certain norms regarding the area irrigated per work/pumpset of each category. These norms seem to be based on limited surveys and informed judgement, rather than any systematic sample surveys of actual ground reality. The reporting by State agencies may be incomplete in as much as the mechanisms for monitoring the construction/energisation of wells/ tubewells under various programmes are not as comprehensive as they should be, nor do official agencies keep track of developments financed wholly by the farmers. The only figure available is from the Land Use Statistics (LUS) which gives separately the area actually irrigated by wells and tubewells.

3.8.2 It needs to be noted that the Plan estimates of potential created do not distinguish between the gross area irrigated by groundwater as a sole source and as a supplement to surface works. The Minor Irrigation Census has estimated the extent of supplementary irrigation by works at nearly 2.9 million hectares, representing nearly 10 per cent of the estimated potential of ground water works at that time. This distinction between sole and supplementary irrigation by the wells is unfortuately not observed by most States. To that extent, the estimates of potential reported in the Plan documents are not strictly comparable with those compiled under land use and cropping statistics.

The Role of Financial Institutions

3.9.1 Financial institutions especially NABARD provide substantial loan assistance for development of ground water irrigation. The Working Group for the Eighth Plan has referred to the fact that institutional investment has not been as large as desired mainly due to the deteriorating recovery position. The Group has suggested several steps to improve the situation including (a) preparation of a district-wise loan disbursement plan at the beginning of each financial year covering all the institutions concerned with a special cell to monitor progress; (b) simplification of the details requirement in the loan application and procedure for processing; (c) strengthening of State Groundwater Boards to provide technical guidance to farmers in hard rock areas and alluvium so that availability of ground water could be certified and technical advice provided during construction and selection of pumpsets; and (d) vigorous efforts to improve recovery position with State assistance. The Group has also suggested a reorientation of subsidy schemes by making it uniform besides measures to extend and improve the supply of power to rural areas; adoption of a scheme for compensation against failed works and improvement of statistics.

3.9.2 Although the share of institutional investment is as large as 40-50 per cent of the total investment in this sector, there does not, at present, exist suitable arrangements/mechanism for effective and close monitoring of the institutional credit at the district level; evaluation/assessment of the benefits achieved vis-a-vis targets; Securing the basic data like the failure rate, yield and cost of wells constructed, actual area brought under irrigation, area under conjunctive use and how much under sole source etc. A more active role by the Ministry of Water Resources, NABARD and financing institutions to encourage more systematic compilation of the basic data for planning and monitoring the programmes of ground water irrigation, as well as research and training to improve the quality of planning/implementatiion would be desirable.

Regulations and Development of Groundwater

3.10.1 There are complaints of overexploitation of ground water in several parts of the country, reflected in a progressive deepening of wells and lowering of the water table. Though a system of classifying areas into different categories (dark, grey and white) according to the potential for future development is in vogue, the basis of the classification, namely maximum sustainable rate of exploitation, is a subject of contention. In any case, the actual lending by financial institutions does not seem to be effectively regulated on this basis. The assessment of sustainable yield needs constant refinement and the effectiveness of various methods of regulating the use of ground water from the viewpoint of sustainability and equity needs a fresh critical look. Spacing restrictions and other direct regulatory steps such as stopping of loans and refusing electric connection have by and large succeeded but, in the absence of ground water legislation, pockets of over-exploited areas continue to develop. In such areas, progressive deepening of wells continues even though it clearly increases both private and social costs of water. Other solutions, such as community wells, in areas with limited supplies of groundwater and development of water markets in areas where groundwater is abundant, supported by a proper pricing policy stipulating a telescopic structure of tariff for energy to discourage excessive use for pumping need to be explored.

Public Tubewells

3.11.1 A number of States like UP, Punjab, Haryana, Gujarat, Bihar and West Bengal have taken up a programme of construction of deep large size tubewells, each irrigating an area of 60 to 100 ha. specially of small farmers. More than 60,000 tubewells are in operation, UP alone having about 23,000. Due to non-availability of power, poor operation and maintenance and lack of field channels, these public tubewells are

generally under-utilised. Apart from taking various corrective measures, the question of handing over these public tubewells to cooperative societies of users/beneficiaries needs to be explored, taking into account our past experiences including the effectiveness of such schemes for some managerial subsidies for some initial period.

3.11.2 For over a decade, the ultimate groundwater potential for irrigation is estimated at 40 million ha. of gross cropped area, based on availability of 26 million hectare meter (m.ha.m.) of annual replenishable recharge and a crop delta of 0.65 m.ha. Two years ago the Central Ground Water Board made a reassessment and placed the volumetric availability of groundwater for irrigation as 38.30 m.ha.m. and the crop delta at 80 m.ha. which has been designated as tentative and provisional. However, the estimates of ultimate potential for groundwater should clearly distinguish between groundwater as the sole source of irrigation and as a supplementary source in surface irrigated areas. The effect of these on crop intensity, crop patterns and productivity are quite different. In case of supplementary irrigation, by definition, the wells increase gross irrigated area only in so far as they increase the cropping intensity on the area already commanded by the surface water. The latter should not be counted in estimating the area ultimately irrigable from all sources.

Micro Irrigation

3.12.1 Micro irrigation systems such as drip and sprinkler systems have found greater acceptability among the farmers in recent years especially in water scarcity areas. Under Drip irrigation, increases in yield of 60 to 70 per cent on an average have been reported. The input cost of fertilisers, weedicides, pesticides, power and irrigation have been also noted to decrease by as much as 30 per cent. An area of about 16,000 ha has been covered under this system with major concentration in Maharashtra. This is quite negligible compared to the total area under cultivation. Efforts should, therefore, be made towards giving an impetus to these systems in the Eighth Plan. Subsidies may be justified on a temporary basis to popularise these systems.

Energy Conservation

3.13.1 Groundwater irrigation and all surface water lift irrigation need energy. The Working Group on Minor Irrigation has estimated that in 1989-90 the consumption of electric energy was 44,420 million KW and that of diesel 6127 million litres which will cost about Rs.8500 crores at current prices. All the same, studies indicate that most of the pumping systems have a very low overall efficiency of about 30 per cent. Urgent measures are thus needed for improving efficiency through using fuel efficient engines/ motors and minimising frictional losses in suction and delivery systems. Even a 10 per cent improvement in effeciency can result in a saving of about Rs.800 crores per year.

Water Logging and Salinity

3.14.1 The problem of waterlogging and soil salinity/alkalinity was noticed even during the sixties in a few irrigation projects in the country. The problem has grown since then. The National Commission on Agriculture (1976) estimated that about 6 million ha. of land was affected by water logging, 3.4 million ha. due to surface drainage problems, mainly in West Bengal, Orissa, Andhra Pradesh, Uttar Pradesh, Tamil Nadu, Kerala,Gujarat, Punjab and Haryana and 2.6 million ha. due to higher water table, particularly in Punjab, Haryana, U.P, some parts of Rajasthan and Maharasthra. About 4.5 million ha. were estimated to be affected by salinity and 2.5 million ha. by alklinity. Saline soils include 1 million ha. in arid and semi-arid regions of Rajasthan and Gujarat and 1.4 million ha. in black cotton soils. The alkali soil problem is mainly in U.P., Punjab and Haryana. 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 contain water logging/salinity. But there has been no systematic or comprhensive survey so far.

3.14.2 Waterlogging and salinity/alkalinity should be treated as a national menace and tackled at two levels: (1) There should be a systematic survey to assess the extent, nature and location of the water logged and saline/alkaline lands in existing project commands; and (2) a phased programme should be taken up to reclaim such land and restore them to their potential in a cost-effective manner. In respect of new projects, it is imperative to ensure that necessary drainage works are, in fact, made an integral part of the project and coordinated simultane-

ously with the main project works. Simultaneously the planning of water use and management needs ismprovement: In particular, cropping patterns must be planned with due regard to soil and drainage conditons; the potential for conjunctive use of groundwater should be fully exploited and farmers educated to prepare their lands for proper irrigation existing projects.

Flood Control

Incidence of Flooding and Its Impact

3.15.1 An area of 40 million ha., i.e., nearly one-eighth of the country's geographical area, is flood prone. The total area affected annually on an average is about 7.7 million ha. The cropped area affected annually is about 3.5 million ha. and was as high as 10 million ha. in the worst year. On an average as many as 1439 lives are lost every year due to floods. As many as 11,316 lives were lost in 1977 alone. The total loss on account of flood damages to crops, houses, cattle, and public utility was estimated at Rs. 26,800 crores during the period 1953-87. Maximum flood damage was estimated to be of the order or Rs. 4059 crores in 1985.

3.15.2 Between 1954 and 1989 roughly Rs. 2500 crores have been invested in flood control works consisting primarily of construction of new embankments (15600 km.); drainage channels (33100 km); afforestation to save 400 towns; and raising 4700 villages above flood level. Altogether an estimated 135 million ha. have been protected by these measures. The Statewise outlays and expenditure on flood control works during the Seventh Plan and Annual Plans 1990-91 and 1991-92 are given in Statement 3.7.

Flood Forecasting

3.16.1 Flood forecasting and early warning to affected 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 on most of the inter-State rivers in the country. The forecasting network needs to be extended to other flood-prone rivers, ensuring the close coordinaion and effective participation of India Metereology Department, National Remote Sensing Agency, Indian Space Reseach Organisation for utilising the remote sensing technique and telemetry. The existing arrangements, to make the forecasts reach the people in advance of the actual water, need to be strengthened. Currently, 157 flood forecasting stations are in operation and nearly 5500 flood forecasts are issued every year. But many imporant flood prone rivers/tributaries are yet to be covered.

Integrated Approach for Flood Management

3.16.2 Flood management schemes need to be planned within the framework of an integrated long-term Plan and in conjunction, where appropriate, with the plans for other water resource development such as irrigation, power and domestic water supply. This will help increase the effectiveness of flood control schemes and may also significantly improve their economic viability. The Central Government has set up two bodies for comprehensive planning of flood control in the lower Ganges and the Brahmaputra basins. The Ganga Flood Control Commission and the Brahmaputra Board have prepared and submitted their Master Plans and detailed reports for some projects. Both the Plans emphasize the need for integrated catchment area treatment. The concerned authorities will have to ensure timely preparation of detailed catchment area plans and to monitor its implementation. Considerable further work is required in operationalising the Brahmaputra Flood Control Master Plan. Similarly, detailing is required for the Ganga Flood Control Plan. High priority should be given to the development of such operational plans giving detailed designs for specific projects, their sequencing and priorities.

Evaluation of Completed Flood Control Schemes

3.17.1 In the immediate future conventional works, such as embankments, drainage channels, and flood zoning will continue. There is scope to improve the effectiveness of these investments both from the technical and economic viewpoint. For this, it is essential to undertake a critical evaluation of complete flood management projects to assess the actual benefits, in terms of extent and quality of protection offered in relation to assumptions made in the project report as well as the structural behaviour of the works carried out vis-a-vis design assumptions. Such evaluation would also reveal administrative and technical lacunae, the correction of

which should be the first concern of flood management strategy in the Eighth Plan.

3.17.2 The other aspects, quite vital to such a plan of action, are maintenance of such works, their cost effectiveness and continuous R&D effort particularly for improving the cost-effectiveness of designs as these are, at present, prepared mostly on empirical basis. The non-plan resources position for the maintenance of flood control works being what it is now, availability of non-plan resources from the States can not be expected to improve further. This has to be addressed to the State and Central Governments alike. The people's participation in this area could go a long way in alleviating the problem of resources constraint being presently faced by the States.

Brahmaputra Flood Control Board

3.17.3 The Brahmaputra and Barack basin are affected by floods in the country. For preparing a Master Plan for flood control and its implementation, the Govternment of India under an Act of Parliament constituted the Brahmaputra Board in 1980.

Some Broader Issues

National Water Policy

3.18.1 The National Water Policy sets out clearly the fundamental principles which should govern water resource planning. The Policy emphasises that many of our rivers are bountiful and if, properly harnessed, can meet adequately the requirements of the people living in the basin and still have something left over for others less-fortunately placed. There is, therefore, scope for transferring waters from one river basin to another with a view to meeting the requirements of water-short areas. This gives real content to the concept of water as a national resource.

3.18.2 Some limited progress has been made in basin-wise planning. Under the auspices of the Central Water Commission, the Ganga basin water studies organisation has in 1987 prepared a report on "Ganga Basin: Water Resources Development - A Perspective Plan" and the Sone River Commission has completed a comprehensive plan for irrigation and power development in the the Sone basin. The Brahmaputra Board has completed an outline of a Master Plan for utilisation and development of water resources for flood control, power generation and irrigation in the Brahmaputra and Barak basins. During the eighties, a number of State Governments have reportedly prepared Master Plans for water resources development in their regions by river basins.

3.18.3 The National Water Development Agency, set up in 1982, has been doing useful studies on the possibilities of inter-basin transfers. So far, prelimiary studies in respect of 85 river basins have been prepared and circulated among concerned States. While this work is important, differences of opinion on whether and on what scale scope exists in a particular river basin for transfer to others cannot be satisfactorily resolved unless the possibilties of effective and economic use within each basin have been properly investigated. For this reason, the strengthening of the organisation and competence for river basin planning and preparation of master plans for each river basin must be given much greater attention.

Environmental Aspect

3.19.1 Concern over the environmental impact of irrigation and power projects centres around the rapid siltation of reserviors arising from failure to check erosion in catchment areas; submergence of economically and ecologically valuable forests and large-scale displacement of people by the reserviors; dangers of over-exploitation of groundwater and of damage to cultivated land due to indiscrimiante use of irrigation water. There is growing awareness of these problems, thanks largely to the environmental organisations. But a great deal remains to be done to ensure that preventive/corrective action is given sufficient attention in design and implementation of projects. It is necessary to make sure that the crop and water use patterns are planned with due care and after proper investigation so that water logging can be prevented. The appraisal process should also make sure that the project design provides for the disturbance of existing population settlements and forest cover to the minimum possible level within the available alternatives.

3.19.2 There is a need for treatment of various catchments, along with the development of water resources in the country which would bestow benefits, among others, by way of decrease in sedimentation, moderation of floods

and increase in land fertility. A holistic approach should be followed in the formulation of project report. Measures for the catchment area treatment for areas upstream of the dam should also be clearly indicated in the project reports. Committed voluntary agencies/NGOs, with proven track record, may be associated as interface between State Forest Department and local village communities for revival, restoration and development of degraded forests in the catchment area. Forest communities and nearby villages should be motivated to identify themselves with the development and protection of forests from which they derive benefits. Environment monitoring of the catchment area will have to be undertaken hereafter as a sustained activity in the context of basin management.

3.19.3 The project designers should try for rehabilitation of displaced persons in the command area and the beneficiaries must make sacrifice by sparing part of their lands for this purpose. The process of decision-making on these projects also needs to be made more open so that the public at large and, in particular, those directy affected by a project can have access to more information about the assumptions and calculations on which a project is judged by the authorities to be technically and economically viable; satisfy themselves that sufficient safeguards have been built into the project to take reasonable care of those who are affected by the projects and also the potential adverse ecological consequences flowing from the construction of the project and its operation; and give them an opportunity to place their objections and concerns before the concerned authorities along with concrete suggestions for alternative, cheaper/safer ways of achieving the objectives which the project is supposed to serve.

People's Participation

3.20.1 In different socio-political set-ups throughout the world, there has been one common feature in irrigation water management in so far as the active participation of users in the overall management of irrigation water is concerned. Therefore, more than setting targets in terms of numbers, potential, etc., the perspective of irrigation water management in future should be based on the vision of an equitable and sustainable irrigated agriculture with the farmer being central to all considerations. Different types of model of water users' association have been functioning like Pipe Committees in Andhra Pradesh, the PHAD System Model, Mohini Users' Cooperative of Gujarat, Sinchai Panchayat in Madhya Pradesh, Water Users Association in Lower Bhavani Project in Tamil Nadu. According to the survey carried out by the Ministry of Water Resources, a total area of 2.34 lakh ha. is being managed by various water users. The success story in Lower Bhavani Project and Mohini Cooperative System have not led to proliferation of such users' association even in the adjoining areas. Various reasons have been attributed for this, like the quality of servicing of irrigation water, land reforms, economic force and land and administrative backup. The quality of irrigation service is required to be made reliable in terms of quantity space and time. Land reforms, whether by giving right to the tenants or by consolidation of holdings or by some structural measures like land levelling/ shaping, are often the best means for tackling the conflicts arising out of irrigation water use. Another means for generating popular response to the participation of people in water management is by giving incentive in the form of rebate to the water users' association. A legal framework to transfer the management of irrigation to water users may also be considered.

Pricing of Water

3.21.1 It is well known that the water charges collected do not cover even working expenses, not to speak of depreciation charges and contributing even a moderate return on the investments. It is worth noting that just prior to Independence (1945-46) public irrigation schemes showed a surplus of Rs. 7.92 crores after meeting working expenses, interest charges and setting off losses on unproductive works. After independence the position has deteriorated rapidly. According to estimates for 1987-88 the annual loss of irrigation systems amounts to a staggering Rs. 1705 crores. The same estimate shows that the gap between the annual working expense and the gross receipts from water rates stood at over Rs. 400 crores. There has also been reluctance on the part of State Govenments to adjust water rates at least in States with rising costs.

3.21.2 Similar problems exist in the case of groundwater irrigation where water-rates reflect only about 1/6th of economic water rates. Elec-

tric charges for agriculture purposes including pumping of water are also highly subsidised.

3.21.3 This situation, in which the State is investing enormous amounts of public money, largely borrowed, without recouping any part of it, is both inequitable and untenable - inequitable in as much as irrigation increases the productivity of the users and enables them to enjoy, without bearing a reasonable part of the costs, a benefit not available to majority of cultivators and untenable in as much as the failure to recover costs increases the burden on the already severely strained budget and is bound, in course of time to adversely affect the ability of the State to maintain or to continue expanding or even improving irrigation in new areas. The general principle should be to establish an implicit coalition between the interests of the farmer and the irrigation authorities. To the extent it succeeds, it offers subsantial returns to both. In the long run a stable and efficient irrigation system would ensure an adequate water price which the farmer would willingly pay.

3.21.4 In most cases, the irrigation charges are collected by the revenue department in the State, as most other taxes. However, the operation & maintenance is the responsibility of the irrigation department. Therefore, the linkage between the collected water charges and operation & maintenance is not direct since one department collects the charges and another is responsible for managing, maintaining and operating the system. Moreover, it is reported that the farmers do not believe that there is a correlation between water charges and the effectiveness and reliability of the irrigation system. They simply view it as another tax; not a fee for a service.

Science, Technology and Training

3.22.1 The S&T component in water resources sector comprises:

(a) R&D through research projects;

(b) Infrastructure development of research institutions;

(c) Education and induction/in-service training of engineers and scientists (R&D personnel).

3.22.2 The S&T investment in the irrigation sector, during the Seventh Plan was about Rs. 110 crores. This programme has concentrated mostly on academic research rather than on applied work designed to find viable and economical solutions for practical problems such as evolving more economical techniques for design, construction, operation and maintenance of irrigation projects; flood and drought management; devising better,cheaper methods of investigation, data collection and establishment of data base. Also, we need to consider how best the limited resources of men and finance can be utilised in order to find solutions for problems experienced in implementing the development programmes. The practical issues of immediate concern with a significant bearing on the viability of projects, include: critical review of existing design norms on the basis of the evaluation experience of irrigation projects completed so far; alternative techniques for reducing silt load; control of evaporation and seepage losses; economic techniques for lining. Another point is to be noted is that the S&T input, relevant to minor surface water irrigation and groundwater development, has been somewhat on the lower side. Greater attention needs to be paid to hydrological data observation for small catchments, standardisation of designs for small earthen dams, surplusing arrangments to dispose of excess flood water and better distribution systems. In the case of groundwater, research is needed on various techniques for groundwater recharge, reliable assessment of various parameters related to groundwater recharge and pumpage; and improving the efficiency of pumpsets. Use of remote sensing, more systematic sample surveys, simpler techniques of measurement capable of being used by personnel without sophisticated skills and ways of involving local educational/research institutes in making the relevant observations are all possibilities to be explored.

3.22.3 The R&D efforts should be a continuous activity. It should not necessarily be confined to the engineering aspect, but should be compatible to social, cultural and economic needs associated with irrigated agriculture. Greater involvement of various R&D institutions, universities, etc. should be consciously promoted. In fact, a symbiotic relation between such institutions and the Government agencies responsible for planning and implementation of water re-

sources projects must be established. In respect of flood control, many States, have State- sponsored river research institutes, but barring a few, these do not contribute much to R&D efforts on a continuing basis. More often such institutes are manned by people of irrigation cadre on a stop-gap arrangement without much motivation and desired expertise.

3.22.4 Another area needing attention is the upgradation of techniques for estimation of parameters, analysis of their relationship and availing of the developments in modelling techniques relevant for systems design/operation. Many issues are involved namely, special training for personnel already in position; encouragement of independent consultancy organisations; fostering of and support for incorprating all these elements in the basic training in engineering colleges/universities, IITs, IIMs and agricultual universities; actively involving the university/ research institutes both in research relevant to better water resource planning and in design of specific projects. A comprehensive review of research/training, both in Government and outside, in the fields related to water resource development will be undertaken in the Eighth Plan to work out a proper programme.

Need for Improvement of Data Base

3.23.1 The lacunae in the data relevant to proper planning of projects, monitoring of the use of irrigation facilities and assessment of their impact have already been indicated. We need to have institutionalised arrangements to compile and update on a continuing basis the data, by basins and sub-basins, on surface and groundwater availability, the quantum used for various purposes and by sources; the spread in conjunctive use and other relevant aspect. This is an essential prerequisite for preparation of integrated long term basin-wise plans for water resource development.

3.23.2 There is also need for a thorough recasting, both at the conceptual and operational level, of statistics on irrigated area and productivity. Each system needs to be encouraged, and helped to compile the detailed data relevant for its management. At the State and national levels, we need to move away from the present patwari based system, which in any case is breaking down. In the case of major and medium systems, we could collate the data from each system but should take care to get not only data on area under irrigation and total area under different crops but also on the quantum of water delivered by season and the number of waterings. In the case of minor works, periodic sample surveys using the frame provided by the Minor Irrigation Census could give more reliable estimates of the changes in the number of different works and update the norms of area actually irrigated by them. Remote sensing could also give an adequate and objective estimate of the area actually irrigated by all surface irrigation projects by season. Both these approaches should be pursued seriously in the Eighth Plan.

3.23.3 The present arrangements for collation of such data and keeping them in an retrieveable form for users need to be improved. Computerisation is helpful, even necessary, but the more important problem is to induce the universities/research institutes who devote so much time and resources and take such pains in collecting data, to match it with systematic analysis of the data.

3.23.4 It is also essential to organise on a regular basis post-evaluation studies for major and medium irrigation projects, compare the actual achievements, in terms of costs, time schedules of construction as well as of water availability, crop patterns, water consumption, irrigation efficiency and yield with the design parameters and systematically analyse the factors contributing to the divergence. Revival of the procedure of preparing completion reports for all major and at least a sample of medium projects deserves serious consideration. Such evaluation studies can serve as a vital input to improve our designs for making them more cost effective and functional.

3.23.5 The present methods of assessing flood damages also need improvement. The available data do not provide a sufficient base for determining the benefit-cost ratio of individual schemes or group of schemes. The Rashtriya Barh Ayog recommended that the State Governments should carry out realistic evaluation of the flood damage, river-basinwise under three separately identified categories, namely, (i) unprotected areas, (ii) protected areas due to failure of protective works and (iii) areas between the embankment and the river.

3.23.5 There are at present different departments in the States and different Ministries in the Centre entursted with the collection of flood damage data. This creates some confusion as well as hinders timely collection of flood damage data. The improvement of the present techniques of field collection, assessment, recording and reporting of flood damage statistics is essential to strengthen the base for planning of flood control strategy and priorities.

Strategy for the Eighth Plan

3.24.1 The main elements of the strategy for the Eighth Plan are as follows:-

Major & Medium Irrigation

i) Completion of on-going projects with a strict prioritisation will be the first charge on funds under major and medium irrigation sector. No new projects will be included unless the needs of the on-going projects are fully met, and if at all done, these should be restricted to medium schemes benefitting tribal and draught prone areas and should be designed on the basis of volumetric supply of irrigation water. In case of on-going projects in early stages of construction and in case of new projects, the State Governments will be required to prepare additional plan for rehabilitation and catchment treatment works, a detailed programme of OFD works and a water management plan based on detailed soil surveys and land use capability. The procedure for clearance will be based on the criteria for approval as recommended by Nitin Desai Committee.

ii) Greater user participation in major and medium irrigation projects will be encouraged both at the system level and at local level. This will be extended further for new projects where, even at the planning stage the user's participation will be achieved. Local initiatives by users or non-government organisations to set up users' organisation to manage water below Government outlets will be actively supported by the Government. Greater intraction with and involvement of experts in relevant technical faculties of universities, research institutes in research, design and evaluation of projects will be encouraged.

iii) Besides the emphasis on a good data base and its processing, special post-evaluation studies for periodic monitoring of actual crop patterns, water-use pattern and productivity in all major irrigation commands and in a few selected medium irrigation commands will be taken up.

iv) The CAD programme in each State will be reviewed to make it a more effective instrument for ensuring speedy transit to irrigated agriculture and optimum use of water.

v) There will be a substantial increase in the scale of programmes for modernisation and improvement of older irrigation systems including minor irrigation to cover as large area as possible during Eighth Plan. The experience of National Water Management Projects will be reviewed so that new projects are better designed and made more cost effective.

Minor Irrigation (Surface water)

vi) Repair and improvement of minor irrigation tanks as well as the development of new works as part of the integrated micro-development projects will be encouraged. These are expected to constitute an important part of the employment-oriented local development works to be implemented by State Government above 100 ha. and by Panchayati Raj below 100 ha. The possibilities of integrating existing or new local storages with the operation of canals fed by large storage reservoirs will also be explored.

vii) Priority should be given for speedy completion of large number of ongoing surface water minor irrigation schemes.

viii) Minor surface water lift irrigation schemes both individually and community owned shall be encouraged where water and energy is available.

ix) In large minor irrigation schemes above 500 ha. or in a group of schemes to make a contiguous block of 500 ha. and above, the CAD concept will also be introduced.

Minor Irrigation (Groundwater)

x) The basic data on the number of wells of different kinds and area irrigated need to be verified and periodically updated through scientific sample surveys using the information from the Minor Irrigation Census as the bench-mark. There should also be periodic sample verification by the funding agencies to ascertain the extent of non-use of wells, unit costs of various types of groundwater development works and the norms of irrigated area per unit work in different parts of the country.

xi) Over exploitation of groundwater should be discouraged by (i) legislative measures and their implementation, (ii) suitable water and power tariffs, and (iii) directing the loaning programmes to effect proper spacing of tubewells on the basis of studies on geological and other factors affecting ground water recharge. In already affected areas, recharge schemes like percolation tanks, monsoon canals, etc. will be implemented.

xii) In groundwater and lift irrigation, adequate and necessary measures should be taken to increase the overall efficiency of pumping system so as to conserve energy. At the same time use of non-conventional source of energy for pumping like Solar-Wind-Water power will be encouraged.

xiii) In water scarce and drought-prone areas, the installation of sprinkler/drip irrigation system to save water will be given due priority.

xiv) Necessary steps to improve the utilisation of public tubewells and their rehabilitation will be taken alongwith entrusting O&M to beneficiary farmers.

xv) Conjunctive use of surface and ground water will be emphasised, especially in those irrigation commands with large scale water-logging.

Flood Control and Drainage

xvi) There should be a systematic survey to assess the extent, nature and location of water logged, saline/alkaline lands in existing irrigation project commands. Reclamation of such land covering and restoring them to their potential productivity in a cost- effective manner will be a thrust area.

xvii) The coverage of flood forecasting and warning system will be extended to more areas by both State and Central Governments.

xviii)Flood control Master Plans for various basins will be prepared by the State and Central Governments. The Master Plans already prepared for some river basins will need to be detailed further and, if necessary after updating.

xix) State Governments should undertake post-facto evaluation of flood control works on a large scale. On the basis of these evaluation studies, necessary corrective actions on administrative and technical lacunae will be taken.

General

xx) Maintenance of existing irrigation and flood control works should be given due importance by the States. The people's participation in this area will be encouraged.

xxi) A major effort at improving the quality of irrigation statistics is imperative. Regular sample surveys of the command area of selected projects to determine irrigated areas, crop patterns, yields and water use will be organised. A programme for systematic use of remote sensing to get objective estimates of irrigated area by season, for areas under command of surface systems will be implemented intially on a selective basis, to be made comprehensive and regular in due course.

xxii) Training and research programmes will be strengthened. The substantive content of the programmes will be decided in the light

of an independent review of the existing institutes and their working, the facilties available outside Government and ways in which these facilties can be better utilised. Greater emphasis will be laid on helping universities/research institutes outside the Government to develop expertise and knowledge in water-related fields and to devise ways in which there is greater interaction between them and Government agencies, besides greater involvement of non-Government experts in planning, design and evaluation of water control programmes.

xxiii) Concentrated efforts will be made to ensure that the States strengthen the organisation and competence for river basin planning and prepare Master Plan for each river basin.

xxiv) The process of decision-making on irrigation projects need to be made more open so that the public at large, particularly those directly involved, can have access to more information about the assumptions and the calculations on which a project is judged by the authorities to be technically and economically viable.

xxv) At the national level, there is a need for removing inter-regional disparities to the extent possible in order to give a sense of equity on macro level. At the micro level of an irrigation project the thrust will be towards an equitable water supply to be engineered more by systemic reforms in the form of appropriate water pricing and by forming cooperatives for group use of water.

xxvi) As part of the continued stress on R&D activity, greater attention needs to be paid to hydrological data observation, standardisation of designs of small dams, arrangement to dispose of excess flood water and better water management projects. All-out efforts will be made for increasing the remote sensing application in water resources sector without duplication of efforts and investment, particularly in the thrust areas like flood mapping, ground water monitoring, irrigation water manangement, land use and land capability studies etc. besides strengthening the in-house capability of interpretation of remote sensing data.

xxvii) A symbiotic relation between the R&D efforts of the Government, the universities and research institution will be aimed at.

Eighth Five Year Plan

3.25.1 The Eighth Five Year Plan outlay for Irrigation, CAD and Flood Control Sector as a whole is Rs. 32525.29 crores. The Statewise and sub-sectorwise break-up is given at Statement 3.8. The targets of physical benefits are as given in Statement 3.3 for major and medium irrigation, and in Statement 3.6 for minor irrigation.

Statement - 3.1

Major & Medium Irrigation - Outlays and Expenditure

(Rs. in Lakhs)

S.No	State/U.T.	Seventh Plan		1990-91		1991-92	
		Plan Provision	Actual Expdr.	Plan Provision	Actual Expdr.	Plan Provision	Anticipate Expdr.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
States:							
1.	Andhra Pradesh	118230.00	127237.00	25700.00	26236.00	23645.00	28811.00
2.	Arunachal Pradesh	100.00	113.00	50.00	445.00	100.00	100.00
3.	Assam	13700.00	11606.00	2625.00	2242.00	3943.00	3943.00
4.	Bihar	128500.00	133254.00	29892.00	25698.00	44787.00	13000.00
5.	Goa	5400.00	6690.00	2370.00	2319.00	2763.00	2763.00
6.	Gujarat	146909.00	99849.00	34490.00	37799.00	39600.00	40410.00
7.	Haryana	41850.00	50201.00	7200.00	6843.00	8670.00	7570.00
8.	Himachal Pradesh	1350.00	914.00	270.00	1284.00	307.00	307.00
9.	J & K	5286.00	7155.00	1554.00	1157.00	1620.00	1729.00
10.	Karnataka	52300.00	52742.00	16040.00	16129.00	19130.00	19000.00
11.	Kerala	28000.00	30190.00	6230.00	6257.24	6751.00	6751.00
12.	Madhya Pradesh	137592.00	115543.00	28492.00	22794.00	38006.00	28260.00
13.	Maharastra	132000.00	156186.73	31000.00	35266.01	25000.00	37390.00
14.	Manipur	6000.00	7376.00	2800.00	2769.60	3400.00	3400.00
15.	Meghalaya	55.00	21.00	120.00	59.00	52.00	46.00
16.	Mizoram	50.00	41.90	20.00	40.0	10.0	10.0
17.	Nagaland	-	-	30.0	30.0	25.00	25.00
18.	Orissa	55000.00	59147.00	18744.00	15545.00	25200.00	24420.00
19.	Punjab	27078.00	22023.00	4276.00	2288.00	4071.00	4071.00
20.	Rajasthan	63546.00	47061.00	10620.00	11011.00	13950.00	13850.00
21.	Sikkim	600.00	-	-	-	-	-
22.	Tamil Nadu	21200.00	19536.00	3826.00	4359.00	4943.00	5028.00
23.	Tripura	2700.00	3087.00	600.00	721.93	840.00	840.00
24.	Uttar Pradesh	142000.00	124501.00	30405.00	30044.00	30508.00	27508.00
25.	West Bengal	20800.00	23437.00	5500.00	5100.00	5900.00	5900.00
Total States		1150246.00	1097911.63	262854.00	256436.78	303221.00	275132.00
Union Territories:							
26.	A & N Islands		-	-	-	-	-
27.	Chandigarh		-	-	-	-	-
28.	D & N Haveli	200.00	221.00	-	50.00	240.00	240.00
29.	Damman & Diu		303.00	-	-	12.00	12.00
30.	Delhi	10.00	5.09	-	-	-	-
31.	Lakhdweep		-	-	-	-	-
32.	Pondicherry	200.00	164.79	46.00	20.00	27.00	60.00
Total UT's		410.00	693.88	46.00	70.00	279.00	312.00

Statement - 3.2

List of on going major & medium Irrigation Projects in Eighth Five Year Plan(1992-97) along with their cost, spillover cost, ultimate benefits and spill over benefits in Eighth Plan

(Rs. Crores/000 ha.)

Sl.No	Name of the Project	Latest Cost	Spillover Cost to 8th Plan	Uttimate irrgn.Pot.	Likely Spillover benefit to 8th Plan	
					Pot.	Utl.
1.	2.	3.	4.	5.	6.	7
	Andhra Pradesh					
	Major Projects					
1.	Sriram Sagar	1027.00	362.53	411.00	146.06	172.23
2.	Srisailam RBC	544.50	439.89	76.89	75.89	76.89
3.	Nagarjun Sagar	778.00	76.48	895.28	89.34	140.04
4.	Godavari Barrage	153.00	13.64	Stabilisation only		
5.	Singur	130.42	14.57	Water Supply Scheme		
6.	Yelleru Reservoir	261.14	36.20	- do -		
7.	Somasila	215.00	64.51	38.48	32.76	35.27
8.	T.B.P.H.L.C.Stage II	193.00	80.45	89.62	40.97	59.79
9.	Vamsadhara Stage I	73.85	24.51	20.13	4.21	4.36
10.	Nizam Sagar	30.16	11.38		Stabilisation only	
11.	Jurala	275.00	143.21	87.70	86.20	87.70
12.	Pulivendala Br. Canal	26.78	12.57	24.28	6.77	8.27
13.	Telegu Ganga	1100.00	688.48	233.00	233.00	233.00
14.	Srisailam LBC	480.00	425.06	121.41	121.41	121.41
15.	Vamsadhara St. II	387.00	381.70	23.71	23.71	23.71
	Total (Major)	5674.85	2775.18	2021.50	860.32	962.67
	Medium Projects (19 Nos.)	461.22	254.31	146.89	111.01	120.61
	Total **Andhra Pradesh**	6136.07	3029.49	2168.39	971.33	1083.28

Statement-3.2 Contd. **(Rs. Crores/000 ha.)**

1.	2.	3.	4.	5.	6.	7.
	Assam					
	Major Projects					
1.	Dhansiri	100.53	15.26	69.00	57.313	57.313
2.	Champamati	52.56	21.98	24.99	17.607	17.607
	Total (Major)	153.09	37.24	93.99	74.920	74.920
	Medium Schemes					
	(12 Nos)	186.13	71.07	135.84	35.00	77.00
	Total Assam	339.22	108.31	229.83	109.92	151.92
	Bihar					
	Major Projects					
1.	Subernarekha Proj.	1428.89	880.54	209.30	195.00	209.00
2.	Bagmati Proj.	314.67	279.09	101.60	-	-
3.	Western Kosi Canal	357.44	160.48	289.30	227.00	255.80
4.	North Koel Reservoir	475.00	132.17	131.00	52.60	93.00
5.	Durgawati Reservoir	147.40	76.01	63.40	50.40	63.40
6.	Barnar Reservoir	102.38	74.35	22.40	22.40	22.40
7.	Uppar Kiul Reservoir	63.67	2.49	14.80	1.80	1.80
8.	Konar Diversion	225.40	153.92	62.80	62.80	62.80
9.	Tilaiya Diversion	121.33	109.34	48.60	48.60	48.60
10.	Bateshwarsthanpump Phase-I	136.67	119.58	25.40	25.40	25.40
	Bansagar Dam State Share	140.00	85.04	-	-	-
11.	Ajoy Barrage Sikatia	133.11	68.27	40.47	40.47	40.47
12.	Gandak Phase II	204.00	165.75	70.00	45.50	58.00
13.	Kosi Phase II	52.00	32.13	-	-	-
14.	Auranga Reservoir	257.00	243.13	55.40	55.40	55.40
15.	Punasi Reservoir	145.00	112.70	24.00	24.00	24.00
	Total(Major)	4303.96	2695.02	1158.47	851.37	960.37
	Medium Projects (29 Nos)	740.23	386.19	176.40	126.50	151.30
	Total Bihar	5044.19	3081.21	1334.87	977.87	1111.67

Statement-3.2 Contd. **(Rs. Crores/000 ha.)**

1.	2.	3.	4.	5.	6.	7.
	Goa					
	Major Projects	97.10	24.88	21.24	13.00	13.10
	Tillari Salauli	163.33	124.43	24.82	24.82	24.82
	Total(Major)	260.43	149.31	46.06	37.82	37.92
	Medium Projects					
	2 Nos.	62.33	37.82	15.82	11.20	11.20
	Total Goa	322.76	187.13	61.88	49.02	49.12
	Gujarat					
	Major Projects					
1.	Karjan	228.98	39.22	77.56	42.52	77.56
2.	Prevention of salinity	172.12	90.83	18.27	5.77	18.27
3.	Machhu-II	36.57	3.50	9.99	4.49	9.99
4.	Machhu-I (Dame Safety)	2.69	1.09	-	-	-
5.	Sabarmati	110.71	5.00	56.68	3.68	56.68
6.	Damnganga	204.43	28.10	51.56	9.62	51.56
7.	Bajajsagar	N.A.	N.A.	N.A.	N.A.	N.A.
8.	Jhankhari	61.52	58.26	24.00	24.00	24.00
9.	Ukai-Kakrapar	65.43	8.95	3.09	0.09	3.09
10.	Sardar Sarovar Project	10000.00	8706.17	1800.00	1800.00	1800.00
	Total (Major)	10882.45	8941.12	2041.15	1890.17	2041.15
	Medium Projects					
	(47 Nos.)	1018.41	182.41	314.94	93.66	314.94
	Total Gujarat	11900.86	9123.53	2356.09	1983.83	2356.09

Statement-3.2 Contd. **(Rs. Crores/000 ha.)**

1.	2.	3.	4.	5.	6.	7.
	Haryana					
	Major Projects					
1.	Modernisation of esxisting channel Ph II & III	490.46	280.73	140.00	128.40	128.40
2.	Installation of 324 Sprinklers	28.95	25.04	14.00	12.00	12.00
3.	Construction of New Tajewala	64.35	42.38	-	-	-
4.	J.L.N. Lift Irrgn.	164.67	3.61	164.00	49.00	124.00
5.	Gurgaon Canal Proj.	40.41	12.47	81.00	20.00	64.00
6.	Const. of SYL Proj.	559.00	110.06	-	-	-
7.	Improvement of existing channels	84.49	66.11	96.00	90.00	90.00
8.	Nagal Lift Inigation	8.35	1.99	14.00	2.00	5.00
	Total (Major)	1440.68	542.39	509.00	301.40	423.40
	Medium Projects	-	-	-	-	-
	Total Haryana	1440.68	542.39	509.00	301.40	423.40
	Himachal Pradesh					
	Major Projects					
1.	Shahnahar Project	93.20	90.00	-	-	-
	Medium Projects (2 Nos)	19.50	8.28	3.33	0.92	2.12
	Total Himachal Pradesh	112.70	98.28	3.33	0.92	2.12
	Jammu & Kashmir					
	Major Projects					
1.	Ravi Tawi Irrgn. Canal Project	173.41	77.34	55.00	15.00	18.00
	Medium Projects (16 Nos.)	200.25	125.45	54.11	40.29	43.97
	Total Jammu & Kashmir	373.66	202.79	109.11	55.29	61.97

Statement-3.2 Contd. (Rs. Crores/000 ha.)

1.	2.	3.	4.	5.	6.	7.
	Karnataka					
	Major Projects					
1.	Upper Krishna	2998.00	2521.85	424.93	294.20	342.53
2.	Bhadra	80.14	10.67	105.57	-	-
3.	Tungabhadra LBC & Dam	112.55	4.99	244.38	2.17	29.48
	Tgabhadra Rt bank HLC	33.18	11.66	80.91	12.34	12.65
4.	Malaprava	383.22	114.14	218.19	62.16	84.93
5.	Karanja	109.94	37.85	35.61	30.36	35.61
6.	Benniethore	79.06	56.50	20.24	20.24	20.24
7.	Ghataprabha St.3	540.57	411.12	178.06	152.58	166.40
8.	Dudha Ganga	37.60	30.90	19.67	19.67	19.67
	Total(Major)	4374.26	3199.68	1327.56	299.52	368.98
	Medium Projects					
	(8 Nos)	253.51	163.21	48.07	42.23	41.53
	Total Karnataka	4627.77	3362.89	1375.63	341.75	410.51
	Kerala					
	Major Projects					
	1.Pamba	61.25	0.80	49.46	-	-
	2.Kuttiadi	56.50	3.31	35.85	-	-
	3.Chimoni Mopli	36.66	1.96	26.00	13.00	13.00
	4.Kaihirpuzha	66.74	9.62	21.85	6.37	6.37
	5.Pazhasi	89.12	12.66	23.05	11.55	11.55
	6.Kallada	457.80	99.79	92.80	21.53	21.53
	7.Idamalayar	67.40	41.05	43.19	43.19	43.19
	8.Muvattupuzha	89.25	37.94	34.74	34.74	34.74
	Total (Major)	924.72	207.13	326.94	130.38	130.38
	Medium Projects					
	(4 Nos)	148.74	118.55	46.62	46.62	46.62
	Total Kerala	1073.46	325.68	373.56	177.00	177.00

Statement-3.2 Contd. **(Rs. Crores/000 ha.)**

1.	2.	3.	4.	5.	6.	7.
	Madhya Pradesh					
	Major Projects					
1.	Hasdeo Bango H692.88	692.88	303.51	392.00	293.00	322.00
2.	Hanadi Reservoir	961.60	681.53	304.90	205.50	239.90
3.	Bargi Unit-I	191.31	34.82	219.80	194.80	204.80
	Unit-II	375.03	261.42	-	-	-
4.	Upper Wainganga	149.88	29.59	103.90	35.20	85.90
5.	Thanwar	24.40	5.04	18.20	1.10	12.80
6.	Kolar	157.40	31.29	60.90	44.40	55.90
7.	Pairi	33.54	13.84	72.80	27.10	37.30
8.	Jonk	46.38	23.85	14.50	8.90	10.50
9.	Kodar	38.28	14.92	23.50	2.90	6.50
10.	Sindh Phase-I	35.52	6.87	37.60	2.40	30.20
11.	Halali	20.57	2.44	37.60	1.60	14.60
12.	Tawa	128.90	4.79	333.00	26.60	183.00
13.	Barna	24.70	4.61	60.50	-NIL-	24.50
14.	Bhandeer Canal	13.01	7.45	44.50	-NIL-	12.50
15.	Bansagar					
	Unit-I	448.03	194.54)	249.00	249.00	249.00
	Unit-II	403.28	329.52)	-	-	-
	Rajghat					
	Unit-I	133.50	61.82)	116.60	116.60	116.60
	Unit-II	287.38	235.43)	-	-	-
16.	Bariarpur L.B.C.	84.60	50.04	43.80	43.80	43.80
17.	Urmil	20.70	10.57	7.70	7.70	7.70
	Bawanthadi	89.78	76.93	29.40	29.40	29.40
18.	Mahi	99.50	74.13	26.40	26.40	26.40
19.	Sindh Phase-II	607.67	567.23	120.00	120.00	120.00
20.	Rangwan .H.L.C	8.83	0.10	17.10	-nil-	10.70
21.	Sukta	13.40	0.08	18.60	-nil-	11.10
	Total(Major)	4947.18	3026.36	2352.30	1436.40	1855.10
	Medium Projects					
	(50 Nos.)	924.12	377.80	303.00	191.00	225.60
	Total Madhya Pradesh	5871.30	3404.16	2655.30	1627.40	2080.70

Statement-3.2 Contd. **(Rs. Crores/000 ha.)**

1.	2.	3.	4.	5.	6.	7.
	Maharashtra					
	Major Projects					
1.	Jayakawadi ST.I&II	650.46	143.00	135.57	68.80	113.18
2.	Surya	155.99	66.54	27.19	5.07	26.47
3.	Bhatsa	83.41	45.64	42.55	31.27	41.66
4.	Upper Tapi	101.32	20.95	55.14	7.88	52.29
5.	Kukadi	543.94	289.16	156.27	98.91	126.46
6.	Bhima	571.39	236.77	162.50	51.69	108.25
7.	Khadakwasla	202.50	67.58	62.15	19.79	37.59
8.	Krishna	224.14	75.00	113.26	34.68	89.16
9.	Lower Tirna	122.94	50.94	20.26	14.83	20.26
10.	Upper Penganga	424.16	206.05	111.53	71.16	102.07
11.	Lower Unnal	95.34	44.57	20.78	18.29	20.78
12.	Arwak	29.46	14.36	10.32	10.32	10.32
13.	Upper Godawari	132.99	71.98	67.29	8.04	34.14
14.	Arnow	19	290.23	113.92	112.12	104.26
15.	Dudhganga	254.41	158.72	65.14	64.34	61.47
16.	Vishnupuri	157.75	75.00	35.73	26.19	34.61
17.	Upper Wardha	356.56	182.28	80.25	78.65	80.25
18.	Arunawati	89.57	40.88	30.87	30.87	30.87
19.	Tillari	43.32	20.45	7.01	7.01	7.01
20.	Chaskman	177.79	79.11	38.62	38.62	38.62
21.	Wan	70.80	45.93	17.56	17.56	17.56
22.	Waghur	69.36	62.69	23.58	23.58	23.58
23.	Krishna Koyna L.I.	293.27	256.45	36.31	36.31	36.31
24.	Nandur madhmeshwar	100.20	90.14	45.12	45.12	45.12
25.	Bawanthadi	81.81	69.27	25.31	25.31	25.31
26.	Talamba	106.71	99.91	16.15	16.15	16.15
27.	Punad	49.03	46.62	16.86	16.86	16.86
28.	Upper Pravara	182.55	172.32	66.90	66.90	66.90
29.	Tultuli	51.93	48.37	30.39	30.39	30.39
30.	Human	93.04	88.36	36.22	36.22	36.22
31.	Nira Deodhar	103.95	103.70	31.21	31.21	31.21
32.	Goshikhurd	542.90	523.00	190.00	190.00	190.00
33.	Lendi	71.38	68.70	19.58	19.58	19.58
34.	Lower Wardha	117.18	111.89	52.98	52.98	52.98
35.	Lower Dudhana	85.07	84.30	29.80	29.80	29.80

Statement-3.2 Contd. **(Rs. Crores/000 ha.)**

1.	2.	3.	4.	5.	6.	7.
36.	Lower Penganga	232.81	232.50	135.57	135.57	135.57
37.	Nakolegaon	22.89	22.89	13.26	13.26	13.26
38.	Poshir	12.94	12.94	11.36	11.36	11.36
	Total(Major)	7162.45	4319.19	2154.51	1596.69	1937.38
	Medium Projects (73 Nos.)	1053.46	601.26	337.31	265.33	327.36
	Total Maharashtra	8215.9	4920.45	2491.82	1862.02	2265.24
	Manipur					
	Major projects					
1.	Singda	34.30	2.52	4.00	4.00	4.00
2.	Thoubal	150.00	71.57	29.67	25.67	25.97
3.	Khuga	67.70	33.74	15.00	15.00	15.00
	Total(Major)	252.00	107.83	48.67	44.67	44.97
	Medium Scheme			---------- Nil ----------		
	Total Manipur	252.00	107.83	48.67	44.67	44.97
	Meghalaya					
	Major Project			---------- Nil ----------		
	Medium					
1.	Rongaivalley Irrgn. Project	16.30	15.03	3.49	3.49	3.49
	Total Meghalaya	16.30	15.03	3.49	3.49	3.49
	Orissa					
	Major Projects					
1.	Upper Indravati Dam	139.11	40.92	No Benefit	-	-
2.	Upper Indravati Irrgn	338.17	256.34	218.64	214.64	214.64
3.	Upper Kolab Irrgn	160.00.	75.86	88.76	64.51	76.76
4.	Subarna-rekha	1097.00	894.94	176.50	176.50	176.50
5.	Rengali Irrigation	1475.00	1327.87	423.60	423.60	423.60
6.	Ong Dam	102.00	99.50	34.50	34.50	34.50
7.	Lower Indra	114.52	113.44	32.89	32.89	32.89
8.	Knupur	268.02	264.29	41.40	41.40	41.40
9.	IB	228.46	227.99	152.60	152.60	152.60
10.	Lower Suktel	74.76	74.23	34.05	34.05	34.05
11.	Bagh Barrage	28.77	28.32	12.42	12.42	12.42

Statement-3.2 Contd. (Rs. Crores/000 ha.)

1.	2.	3.	4.	5.	6.	7.
12.	Mahanandi chitrotpala	93.07	87.26	35.95	35.95	35.95
13.	Samakoi	82.35	80.86	32.67	32.67	32.67
	Total (Major)	4201.23	3571.82	1283.94	1255.73	1267.98
	Medium Projects (10 Nos.)	391.34	205.47	93.86	96.86	96.86
	Total Orissa	4592.57	3777.25	1380.80	1349.59	1364.84
	Punjab					
	Major Projects					
1.	Lining of Channels Ph. II	100.00	84.28	53.50	42.00	42.00
2.	Rehabilitation & Improvement of Canal regulation structure in canal system (Gates and Gearing)	24.82	23.04	25.00	24.70	24.70
	Extention and Improvement of Shah nahar Canal system	102.75	36.81	25.36	8.65	22.86
3.	Extention of Non-perennial Irrigation in UBDT Tract	11.24	1.35	233.00	0.01	2.01
4.	Lining of channels Ph I	190.92	5.00	86.89	1.50	8.19
5.	Remodelling of channels utilisation of surplus Ravi Beas waters	19.05	2.94	418.00	89.90	102.11
	SYL main canal	88.17	23.84	-	-	-
6.	SYL providing irrigation facilities to Pb.area	142.29	96.36	130.00	127.50	130.00
7.	Raising lining of BML for providing area board	0.82	0.62	-	-	-
	Total(Major)	680.06	274.24	971.75	294.26	331.87
	Medium Projects (1 No.)	2.00	1.75	-	-	-
	Total Punjab	682.06	275.99	971.75	294.26	331.87

Statement-3.2 Contd. **(Rs. Crores/000 ha.)**

1.	2.	3.	4.	5.	6.	7.
	Rajasthan					
	Major Projects					
1.	Indira Gandhi Nahar Stage-I	255.00	12.09		Show under Stage-II	
2.	Chambal Tech. Committeee	.10.47	2.32	213.00	-Nil-	0.54
3.	Rana Pratap Sagar	20.18	1.12	0.00	0.00	0.00
4.	Jawar Sagar	15.68	0.57	0.00	0.00	0.00
5.	Raising Of Kota Barrage	0.55	0.02	-	-	-
6.	Jakham	84.80	18.01	23.50	2.08	9.46
	Gurgaon Canal	33.16	12.69	28.20	2.26	17.03
7.	Mahi Bajaj Sagar Unit I & II	429.20	199.52	128.60	86.32	106.22
8.	Indira Gandhi Nahar Stage-II	1430.00	868.45	1386.00	576.73	762.55
9.	Okhala Barrage	2.27	2.07	0.00	0.00	0.00
10.	Narmada	548.00	544.13	73.16	73.16	73.16
11.	Sidmukh & Nohar	197.00	190.58	67.34	67.34	67.34
12.	Bisalpur Stage-I	179.68	147.20	60.00	60.00	60.00
	Total(Major)	3205.99	1998.77	1979.80	867.89	1096.30
	Medium Schemes					
	(9 Nos.)	323.18	137.08	83.44	44.84	55.07
	Total Rajasthan	3529.17	2135.85	2063.24	912.73	1151.37
	Tamil Nadu					
	Major Projects					
1.	Modernisation Of Periyar Vaigai Stage II	124.72	29.23	Stabilisation only		
2.	Perambikulamaliyar	94.51	5.67	172.08	7.00	6.84
	Total (Major)	219.23	34.50	172.08	7.00	6.84
	Medium Projects					
	(5 Nos.)	67.24	2.25	14.63	3.30	3.73
	Total Tamil Nadu	286.47	36.75	186.71	10.30	10.57
	Tripura					
	Major Project				---------- Nil ----------	
	Medium Schemes(3 NOs.)	105.59	53.17	25.52	23.52	23.52
	Total Tripura	105.59	53.17	25.52	23.52	23.52

Statement-3.2 Contd. **(Rs. Crores/000 ha.)**

1.	2.	3.	4.	5.	6.	7.
	Uttar Pradesh					
	Major Projects					
1.	Upper Ganga irrigation mod. project					
(i)	Uppa Ganga Canal(Ist time slice)	510.00	215.33	9.00	9.00	9.00
(ii)	Madhya Ganga Canal(Stage I)	408.06	132.82	178.00	77.02	163.77
(iii)	Upper Ganga irrigation mod. project (IInd time slice)	513.00	513.00	15.00	15.00	15.00
2.	Rajghat Dam (ID Share)	106.88	14.03	-	-	-
3.	Rajghat Canal (UP)	126.44	83.08	109.05	109.05	109.05
4.	Urmil Dam	26.03	3.43	4.77	4.77	4.77
	Bansagar Dam (UP share)	112.00	57.14	-	-	-
5.	Bnsagar Canal	218.19	215.04	129.05	129.05	129.05
6.	Western Ganga Canal	158.77	26.00	-	-	-
7.	Sarda Sahayak	1064.60	325.30	1582.00	459.65	881.82
8.	Tehri Dam (I.D.share)	311.81	155.79	-	-	-
9.	Lakhwarvyasi Dam (I.D. share)	319.00	194.18	-	-	-
10.	Jamrani Dam	194.00	174.44	60.60	39.60	45.60
11.	I/C of Narainpur PC	54.59	8.00	73.14	5.14	35.27
12.	Maudha Dam	76.21	15.41	28.24	27.24	28.24
13.	Bewar Feeder	29.74	3.54	9.80	9.80	9.80
14.	I/C of Zamania PC	39.90	1.63	25.72	5.75	8.57
15.	Raising of Meja Dam	45.02	8.00	17.88	-	17.02
	Remod of Bhimgoda head works	35.96	1.55	-	-	-
16.	Eastern Ganga Canal	266.55	120.76	105.00	79.33	102.00
17.	Sarju Nahar Pariyojana	1256.00	916.10	1404.00	1346.00	1398.88
18.	Sone Pump Canal	72.55	33.14	42.90	22.90	40.35
19.	Kanhar irrigation	150.23	116.23	33.13	33.13	33.13
	Total (Major)	6095.53	3333.94	3827.28	2372.18	3031.32
	Medium Schemes					
	(6 Nos)	112.49	36.72	30.36	8.60	27.93
	Total Uttar Pradesh	6208.02	3370.66	3857.64	2380.78	3059.25

Statement-3.2 Contd. **(Rs. Crores/000 ha.)**

1.	2.	3.	4.	5.	6.	7.
	West Bengal					
	Major projects					
1.	Mod of Kangsabati Res. Project	311.07	309.58	Stabilisation to be ensured with the progress of work		
2.	Kansabati Res.Project158.39	11.99	401.66	2.66	39.51	
3.	Barrage and irrigation system of D.V.C. (Ext. & improvement)	60.00	15.42	515.38	37.38	60.88
4.	Teesta Barrage Project (1st Sub stage)	695.00	302.77	526.62	481.12	494.15
5.	Subarnarekha barrage Project	226.82	217.55	130.00	130.00	130.00
	Total (Major)	1451.28	857.31	1573.66	651.16	724.54
	Medium Projects (17 No.s)	70.45	24.89	36.94	3.20	6.02
	Total West Bengal	1521.73	882.20	1609.66	654.36	730.56
	Pondichery					
	Major projects		---------- Nil----------			
	Medium Projects					
	(1 Nos.)	17.00	13.51	Stabilisation only		

Benefits From Major And Medium Irrigation Schemes

('000 ha)

S.NO.	State/UTs	Ultimate Irrigation Potential	Benefit To End Of Seventh Plan		Achievement During 1990-91		Achievement During 1991-92		Target For Eighth Plan	
			POT	UTL	POT	UTL	POT	UTL	POT	UTL
1	2	3	4	5	6	7	8	9	10	11
1.	Andhra Pradesh	5000.00	3331.00	3148.00	40.00	40.00	39.89	26.33	419.00	208.00
2.	Arunachal Pradesh	-	-	-	-	-	-	-	-	-
3.	Assam	970.00	147.00	97.00	20.00	10.00	26.20	9.09	120.00	74.80
4.	Bihar	6500.00	2715.00	2525.00	17.00	110.00	17.00	110.00	315.00	410.00
5.	Goa	62.00	12.87	4.85	2.00	6.50	0.00	3.61	36.20	14.23
6.	Gujarat	3000.00	1244.00	1225.00	39.79	57.75	35.00	60.00	448.00	404.00
7.	Harayana	3000.00	2021.00	1791.00	7.70	7.70	37.60	37.60	296.00	270.00
8.	Himachal Pradesh	50.00	7.00	4.00	0.25	0.25	0.21	0.15	2.64	2.00
9.	J & K	250.00	153.00	132.00	3.00	3.00	15.60	14.75	20.50	23.00
10.	Karnataka	2500.00	1409.00	1237.00	39.00	31.00	49.50	39.60	401.00	361.00
11.	Kerala	1000.00	562.00	562.00	57.48	57.48	50.00	50.00	148.00	148.00
12.	Madhya Pradesh	6000.00	2138.00	1504.00	75.00	75.00	75.00	45.10	450.00	300.00
13.	Maharastra	4100.00	1953.00	1190.00	34.85	58.40	47.00	58.40	400.00	444.00
14.	Manipur	135.00	98.80	69.80	3.60	4.64	1.70	3.95	54.16	43.39
15.	Meghalaya	20.00	-	-	1.94	1.94	1.00	1.00	3.88	3.00
16.	Mizoram	-	-	-	-	-	-	-	-	-
17.	Nagaland	10.00	-	-	-	-	-	-	-	-
18.	Orissa	3600.00	1359.00	1259.00	74.10	61.95	39.43	11.85	334.00	340.00
19.	Punjab	3000.00	2633.00	2522.00	40.35	19.35	28.80	28.80	176.42	176.42
20.	Rajasthan	2750.00	1913.00	1795.00	59.48	50.06	56.09	80.47	288.61	232.13
21.	Sikkim	20.00	-	-	-	-	-	-	-	-
22.	Tamil Nadu	1500.00	1460.00	1444.00	6.80	6.80	3.97	6.76	10.30	10.57
23.	Tripura	100.00	2.00	0.00	0.50	0.00	2.00	1.00	13.20	12.00
24.	Uttar Pradesh	12500.00	6659.00	5696.00	132.00	135.00	52.00	66.00	976.00	600.00
25.	West Bengal	2300.00	1701.00	1560.00	20.00	22.00	25.29	31.71	170.53	171.56
Total States		58367.00	31518.67	27765.65	674.84	758.82	603.28	686.17	5083.44	4248.10
26.	A & N Islands	:	-	-	-	-	-	-	-	-
27.	Chandigarh	:	-	-	-	-	-	-	-	-
28	D & N Haveli	:	-	-	-	-	-	-	-	-
29.	Damman & Diu	87.00	-	-	-	-	0.50	-	1.71	1.71
30.	Delhi	:	-	-	-	-	-	-	-	-
31.	Lakshadweep	:	-	-	-	-	-	-	-	-
32.	Pondicherry	11.00	4.77	4.76	0.15	0.15	0.10	0.10	2.50	2.50
Total UT's		98.00	4.77	4.76	0.15	0.15	0.60	0.10	4.21	4.21
Total States & UT's		58465.00	31523.44	27770.41	674.99	758.97	603.88	686.27	5087.65	4252.31

Statement - 3.4

Command Area Development - Outlays and Expenditure

(Rs. in Lakhs)

S.No.	States/ UTs	Seventh Plan		1990-91		1991-92	
		Plan Provision	Actual Expdr.	Plan Provision	Actual Expdr.	Plan Provision	Anticipate Expdr.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
States							
1.	Andhra Pradesh	11050.00	3363.00	700.00	525.00	567.00	700.00
2.	Arunachal Pradesh			10.00	8.90	35.00	35.00
3.	Assam	1000.00	861.00	300.00	300.00	310.00	310.00
4.	Bihar	3500.00	2814.00	1000.00	851.00	1373.00	1000.00
5.	Goa	665.00	564.52	142.00	127.01	192.00	192.00
6.	Gujarat	6067.00	3933.00	1175.00	678.00	1940.00	1288.00
7.	Haryana	8625.00	1688.00	450.00	510.00	2873.00	676.00
8.	Himachal Pradesh	300.00	154.00	40.00	43.00	46.00	46.00
9.	J & K	550.00	506.00	170.00	170.00	187.00	187.00
10.	Karnataka	4700.00	5912.00	1784.00	1784.00	1808.00	1608.00
11.	Kerala	2900.00	1476.00	965.00	803.00	827.00	893.00
12.	Madhya Pradesh	16196.00	11593.00	2366.00	1516.00	2491.00	2491.00
13.	Maharastra	31991.00	27303.00	4500.00	4500.00	4000.00	4310.00
14.	Manipur	300.00	223.00	50.00	48.00	150.00	150.00
15.	Meghalaya		53.00	20.00	26.95	65.00	65.00
16.	Mizoram						
17.	Nagaland					30.00	30.00
18.	Orissa	1900.00	1215.00	394.00	214.00	453.00	453.00
19.	Punjab	1600.00	3300.00	600.00	578.00	1100.00	1307.00
20.	Rajasthan	9912.00	13513.00	4660.00	4041.00	6266.00	6266.00
21.	Sikkim						
22.	Tamil Nadu	4000.00	4109.00	890.00	981.00	900.00	952.00
23.	Tripura		700.00	10.00	7.37	10.00	10.00
24.	Uttar Pradesh	10700.00	9162.00	1200.00	1810.00	1800.00	1924.00
25.	West Bengal	900.00	477.00	155.00	157.00	175.00	175.00
Total States		116856.00	92919.52	21581.00	19679.23	27598.00	25068.00
Union Territories							
26.	A & N Islands	-	-	-	-	-	-
27.	Chandigarh	-	-	-	-	-	-
28.	D & N Haveli	215.00	127.00	50.00	30.00	50.00	50.00
29.	Damman & Diu	-	30.00	-	20.00	-	-
30.	Delhi	-	-	-	-	-	-
31.	Lakhdweep	-	-	-	-	-	-
32.	Pondicherry	-	-	-	-	-	-
Total	UT's	215.00	157.00	50.00	50.00	50.00	50.00
Total	States &UT's	117071.00	93076.52	21631.00	19729.23	27648.00	25118.00
Central Sector		50000.00	49687.00	11000.00	9423.00	9000.00	9644.00
Grand Total		167071.00	142763.52	32631.00	29152.23	36648.00	34762.00

Statement - 3.5

Minor Irrigation - Outlays and Expenditure

(Rs. in Lakhs)

S.No.	States/UTs	Seventh Plan		1990-91		1991-92	
		Plan Provision	Actual Expdr.	Plan Provision	Actual Expdr.	Plan Provision	Anticipate Expdr.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
States							
1.	Andhra Pradesh	14740.00	17604.00	3100.00	6307.00	3904.00	6539.00
2.	Arunachal Pradesh	2300.00	2332.00	860.00	764.00	1072.00	1072.00
3.	Assam	16000.00	16253.00	3900.00	3900.00	4805.00	4805.00
4.	Bihar	26000.00	28403.00	4552.00	6066.00	9721.00	8637.00
5.	Goa	880.00	880.00	329.00	373.00	340.00	340.00
6.	Gujarat	13455.00	10978.00	2525.00	2630.00	3352.00	3265.00
7.	Harayana	1417.00	9596.00	270.00	2150.00	2873.00	2428.00
8.	Himachal Pradesh	5400.00	5998.00	2225.00	2070.00	3050.00	3050.00
9.	J & K	4200.00	6269.00	1635.00	1436.00	1651.00	1856.50
10.	Karnataka	15100.00	17270.00	3116.00	3168.00	3705.00	3705.00
11.	Kerala	5000.00	4463.00	1650.00	1560.20	1882.00	2083.00
12.	Madhya Pradesh	43360.00	33019.00	14413.00	9381.00	6977.00	11700.00
13.	Maharastra	25000.00	39936.00	10702.00	11474.09	9000.00	11000.00
14.	Manipur	1000.00	871.00	310.00	269.00	435.00	435.00
15.	Meghalaya	970.00	1014.00	551.00	355.00	555.00	555.00
16.	Mizoram	700.00	684.00	242.00	242.00	290.0	250.0
17.	Nagaland	1500.00	1442.00	293.0	293.00	577.00	577.00
18.	Orissa	11000.00	18295.00	4800.00	4416.00	5900.00	5900.00
19.	Punjab	4622.00	3496.00	1730.00	1707.00	1853.00	2163.00
20.	Rajasthan	4788.00	5585.00	2429.00	2113.00	2684.00	2684.00
21.	Sikkim	1000.00	882.25	190.00	189.00	200.00	200.00
22.	Tamil Nadu	8500.00	1002.80	2634.00	2929.00	3323.00	4572.00
23.	Tripura	1500.00	2055.00	830.00	830.00	750.00	750.00
24.	Uttar Pradesh	51200.00	58921.00	14692.00	11724.00	8763.00	8613.00
25.	West Bengal	6800.00	8682.00	4821.00	4125.00	5439.00	5439.00
	Total States	266432.00	295931.05	82799.00	80471.29	83101.00	92618.50
Union Territories							
26.	A & N Islands	270.00	280.00	120.00	101.81	122.00	122.00
27.	Chandigarh	60.00	96.47	20.00	5.02	20.00	20.00
28.	D & N Haveli	213.00	152.00	35.00	44.00	55.00	55.00
29.	Damman & Diu	-	-	6.00	0.50	13.00	14.00
30.	Delhi	519.00	155.15	271.00	103.82	246.00	204.00
31.	Lakhdweep	-	-	-	-	-	-
32.	Pondicherry	505.00	551.41	113.00	102.27	180.00	146.50
	Total UT's	1567.00	1535.03	565.00	357.42	636.00	561.50
Total States & UT's		267999.00	297466.08	83364.00	80828.71	83737.00	93180.00
Central Sector		13500.00	14007.00	4190.00	2387.00	5783.00	4542.00
Grand total		281499.03	311473.08	87554.00	83215.71	89520.00	97722.00

Statement - 3.6

Minor Irrigation - - Physical achivements/targets

(in '000 ha.)

S.No. & State/UTs	Ultimate Irrgn. Potential	Upto Seventh Plan		During 1990-91		During 1991-92 (anticipated)		Eighth Plan Target	
		Potential	utili-sation	Potential	utili-sation	Potential	utili-sation	Potential	utili-sation
1.	2.	4.	5.	6.	7.	8.	9.	10	11
States									
1.Andhra Pradesh	4200	2797.00	2595.88	20.19	15.36	54.32	37.92	500.00	400.00
2.Arunachal Pradesh	260	55.98	49.65	3.32	2.00	3.70	2.20	20.00	20.00
3.Assam	1700	537.04	438.87	21.02	16.76	63.40	67.90	180.00	120.00
4.Bihar	5900	4428.00	3991.00	180.00	177.60	161.95	160.51	1832.00	1466.00
5.Goa	20	17.15	16.01	0.62	0.41	0.56	4.08	4.00	3.00
6.Gujarat	1750	1850.32	1773.21	27.98	14.01	32.00	15.38	180.00	150.00
7.Haryana	1550	1487.97	1454.92	13.60	10.80	13.60	13.60	100.00	90.00
8.Himachal Pradesh	285	126.60	112.67	5.04	3.00	4.80	2.90	25.00	20.00
9.Jammu & Kashmir	550	356.27	346.17	2.70	2.25	2.88	2.47	40.00	40.00
10.Karnataka	2100	1355.44	1317.44	43.80	42.30	50.56	46.35	220.00	200.00
11.Kerala	1100	479.38	437.27	18.64	25.34	17.85	24.85	100.00	85.00
12.Madhya Pradesh	4200	2381.40	2247.20	118.92	73.92	74.00	51.00	500.00	375.00
13.Maharashtra	3200	2394.10	2164.60	31.55	20.55	36.00	26.00	400.00	325.00
14.Manipur	105	46.87	39.52	1.20	0.75	1.50	0.95	15.00	12.00
15.Meghalaya	100	40.43	35.63	0.41	0.31	3.30	2.50	12.00	8.00
16.Mizoram	70	9.49	8.22	0.55	0.51	0.51	0.40	6.00	4.00
17.Nagaland	80	62.73	54.43	1.20	0.76	1.22	0.80	13.00	10.00
18.Orissa	2300	1156.17	1059.50	48.28	32.55	54.17	24.40	150.00	150.00
19.Punjab	3550	3252.74	3202.39	3.50	3.50	11.32	11.32	76.00	70.00
20.Rajasthan	2400	2263.14	2203.29	67.77	62.15	57.57	51.42	300.00	280.00
21.Sikkim	22	20.36	15.85	1.01	0.60	0.95	0.60	5.00	4.00
22.Tamilnadu	2400	2058.39	2049.30	33.11	36.81	33.73	33.47	110.00	107.00
23.Tripura	115	80.54	72.52	3.61	3.98	4.20	2.92	27.00	16.00
24.Uttar Pradesh	13200	16642.00	15182.00	1098.00	1062.00	1087.00	1050.00	5439.00	5000.00
25.West Bengal	3800	2624.60	2175.00	68.95	62.60	100.00	60.00	450.00	400.00
Total States	54957.00	46524.11	43042.54	1814.97	1670.82	1871.09	1693.94	10704.00	9355.00
Total U.T.s	90	81.31	77.13	0.39	0.40	1.18	0.96	7.00	5.00
All India Total	55047.00	46605.42	43119.67	1815.36	1671.22	1872.27	1694.90	10711.00	9360.00

Ultimate Irrigation Potential under revision.

Statement - 3.7

Flood Control - Outlays and Expenditure

(Rs. in Lakhs)

S.No.	States/ UTs	Seventh Plan		1990-91		1991-92	
		Plan Provision	Actual Expdr.	Plan Provision	Actual Expdr.	Plan Provision	Anticipate Expdr.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	States						
1.	Andhra Pradesh	4790.00	2743.00	500.00	993.00	390.00	5315.00
2.	Arunachal Pradesh	200.00	210.00	100.00	86.00	153.00	153.00
3.	Assam	2700.00	3456.00	870.00	903.00	1467.00	1467.00
4.	Bihar	14400.00	20841.00	4000.00	3193.00	5490.00	5039.00
5.	Goa	100.00	65.84	30.00	32.30	20.00	20.00
6.	Gujarat	1200.00	812.00	150.00	100.00	160.00	160.00
7.	Haryana	7569.00	5320.00	950.00	1293.00	1045.00	1045.00
8.	Himachal Pradesh	400.00	308.00	90.00	79.00	100.00	100.00
9.	J & K	2000.00	2750.00	741.00	881.00	756.00	761.00
10.	Karnataka	400.00	324.00	250.00	250.00	200.00	200.00
11.	Kerala	2500.00	1796.00	550.00	562.00	930.00	930.00
12.	Madhya Pradesh	500.00	413.00	89.00	85.00	98.00	98.00
13.	Maharastra	70.00	97.00	30.00	30.00	30.00	30.00
14.	Manipur	500.00	702.00	200.00	228.00	416.00	416.00
15.	Meghalaya	135.00	135.00	67.00	12.00	66.00	66.00
16.	Mizoram	100.00	51.00	15.00	15.00	20.0	20.0
17.	Nagaland	-	-	-	-	20.00	20.00
18.	Orissa	1700.00	2081.00	500.00	500.00	500.00	1280.00
19.	Punjab	3709.00	6182.00	1900.00	1487.00	1440.00	1440.00
20.	Rajasthan	1460.00	828.00	400.00	307.00	457.00	400.00
21.	Sikkim	105.00	87.86	20.00	4.66	20.00	11.00
22.	Tamil Nadu	1300.00	1132.00	50.00	17.00	50.00	73.00
23.	Tripura	600.00	684.00	180.00	180.00	200.00	208.00
24.	Uttar Pradesh	16100.00	10216.00	1650.00	1530.00	1500.00	1000.00
25.	West Bengal	10500.00	11264.00	3500.00	2915.00	4000.00	4000.00
	Total States	73038.00	72498.70	16832.00	15682.96	19528.00	24252.00
	Union Territories						
26.	A & N Islands	-	-	-	-	-	-
27.	Chandigarh	-	-	-	-	-	-
28.	D & N Haveli	10.00	-	-	-	-	-
29.	Damman & Diu	-	18.00	14.00	8.00	18.00	18.00
30.	Delhi	6398.00	5184.89	1729.00	1063.51	1300.00	1184.70
31.	Lakhdweep	100.00	122.35	50.00	89.99	50.00	50.00
32.	Pondicherry	200.00	277.89	65.00	54.70	70.00	70.50
Total UT's		6708.00	5603.13	1858.00	1216.20	1438.00	1323.20
Total States & UT's		79746.00	78101.83	18690.00	16899.16	20966.00	25575.20
Central Sector		14993.00	16056.00	4701.00	2796.00	7833.00	3980.00
Grand Total		94739.00	94157.83	23391.00	19695.16	28799.00	29555.20

Statement - 3.8

Eighth Five Year Plan Outlays For Irrigation & Flood Control

(Rs.Crores)

S. No.	State/UTs	EIGHTH FIVE YEAR PLAN OUTLAY				
		Major & MediumIrrgn.	MinorIrrgn.	C.A.D.	Flood Control	Total Irrgn. & Flood Control
1	2	3	4	5	6	7
	States					
1.	Andhra Pradesh	2066.78	234.68	55.00	143.54	2500.00
2.	Arunachal Pradesh	4.71	53.69	1.70	4.71	64.81
3.	Assam	86.11	183.45	16.79	86.85	373.20
4.	Bihar	1927.17	1021.30	70.65	251.71	3270.83
5.	Goa	114.70	13.10	6.40	0.90	135.10
6.	Gujarat	3426.00	240.00	80.00	10.00	3756.00
7.	Harayana	446.67	134.45	45.77	52.00	678.89
8.	Himachal Pradesh	16.00	95.25	2.45	6.00	119.70
9.	J & K	70.57	84.20	10.00	40.75	205.52
10.	Karnataka	1936.09	306.91	130.00	11.00	2384.00
11.	Kerala	437.00	130.00	60.00	65.00	692.00
12.	Madhya Pradesh	1791.29	728.37	128.05	8.53	2656.24
13.	Maharastra	2391.54	612.17	323.93	1.46	3329.10
14.	Manipur	125.00	25.00	7.00	20.00	177.00
15.	Meghalaya	11.10	29.03	0.00	8.54	48.67
16.	Mizoram	1.00	11.75	0.00	0.25	13.00
17.	Nagaland	2.00	21.00	0.50	1.50	25.00
18.	Orissa	2614.33	389.40	33.40	42.05	3079.18
19.	Punjab	257.73	113.20	140.00	125.00	635.93
20.	Rajasthan	1310.08	171.92	412.69	25.30	1919.99
21.	Sikkim	0.00	11.50	1.50	0.00	13.00
22.	Tamil Nadu	260.00	250.00	45.00	30.00	585.00
23.	Tripura	35.00	31.50	0.50	8.00	75.00
24.	Uttar Pradesh	2599.34	400.60	90.00	70.00	3159.94
25.	West Bengal	380.00	370.00	18.00	280.00	1048.00
Total States		22310.21	5662.47	1679.33	1293.09	30945.10
	Union Territories					
26.	A & N Islands	0.00	4.24	0.00	0.05	4.29
27.	Chandigarh	0.00	1.00	0.00	0.00	1.00
28.	D & N Haveli	5.23	3.00	0.20	0.02	8.45
29.	Daman & Diu	1.60	0.44	0.60	1.17	3.81
30.	Delhi	0.00	8.00	0.00	40.00	48.00
31.	Lakshadweep	0.00	0.00	0.00	2.60	2.60
32.	Pondicherry	2.49	5.11	0.00	4.44	12.04
Total UT's		9.32	21.79	0.80	48.28	80.19
Total states & UT's		22319.53	5684.26	1680.13	1341.37	31025.29
Central sector		95.00	293.00	830.00	282.00	1500.00
Grand total		22414.53	5977.26	2510.13	1623.37	32525.29

CHAPTER 4

ENVIRONMENT AND FORESTS

Overview

4.1.1 The scenario of enviornment and forests continues to cause concern. Destruction and degradation of forests are taking a heavy toll of our soil and water resources. An estimated 6000 million tonnes of top soil with essential nutrients are flowing into the sea every year. Loss of top soil, vegetative cover, unregulated surface run-off with poor recharge of aquifers seriously affect the society and in particular tribals. Overall degradation of nature is also making our resources less productive, leading to impoverishment of the rural population.

4.1.2 Much of the water resources and the air in the country continue to be polluted, affecting human health. Besides traditional domestic pollutants, there is increasing contamination by chemicals, heavy metals and other toxic substances which are thrown into the rivers and the sea due to careless industrial and agricultural practices. Unplanned urban growth and industrialisation are also increasing the levels of pollution.

4.1.3 This environmental degradation seriously threatens economic and social progress of the country. Our future generations may discover that life support systems have been damaged beyond repair.

4.1.4 The causes for environmental degradation are many. The prevailing conditions of poverty and underdevelopment themselves create a situation where people are forced to live in squalor and further degrade their environment. On the other hand, the process of development itself may damage the environment, if not properly managed. In the final analysis, removal of poverty, generation of employment, raising the levels of education and increasing awareness of the people are crucial for protection of environment.

Major Tasks

4.2.1 The major tasks for meeting this challenge are:

1. To protect the natural environment;

2. To regenerate and restore degraded ecosystems and increase their productivity and to generate employment through these activities;

3. To decentralise control over nature and natural resources;

4. To develop and share an understanding of nature and natural processes;

5. To formulate a national policy for environment and an appropriate institutional and legal framework in support of the policy;

6. To ensure co-ordinated and integrated Governmental action aimed at conserving nature and sustainable use of natural resources;

7. To make individuals and institutions more accountable to the people for their actions impinging on environment and ecosystem; and

8. To monitor the state of environment.

4.2.2 These tasks are not independent of each other, but complementary and sometimes overlapping. Many of them are already being performed by the Central and State Governments. However, much greater effort is called for, if the current trend of environmental degradation is to be reversed.

Protection Strategy

4.3.1 It is a primary task of the Government to protect all natural ecosystems from degradation by having comprehensive strategies of protection, appropriate for different areas, geographical regions, ecological and social systems. Areas need to be classified not only on the basis of their ecological characteristics, including fragility, but also in terms of the types and severity of threats they face, the source and cause of these

threats and the level of protection they warrant.

4.3.2 Broadly, threats to natural environment are of three types: pollution, over-use and destruction. Strategies to meet these threats to natural environment can be preventive or regulatory.

4.3.3 The strategy of prevention consists of raising public awareness, strict enforcement of laws, statutory assessment of environmental impact of projects and efforts to regenerate the productivity of ecosystems. The raising of public awareness is effective in some cases in refraining people from harmful activities, once they are convinced of the dangers. Strict laws, rigorously implemented, can prevent environmental destruction through stringent punitive measures, including fiscal, making an undesirable action very expensive for the offender. However, the effectiveness of the principle of 'Polluter Pays' is limited by the sensitiveness of the people to the socio-economic problem. Statutory environmental impact assessment of all projects and activities before their implementation prevents degradation through obligation on the executing agencies to undertake compensatory measures. Destruction can also be prevented by regenerating nature and increasing the productivity of the ecosystems.

4.3.4 The strategy of regulation is best applicable where activities have started or projects have come up. It requires that:

(i) a detailed report should be prepared identifying the sources of pollution by the project or activity and indicating, in a realistic and time-bound manner, the measures required to be taken;

(ii) a similar report should be prepared about domestic and agricultural pollution, especially from pesticides, locating sources and suggesting remedial measures;

(iii) functioning of the Central and State Pollution Control Boards should be strengthened and be made more open;

(iv)comprehensive and realistic standards should be formulated for environmental pollution and for procedures and standards for assessing environmental damage;

(v) industries should be made to recognise, if necessary by a dialogue with the Government, the cost on economy of environmental effects and be persuaded to show greater leadership and responsibility by controlling pollution ab initio through built in measures;

(vi) public participation and involvement of NGOs in prevention and control of pollution and environmental degradation should be facilitated by providing necessary technical help, through designated institutions, obliged to provide information and technical advice, and by the Central, State and Local governments setting up appropriate machinery for speedy response to investigation and disposal of public complaints;

(vii) for encouraging public vigilance, incentives should be offered for reporting instances of violation of laws relating to pollution, forests, wildlife and other environmental issues, and

(viii) the regulatory functions of the Government should be decentralised, especially in relation to pollution with essential training and equipment being provided to representatives of communities.

4.3.5 The Eighth Plan will convert the Ganga Action Plan into the proposed National River Action Plan. Establishment of common effluent treatment plants will be assisted so that small and medium industries can have their wastes treated and effect waste recovery in an economically viable manner. National parks and sanctuaries will be further strengthened. Stress will also be laid on eco-development, especially around protected areas, so that the human population in these areas is not deprived of the basic life support resources and continue to participate in the protection of the environment.

Regeneration and Restoration of Degraded Ecosystems

4.4.1 Today, much of nature in the country lies ravaged. Such degradation not only impoverishes the poor further but also affects the ability

of the environment to remain productive. It is, therefore, crucial to regenerate the ecosystem and it is imperative that the persons degrading the environment should be made, by law, to regenerate and to restore the areas degraded by them.

4.4.2 Programmes for regeneration and restoration of ecosystem can also provide productive employment to a large section of rural people. Creation of jobs for ecological restoration has relatively few requirements and with marginal investment can yield substantial returns. There are huge areas of degraded land (over 100 million hectares as detailed in tables 4.1) which could be reclaimed. Apart from wages, little other input is required, especially if the work is organised by the local communities themselves on cooperative basis. Most of the land needs only basic water and soil conservation measures and some amount of plantation and protection work. Appropriate measures should be taken and resources provided for this purpose. By protecting, regenerating and restoring the degraded land, pressure on the remaining land, forests and pastures will also be reduced. Similar activities could be designed to restore, in an integrated manner, other natural areas.

4.4.3 In view of the importance of regeneration and restoration, the National Wastelands Development Board has included regeneration of degraded forest lands as part of its objectives and given special thrust to promotion of integrated wasteland development.

Decentralisation

4.5.1 No Government can protect, regenerate and ensure sustainable use of natural resources on its own. It is essential, therefore, to decentralise control over natural resources. Decentralisation, in this context, means transfer of control from the Government to the people collectively. An instance of this is the social forestry programme. For collective control, it is important that conditions should be created for effective management through creation of appropriate local bodies and institutional structure. The people must also have access to information and professional knowledge and must be able to call upon technical bodies for advice and support. Such an approach is even more necessary in the case of tribals and other communities who are traditionally dependent on natural produce.

4.5.2 A major initiative in decentralising power will be to enable the villagers to decide for themselves their own priorities and to take up activities accordingly. Research activities should also be reoriented to become more appropriate to the felt needs of local inhabitants.

Development and Sharing of an Understanding of Nature and Natural Processes

4.6.1 Of late, professional bodies have become more isolated and distanced from the people. Consequently, advances in scientific understanding of nature and natural processes have not been shared or developed in partnership with the people, especially the rural and tribal communities who have their own traditional wisdom on these matters. Hence, the enrichment that would have followed from synthesis of these two streams of knowledge did not take place.

4.6.2 Thus, current research, training and awareness programmes need to be reviewed for their content and methodology. Research areas must be selected with care. The thrust of research activities within the Ministry of Environment and Forests, the ICAR, the CSIR and Universities and other associated research institutes, has to be redirected primarily to specific social, managerial and scientific issues relevant to grassroot reality.

4.6.3 Environmental training and education of professionals and administrators is crucial to the establishment of an environment-friendly social system. The pursuit of economic development without being socially and environmentally destructive would be an important content of such training programmes.

Formulation of National Policy

4.7.1 An important task before the Government is the formulation of a comprehensive national policy on nature and natural resources. To be effective it must be evolved in consultation with the people. The policy must also spell out the position regarding environmental needs of the society in general and the rights of the weaker sections such as, tribals, nomads, women and children, especially in terms of giving access to and control over natural resources, in particular.

Co-ordinatation in Government Action

4.8.1 The task of ensuring co-ordinated Governmental action involves the formulation of a natural resource policy for sustainable development. Irrigation, energy, agriculture and rural development are some of the areas requiring such coordinated action.

4.8.2 Integrated action for irrigation will need a strategy to achieve optimally the irrigation targets by minimising ecological damage, development of appropriate technologies for reducing siltation of dams, promotion of afforestation, conservation of water and research in alternate water harvesting technologies.

4.8.3 For energy, the action points will be conservation, development of mini-hydel generation capacities and environmental management of thermal, hydro and other energy programmes.

4.8.4 The action points for agriculture and rural development will include minimising the use of harmful pesticides and fertilisers, biological control of pests, adoption of ecologically regenerative land and water use. Simultaneously, low input, organic agricultural practices especially in arid zones require to be developed. Environmentally sound rural development programmes need to be designed and pursued.

4.8.5 In industry, integrated action would be needed for prevention and control of pollution hazards, suitable location of industrial units, recycling of industrial wastes and adoption of energy efficient technology.

Accountability

4.9.1 Concerted efforts must be made to internalise environment related costs and benefits into the calculus of viability. This calls for development of suitable methodology for quantifying environmental costs and benefits. The 'business as usual' approach which has so far treated them as qualitative externalities must be discontinued.

Monitoring the Environment

4.10.1 The critical condition of natural environment demands that a system should be set up for constant monitoring of important parameters. This is a responsibility of Government institutions and departments, though an active role should also be assigned to people's organisations at the grassroot level. Since quick preventive action may often be necessary, the monitoring machinery must be comprehensive, have access to critical information, be regular in its assigned role and have the capacity to enforce strict adherence to the norms.

Review of the Seventh Plan

4.11.1 The Seventh Plan saw significant progress in environment and ecology, Ganga action plan, forestry and wildlife, wastelands development and island development subsectors.

4.11.2 Major activities undertaken by the Central Pollution Control Board relate to development of laboratories and management and operation of national air and water quality network, controlling pollution at source, river basin studies and evolution and implementation of national standards. Programmes on waste recycling, prevention of coastal pollution and schemes concerning pollution were initiated in the Seventh Plan.

4.11.3 The Central and State Pollution Control Boards have been implementing laws on pollution control regarding water and air. Fourteen river basins of the country are being monitored for water pollution. Two hundred water quality monitoring stations, 85 air quality monitoring stations and 173 coastal monitoring stations have been established. Standards have been notified for 26 priority industries. More than 50% of the major and medium industries have installed pollution treatment plants. Central assistance is being extended to the State Environment Departments and the State Pollution Control Boards for strengthening their technical set up.

4.11.4 Environmental impact assessment of major river valley and hydro-electric, mining, industrial and thermal power projects were carried out through Environmental Appraisal Committees. All major development projects are subjected to this assessment prior to clearance with or without conditions. The impact assessment procedures have been streamlined by devising a single window machinery for speedy environmental and forest clearance. In all, 1464 development projects were appraised during 1985-90, in the areas of river valley, mining, thermal power, industries and others.

4.11.5 The Botanical and the Zoological Surveys of India (BSI and ZSI) were restructured and their objectives redefined for a proper orientation towards ecology and conservation. The major activities of BSI have been the compilation of national and State flora and publication of Red Data Book, survey of plant resources and endangered species and studies on taxonomical, ethnobotanical and geobotanical aspects. The ZSI undertook exploration and survey of faunal resources, augmentation of national zoological collections, status survey of endangered species, taxonomic studies and publication of fauna of India. Construction of a Marine Aquarium-cum-Research Centre at Digha in West Bengal is nearing completion.

4.11.6 Seven Biosphere Reserves have been set up for preserving the genetic diversity in representative ecosystems. Ecological restoration work has been undertaken in fragile areas. Schemes have been initiated on captive breeding of plants and commercial utilisation of medicinal plants. The Doon Valley Board has been ensuring integrated development of ecologically fragile Doon Valley. Special attention is being given for the environmental protection of Andaman and Nicobar Islands and Lakshadweep. A multi-departmental National Natural Resources Management System (NNRMS) has been set up. Conservation of plants and special ecosystems like mangroves and wetlands has also been taken up. Fifteen mangrove areas have been identified and status report prepared on mangroves in India. A Core Committee constituted to recommend the framework and operational details of a National Conservation Strategy has given its final report.

4.11.7 Environmental research projects have been sponsored in the universities and other institutions. Three hundred and nineteen research and development projects were sanctioned in the Seventh Plan. Centres of Excellence have been set up in different parts of the country for environmental education, ecological research, studies on mining areas and ornithology. Of these, two centres were set up during the Sixth Plan and one was established in 1986-87. The Centre of Excellence on Ornithology was set up during 1988-89. Eco-Task Forces have been deployed in UP, Rajasthan and Jammu & Kashmir for ecological restoration and land reclamation. The Eco-Task Force in Jammu & Kashmir was created in 1988-89. Eco-development camps were supported for creating awareness through participation in the practical activities of eco-development by Non-governmental organisations. Two hundred and ninety four camps have been conducted during the Seventh Plan. The Gobind Ballabh Pant Paryavaran Evam Vikas Sansthan has been set up to study Himalayan environment and development.

4.11.8 Field demonstration programmes have been conducted in different areas. Projects on eco-regeneration of Pushkar Lake Valley (Rajasthan), Auroville (Tamil Nadu), Shivalik Foothills (Punjab), Tumkur (Karnataka), Gopeshwar in Chamoli (UP) and Cherapunjee (Meghalaya) were supported.

4.11.9 The programme included schemes on Environmental Education and Training, Seminars/workshops, Pitambar Pant Fellowship, National Museum of Natural History (NMNH) and Environmental Information. A new scheme on grants- in-aid to professional societies has been introduced in the Seventh Plan.

4.11.10 A national environmental awareness campaign initiated in 1986 was continued. It has covered a wide spectrum of the population through different media, and involving more than 200 non-governmental organisations. Financial assistance has been provided to various institutions, universities and non- governmental organisations for conducting seminars and workshops. The National Museum of Natural History (NMNH) has also promoted environmental awareness in the public, particularly among the school children, by organising exhibitions, educational programmes, out-door nature study tours, film shows and lectures. A new gallery on conservation has been set up in NMNH which participated in the Festivals of India in USSR and Japan. The work for setting up a regional museum at Mysore is in progress. A new annual award - "Indira Gandhi Paryavaran Puraskar" has been instituted. An environmental information system for collection, storage, retrieval and dissemination of scientific and technical information is in operation in ten centres on different areas of environment. Paryavaran Abstract, a quarterly journal of Research Abstracts, is being published.

4.11.11 Central assistance has been extended to 19 States and 4 Union Territories to strengthen their technical set up. Assistance has been provided to 16 State Pollution Control Boards for strengthening their field set up. A management system to handle different aspects of safety and ecological balance has also been evolved.

4.11.12 A comprehensive Environment (Protection) Act came into being in 1986 to remedy the lacunae noticed in the earlier laws and to serve as a single legislation on the subject. A number of Central and State executive authorities have been delegated powers under the Act. Twenty State Governments have been delegated powers vested with the Central Government under the section 5 of the Act for the issue of direction to any person, officer or authority for purposes of implementation of the provisions of the Act. The Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974 were amended to bring their provisions at par with those of the Environment (Protection) Act, 1986 and to give more powers to the implementing agencies.

Ganga Action Plan

4.12.1 The Government of India had in February, 1985 set up the Central Ganga Authority with the Prime Minister as Chairman to oversee the implementation of the Ganga Action Plan in view of the magnitude of pollution of river Ganga. The objective of the Ganga Action Plan is to intercept, divert and treat the sewage flowing into the river with a view to improve the water quality and to compel the industries discharging their effluents into the river to conform to prescribed standards. Schemes of low cost sanitation, river front development and construction of electric crematoria are a part of the Action Plan. Two hundred and sixty one schemes spread over Uttar Pradesh, Bihar and West Bengal have been sanctioned at a cost of Rs.256 crores. As many as 147 schemes were completed during the Seventh Plan. An independent evaluation of Ganga Action Plan - Phase I has been sought from the Ministry of Environment and Forests. A monitoring committee of Ganga Action under the Chairmanship of Member, Planning Commission has been operational during the Seventh five year Plan.

Forest and Wild Life Policy

4.13.1 A "National Forest Policy 1988" was formulated in December 1988 with the principal aim of ensuring environmental stability and maintenance of ecological balance. The Forest Conservation Act, 1980 was amended in 1988 to facilitiate stricter implementation and to plug certain loopholes. The rate of diversion of forest land was brought down to about 0.017 million ha. per year from 0.15 million ha. between 1951-52 and 1979-80. The loss of actual forest cover as per the interpretation of Landsat imagery made by the Forest Survey of India during 1987 and 1989 is indicated in table 4.2.

4.13.2 A modern Forest Fire Control Project, assisted by UNDP was implemented in Maharashtra and Uttar Pradesh with the objective of devising, testing and demonstrating the principles and techniques of prevention, detection and suppression of forest fires. A scheme on Development of Infrastructure for the Protection of Forests from Biotic Interference is under implementation in various States with a view to preserving and protecting the natural forest wealth and developing adequate infrastructure facilities.

4.13.3 Forest research, education and training have been reorganised to make them more relevant to the present requirements. The Indian Council of Forestry Research and Education has been constituted in order to provide impetus and thrust to research activities and education. Five new research institutes viz. Institute of Wood Sciences and Technology, Bangalore; Institute of Deciduous Forests, Jabalpur; Institute of Forest Genetics and Tree Breeding, Coimbatore; Institute of Arid Zone Research, Jodhpur and Institute of Rain and Moist Deciduous Forest Research, Jorhat have been set up while retaining the prime role of the Forest Research Institute, Dehra Dun. Each Institute carries out national level research on one or more facets of forestry and also takes care of the regional needs.

4.13.4 The Indira Gandhi National Forest Academy (IGNFA) has also been established at Dehra Dun for the training of Forest Service probationers. A graduate course in the science of forestry has been introduced in 14 State Agricultural Universities. Around 250-300 graduates benefit from the programme every year. The new com-

plex of the Indian Institute of Forest Management (IIFM) at Bhopal was inaugurated in June, 1988, as an apex research institute in forest management in the country. The Forest Survey of India has been reorganised. It has completed the first stage of the Forest Report including the vegetation maps.

4.13.5 In view of the symbiotic relationship between the tribals and the forest, efforts have been made to associate tribals and other people living in and around forests in general for the protection and development of forests. A centrally sponsored scheme for plantation of minor forest produce including medicinal plants is currently in operation.

4.13.6 Implementation of the 10-point National Wildlife Action Plan (NWAP) has been started. The Wildlife Institute of India has published a comprehensive report incorporating a workable biogeographic classification system. It makes recommendations for a representative network of protected areas based on this classification to bring about overall improvement in protection and conservation of wildlife. Thirty National Parks and 75 Sanctuaries are being provided financial assistance by the Central Government. The number of tiger reserves rose from 15 to 18 in the Seventh Plan. These cover an area of 28,017 sq. kms. located in 13 States.

Afforestation Programme

4.14.1 In the Seventh Plan there was considerable increase in the total area brought under afforestation programme. Block plantations, strip plantations and farm forestry were carried out. Plan funds were made available through Forest Departments in the States. These were further supplemented in 15 States with new projects which received external assistance. While the total afforestation during the Sixth Plan period was only 4.65 million ha, the coverage in the Seventh Plan, was 8.87 million ha.

4.14.2 The progress of afforestation over the past Plan periods is indicated in Table 4.3. To bring about qualitative changes in this programme, a National Wastelands Development Board (NWDB) was set up in June 1985, with the principal aim of reclaiming wastelands through a massive programme of afforestation with people's participation.

4.14.3 An independent evaluation of Rural Fuelwood Plantation (RFP) scheme was carried out by the National Council for Applied Economic Research (NCAER) at the behest of National Wastelands Development Board (NWDB). The study has revealed certain deficiencies in the scheme namely, low survival of plantation (between 40 to 50 per cent) and poor health of the surviving plants; inadequate consolidation of effort and discontinuity; poor maintenance and after care of plantations; predominance of non-fuel species in most States; ambitious targets and bad advance planning leading to poor choice of planting material and lack of people's involvement.

4.14.4 A number of programmes of afforestation were taken up to secure people's participation. Under this scheme, priority was given to

i) establishment of decentralised nurseries and school nurseries;

ii) block plantation specially on community land and lands of SC/ST and people living below the poverty line;

iii) pasture development through people's institutions and involvement; and

iv) assistance in the implementation of the Tree Patta Schemes.

4.14.5 The scheme of decentralised people's nurseries was initiated in 1986-87 to encourage seedling production by farmers, especially small and marginal farmers to establish small, dispersed nurseries to cater to local needs of planting material and provide income generating activites to the beneficiaries.

4.14.6 Social forestry projects which were initiated in 1981-82 for periods ranging from five to eight years continued in the Seventh Plan. They envisaged tree planting and afforestation of 19,84,600 ha. of wastelands with a total investment of Rs. 911.73 crores. These projects were assisted by several external agencies, including the World Bank, United States Agency for International Development and Overseas Development Agency of United Kingdom.

4.14.7 Seeds for the ongoing programmes of afforestation were mostly collected without determining their quality. For development of quality seeds, a centrally sponsored scheme was introduced by the National Wastelands Development Board (NWDB) in 1988-89.

4.14.8 To ensure an area-specific approach on fuelwood and fodder, a new centrally sponsored scheme was initiated from 1988- 89. This scheme was to cover the watersheds in the districts included under the National Watershed Development Programme of the Department of Agriculture, so as to ensure integrated development of wastelands in the identified watersheds. The scheme was to be implemented initially, in 52 districts of 11 States.

4.14.9 Aerial seeding holds the potential to cover vast tracts quickly in a cost effective manner, especially in remote, inaccessible areas like ravines and hills. A Centrally-Sponsored Scheme for Aerial Seeding was initiated by the National Wastelands Development Board from 1988-89 to assist a few selected states in systematically carrying out aerial seeding in remote areas and to develop and standardise the steps involved in aerial seeding techniques.

4.14.10 To encourage flow of institutional finance for socially beneficial afforestation and watershed development projects and to encourage afforestation through people's active participation, a margin money scheme was initiated by NWDB in 1987-88. This is a Central Sector Scheme where 25% of the project cost is given as grant, provided an equal matching contribution is given by the eligible Institution/State and at least 50% of the total project cost is financed by a financial institution.

4.14.11 Under the National Rural Employment Programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) carried out by the Department of Rural Development, 25% of the funds were specifically earmarked for the social forestry component, during the first four years of the Seventh Plan. The afforestation component under these programmes was implemented by the State Forest Departments mainly on Government and community lands, road sides and canal embankments. Since the availability of community lands was limited, afforestation was also carried out on degraded forest lands. Bulk of the funds for the forestry sector came from the Rural Employment Schemes under the social forestry component. However, an evaluation carried out by the Programme Evaluation Organisation (PEO) of the Planning Commission has indicated that people's participation under this programme has been very limited and the trees planted were of species which met the requirement of wood for urban markets rather than the subsistence needs of fuel and fodder of the rural poor.

4.14.12 An appraisal of the various afforestation schemes undertaken above reveal some defeciencies. They have no specific plan of action for meeting fuel wood and fodder requirements except for the continuance of the scheme for rural fuel wood plantation, which does not directly address these issues. Fostering of people's movements for afforestation has been done largely through increasing people's interest on farm forestry. Under the social forestry programme, the efforts have largely been departmental. The rural poor and tribals, who depend mostly on public and forest lands for their living, have at best, been given restricted access to the areas taken up for development.

4.14.13 There are certain other issues which also need to be addressed so that the schemes for wasteland development achieve the desired objectives of ecological restoration and meet the socio-economic needs of the people. The schemes should not be directed towards a single use i.e. fuel or fodder, but should adopt an integrated approach. Besides, in the States, an agency has to be clearly entrusted with the nodal responsibility for wasteland development. An important reason why planning and action programmes for the wastelands development have tended to remain inadequate, is the lack of coordination between the Forest Department, which is the implenting agency in most States, and other departments like Agriculture, Horticulture, Soil Conservation, Minor Irrigation and Rural Development.

4.14.14 The existing wasteland development schemes generally are not based on integrating the control of run-off rain-water for reducing erosion, soil and water conservation and water harvesting. In propagating this technology, there is a need to identify and demonstrate such

approaches which have low cost and are less dependant on capital and external inputs.

Island Development Authority (IDA)

4.15.1 Island Development Authority was constituted in August, 1986 under the Chairmanship of the Prime Minister to formulate policies and programmes for an ecologically sound, suitable and integrated development of Andaman and Nicobar and Lakshadweep Islands. It met six times during the Seventh Plan. The Steering Committee of IDA under the Chairmanship of Member, Planning Commission also held thirteen meetings during the same period. A large number of valuable studies produced by IDA have formed the basis of Plan formulation and resource allocation.

Planning and Environmental Concerns

4.16.1 Systematic efforts have been made since the Sixth Plan period to integrate environmental considerations and imperatives in the planning process in all the key socio-economic sectors. As a result of sustained endeavour, planning in all major sectors like industry, science & technology, agriculture, energy and education includes environmental considerations. This awareness is now shared by most enterprises in the public sector.

4.16.2 In addition to a number of national level bodies which have been constituted by the ministry of Environment & Forests the Planning Commission has set up several expert groups/committees to formulate long- term sectoral policies.

4.16.3 Two separate Expert Groups, one comprising representatives of industry and the other of intellectuals have been constituted under the Chairmanship of the Member, Planning Commission to reconcile the conceptual confrontation between environment and development.

4.16.4 An expert Group to formulate policies for integrated development of Himalayan Region has been constituted under the Member, Planning Commission.

4.16.5 A Standing Committee under the Chairmanship of Dy. Chairman, Planning Commission has been constituted to look into the possibility of expeditious clearance of pending projects.

4.16.6 The Island Development Authority has been reconstituted. The Steering Committee of Island Development Authority has since been replaced by a newly constituted Standing Committee under the Chairmanship of Deputy Chairman, Planning commission.

4.16.7 Environmental issues such as depletion of Ozone layer, Greenhouse gases and climate change, bio-diversity and role of forests are current global concerns. Some of these issues are to be discussed shortly at United Nations Conference on Environment and Development to be held in Brazil in June 1992. It is essential that these negotiations recognise the aspirations of large masses of poor people and do not impose any burden on developing countries, respecting their sovereign right over their resources. Transfer of technology, flow of new and additional resources to developing countries to fully meet any additional cost are pre-requisites to international cooperation in the environment sector.

Basic Policies

4.17.1 A framework of policies pertaining to forestry and Environment already exists in the form of a number of policy documents, Acts and their amendments and guidelines. Some of these are the National Forest Policy 1988, Draft Policy Statement for Abatement of Pollution, 1991, The Forest (Conservation) Act, 1980, as amended in 1988, National Wildlife Action Plan, Draft National Conservation Strategy and Policy Statement on Environment & Development, the Environment Protection Act of 1986, the Water (Prevention and Control of Pollution) Act of 1974, as amended in 1988, and the Air (Prevention and Control of Pollution) Act 1981, as amended in 1987.

Eighth Plan Outlay

14.18.1 In the Central Sector an outlay of Rs. 525.00 crores has been provided during the Eighth Plan period for Forestry and Wildlife sub-sector. The corresponding outlay in the State and UT sector is Rs. 3556.87 crores.

14.18.2 During the Eighth Plan an outlay of Rs. 675.00 crores has been provided for Ecology and Environment sub-sector in the Central Plan. In respect of States and UTs the Eighth Plan outlay under this sub-sector has been kept at Rs. 153.11 crores.

Table 4.1 Estimates Of Wastelands In India

(Lakh ha)

States/UT	Non-Forest Degraded Area	Forest degraded Area	Total
1.	2.	3.	4.
Andhra Pradesh	76.82	37.34	114.16
Assam	9.35	7.95	17.30
Bihar	38.96	15.62	59.58
Gujarat	71.53	6.83	78.36
Haryana	24.04	0.74	24.78
Himachal Pradesh	14.24	5.34	19.58
Jammu Kashmir	5.31	10.34	15.65
Karnataka	71.22	20.43	91.65
Kerala	10.53	2.26	12.79
Madhya Pradesh	129.47	71.95	201.42
Maharashtra	115.60	28.41	144.01
Manipur	0.14	14.24	14.38
Meghalaya	8.15	11.03	19.18
Nagaland	5.08	8.78	13.86
Orissa	31.57	32.27	63.84
Punjab	11.51	0.79	12.30
Rajasthan	180.01	19.33	199.34
Sikkim	1.31	1.50	2.81
Tamil Nadu	33.92	10.09	44.01
Tripura	1.08	8.65	9.73
Uttar Pradesh	66.35	14.26	80.61
West Bangal	21.77	3.59	25.36
UTs	8.89	27.15	36.04
Total	936.91	358.89	1295.80

Source :Society for Promotion of Wastelands Development, New Delhi, 1984.

Table - 4.2 Forest Cover-the Comparative Situation (1987 & 1989)

(Area: sq.km.)

Sl. No.	State/UTs	Forest Cover Assesment			
		1987 Assessment based on imagery 1981-83	1989 Assessment based on imagery 1985-87	Difference in Sq. km.	Percentage Change.
1.	Andhra Pradesh	50194	47911	-2283	- 4.5
2.	Arunachal Pradesh	60500	68763	+8263	+13.6
3.	Assam	26386	26058	- 328	- 1.2
4.	Bihar	28748	26934	-1814	- 6.3
5.	Goa (including Daman and Diu)	1285	1300	+15	+ 1.2
6.	Gujarat	13570	11670	-1900	-14.0
7.	Haryana	644	563	-81	-12.5
8.	Himachal Pradesh	12882	13377	+ 495	+ 3.8
9.	Jammu & Kashmir	20880	20424	- 456	- 2.1
10.	Karnataka	32264	32100	- 164	- 0.5
11.	Kerala	10402	10149	- 253	- 2.43
12.	Madhya Pradesh	127749	133191	+5442	+ 4.25
13.	Maharashtra	47416	44058	-3358	- 7.02
14.	Manipur	17679	17885	+ 206	+ 1.16
15.	Meghalaya	16511	15690	- 821	- 4.97
16.	Mizoram	19092	18178	- 914	- 4.78
17.	Nagaland	14351	14356	+5	+ 0.03
18.	Orissa	53163	47137	-6026	-11.3
19.	Punjab	766	1151	+ 395	+51.5
20.	Rajasthan	12478	12966	+ 488	+ 3.9
21.	Sikkim	2839	3124	+ 285	+10.0
22.	Tamilnadu	18380	17715	- 665	- 3.6
23.	Tripura	5743	5325	- 418	- 7.2
24.	Uttar Pradesh	31443	33844	+2401	+ 7.63
25.	West Bengal	8811	8394	- 417	- 4.7
26.	Andaman & Nicobar Island	7603	7624	+21	+ 0.27
27.	Chandigarh	2	8	+6	+30.0
28.	Dadra & Nagar Haveli	237	205	-32	-13.5
29.	Daman & Diu	-	2	-	-
30.	Delhi	15	22	+7	+46.6
31.	Lakshadweep	-	-	-	-
32.	Pondicherr y	8	-	-	-
Total :		642041	640134	-1907	0.29

Source: The State of Forest Report 1989

Table - 4.3 Progress of Afforestation through successive Plan periods

Sl No.	Five Year Plan Period	Area afforested in Plan Period (Lakh Ha.)	Cumulative (lakh Ha.)
1.	First	0.52	0.52
2.	Second	3.11	3.63
3.	Third	5.83	9.46
4.	1966-69	4.53	13.99
5.	Fourth	7.14	21.13
6.	Fifth	12.21	33.34
7.	1979-80	2.22	35.56
8.	Sixth	46.50	82.06
9.	Seventh	88.70	170.76
10.	1990-91	7.01	177.77

Source : Developing Wastelands, Ministry of Environment and Forests.

CHAPTER 5

INDUSTRY AND MINERALS

Seventh Plan Performance

5.1.1 The Industrial Policy Statement of July 22, 1991 has set out the broad outlines of the nation's industrial policy in the near-term future. In many respects, it signifies a return to the 1956 Industrial Policy Resolution with only one major exception, viz., the reduction of the industrial activities exclusively reserved for the public sector from 17 to 8 industries. Indian industry has developed a highly diversified structure, considerable entrepreneurship and a vastly expanded capital market. All this makes it possible for the public sector to vacate many areas hitherto exclusively reserved for it and throw them open to private sector initiative. This will free scarce public resources for investment in priority sectors. Also, the new Policy emphasizes efficiency and surplus generating capability in the public sector, a larger entrepreneurial and managerial freedom for both domestic private sector and foreign investment, a more open access to technology and greater reliance on the capital market for raising resources.

5.1.2 India stands totally committed to a policy of mixed economy as propounded by Nehru and other founding fathers under which both the public sector and the private sector enterprises co-exist and function side by side. But both need to be efficient. It is this strong motive for inducting efficiency which has partially prompted the recent policy of partial disinvestment of the shareholding in the public sector enterprises. The other consequence will be to free part of the public resources locked up in these enterprises for deployment elsewhere where it is needed more.

5.1.3 The relatively open foreign investment policy has been dictated by the following considerations :-

(i) A general awareness that foreign investment in India has been abysmally low and that the country has substantial absorptive capacity;

(ii) Realisation that foreign direct investment is less costly but more productive than international non- concessional credit at commercial rate;

(iii) Knowledge that to a limited extent foreign direct investment can provide both balance of payment support and ensure the inflow of latest technology.

5.1.4 There is, however, no intention to permit foreign investment indiscriminately in all areas, but to welcome it selectively in desired or priority areas.

5.1.5 The Eighth Plan starts against a backdrop of impressive industrial growth during the eighties, a rate which was higher than that achieved by the great majority of other nations. The average annual growth rate of the industrial sector including mining, manufacturing and electricity generation during the Seventh Plan period was 8.5% which though marginally lower than targetted 8.7% was much higher than the 3.5% achieved during the Sixth Plan.

5.1.6 The manufacturing sector which achieved an average annual growth rate of 8.9 per cent during the Seventh Plan period contributed significantly to this higher growth rate in the economy. Within the manufacturing sector, manufacture of electrical machinery and chemicals and chemical products achieved growth rates of 25.8% and 11.7% respectively. These two groups contributed about 61% of the industrial growth in the manufacturing sector.

5.1.7 Table 1 shows the average annual rate of growth recorded in 17 selected industry groups during the Seventh Plan period and 1990-91.

5.1.8 It will be seen that compared to the Sixth Plan, the Seventh Plan achieved higher annual growth rates in the manufacturing and electricity sectors. The mining sector, however, witnessed a substantial slow down in growth from 12.7 per cent in the Sixth Plan to 5.6 per cent in the

Table - 1 Growth rates of index of industrial production

(Base: 1980-81 = 100)

Code-Group	Idustry Group	Weight	% Growth Rate	
			Seventh Plan Average	1990-91
1.	2.	3.	4.	5.
20-21	Food Products.	5.327	5.0	12.5
22	Beverage, Tobacco & Tobacco products.	1.571	-1.1	1.3
23	Cotton Textiles.	12.309	1.8	14.7
24	Jute, Hemp & Mesta Textiles.	1.999	-0.3	4.4
25	Textile products. (incl. wearing apparel)	0.817	11.8	-32.0
26	Wood & Wood products & Furniture & Fixtures.	0.448	-2.5	12.7
27	Paper & Paper products.	3.235	6.7	9.0
28	Manufacture of Leather & Fur products.	0.489	6.4	3.1
29	Manufacture of Rubber Plastic, Petroleum & Coal products.	4.000	3.6	-0.1
30	Manufacture of Chem. & Chem. products.	12.513	11.7	2.7
31	Manufacture of Non-metallic Minerals.	2.299	6.7	1.7
32	Basic Metals & Alloy industries.	9.802	6.1	10.8
33	Metal products & parts.	2.888	6.3	0.4
34	Machinery, Machine tools & parts.	6.240	6.0	8.4
35	Manufacture of Electrical Machinery.	5.779	25.8	22.4
36	Manufacture of Transport Equipment & parts.	6.386	6.5	6.3
37	Miscellaneous Manufacturing industries.	0.905	23.1	-2.9
2-3	Manufacturing	77.107	8.9	9.1
1	Mining & Quarrying	11.464	5.6	4.9
4	Electricity	11.429	9.3	8.7
	Overall Index.	100.000	8.5	8.5

Seventh Plan. Among the major industry groups, the annual growth rates of textile products, basic metals and alloys, metal products and parts, electrical machinery and appliances, and other manufacturing products accelerated during the Seventh Plan period, whereas those of beverages, tobacco and tobacco products, wood and wood products decelerated.

5.1.9 The significant growth in industrial production during the Seventh Plan is attributable to a number of factors, the most important being improvement in the performance of the infrastructure viz., power, coal, etc. The other contributory factors were :(a) changes in the area of licensing and procedures; (b) import of technology; (c) higher import of capital goods; (d) better utilisation of installed capacities; and (e) allowing broadbanding of products in a number of industries. The Seventh Plan also witnessed a higher dose of liberalisation measures such as (i) raising the assets limit for exemption to companies from the purview of MRTP Act; (ii) exempting 83 industries under the MRTP Act for entry of dominant industries; (iii) grant of exemption from licensing for industrial units with an investment of upto Rs.50 crores in backward areas and Rs.15 crores in other areas on the basis of a negative list; and (iv) delicensing non-MRTP, non-FERA companies for 31 industry groups and MRTP/FERA Companies in backward areas for 72 industry groups.

Performance of Central Public Sector Enterprises

5.1.10 As on 31.3.1991, there were 246 Central Public Sector Enterprises (PSEs) owned by the Government of India with a total investment of Rs.113,234 crores. Out of these, 236 were operational enterprises with an employed capital of Rs.101,702 crores and employee strength of 23.01 lakhs. Of these, 131 enterprises earned an overall net profit of Rs.5731 crores during 1990-91 and 109 suffered a net loss of Rs.3064 crores. The profitability profile of the PSEs over the last decade is detailed in statement 5.1.

5.1.11 The performance of the Central Public Enterprises has been the subject of debate for some years now, and a number of Committees/Working Groups have gone into the matter in detail. In the context of the role which the Public Sector is required to play in the prevailing environment, the Government has taken the following decisions:

i) Portfolio of public sector investments will be reviewed with a view to focussing the public sector on strategic, high-tech and essential infrastructure. Whereas some reservation for the public sector is being retained, there would be no bar on areas of exclusivity being opened up to the private sector selectively. Similarly, the public sector may also be allowed entry in areas not reserved for it.

ii)Public enterprises which are chronically sick and which are unlikely to be turned around will, for the formulation of revival/rehabilitation schemes, be referred to the Board for Industrial and Financial Reconstruction (BIFR), or other similar high level institutions created for the purpose. A social security mechanism is being created to protect the interests of workers likely to be affected by such rehabilitation packages.

iii)In order to raise resources and encourage wider public participation, a part of the Government's share- holding in the public sector would be offered to mutual funds, financial institutions, general public and workers. This is also expected to bring in greater public accountability and help create a new culture in the working of PSEs and improve their operational efficiency.

iv)Boards of public sector companies would be made more professional and given greater powers.

v)There will be a greater thrust on performance improvement through the Memoranda of Understanding (MOU) system through which managements will be granted greater autonomy and held accountable. Technical expertise on the part of the Government would be upgraded to make the MOU negotiations and implementation more effective.

vi) To facilitate a fuller discussion on performance, the MOUs between the Government

and the public enterprises will be placed in Parliament. While focussing on major management issues, this will also help place matters on day to day operations of public enterprises in their correct perspective.

5.1.12 The implementation of these decisions has already started. During 1991-92, it was possible to mop up Rs.3038 crores through disinvestment of equity of PSEs. Similarly, the number of MOU signing companies is being gradually increased. In 1992-93, 120 PSEs are expected to sign MOUs. The Government has also established a National Renewal Fund to provide a social safety net to protect the workers from the adverse consequences of the technological tranformation.

State Level Public Enterprises

5.1.13 There are in all about 1100 State Level Public Enterprises (SLPEs) with an estimated investment of about Rs.50,000 crores. Unfortunately, a large proportion of these State level public enterprises has not been working satisfactorily. As a first step towards making these PSEs more responsive, the Government has decided to disinvest from some of the SLPEs.

Subsidies by the State Governments

5.1.14 The State Governments have been offering various concessions to entrepreneurs for setting up new industrial units. It is anomalous that while the State Governments are raising power rates to meet the losses of State Electricity Boards (SEBs), they are also offering power subsidy to new units. Similarly, most State Governments have announced deferment/exemption of sales tax for new units, capital subsidy and subsidy for purchase of generating sets. As most States are announcing similar incentives, it is a zero sum game, with the State Governments giving up revenue. It would only be appropriate that a detailed review of the various subsidies/concessions offered by the State Governments is undertaken so that a more rational policy frame is developed.

New Growth Centres Scheme

5.1.15 For promoting industrialisation of backward areas Government of India announced in June, 1988, a scheme to develop growth centres in all States/Union Territories. These growth centres will be endowed with adequate infrastructural facilities like power, water, communications, banking etc. so that they can act as magnets for attracting industries to these areas. It has been decided to develop about 70 growth centres during the Eighth Plan. The locations of 63 growth centres have so far been finalised in consultation with the concerned State Governments/Union Territory Administrations. However, the pace of implementation is slow. With the abolition of licensing in most of the sectors, this is the only instrument available for facilitating regional dispersal. Considering the imperative need to minimise regional imbalances within the shortest time, intensive efforts would need to be made to ensure that these Centres are fully operational in the next 3-4 years.

Science & Technology in Industry & Minerals Sector

5.1.16 Research & Development (R&D) is the watch word for maintaining an edge in quality and cost in today's competitive world. Indian industry has made significant strides in building up a strong base for manufacture of various goods, largely through acquired technologies. There is an imperative need for assimilation, adaptation and improvement of imported technologies as well as development of indigenous technologies suited to local conditions.

5.1.17 A large number of industries in the public and private sectors have established corporate R&D facilities. Organisations like Steel Authority of India Ltd, Bharat Heavy Electricals Ltd, Project Development India Ltd, Hindustan Machine Tools, Instrumentation Ltd, Indian Petrochemicals Corporation Ltd, Petrofils Cooperative Ltd, Hindustan Organic Chemicals Ltd and Hindustan Insecticides Ltd have established in-house R&D facilities for product and process improvement and applied research. In addition, a large number of industry specific research institutes and Cooperative Research organisations are doing very useful work. Moreover, there are a large number of technical consultancy organisations having expertise in operational areas, a resource to be reckoned with for undertaking various developmental activities. Besides, in-house R&D efforts and foreign collaborations with reputed manufacturers abroad, UNIDO/UNDP assistance for frontier technologies is being sought for technological development in the country. However, there is a need

to improve the interaction between the industry and the academics.

Outlays and Expenditure

5.1.18 The Seventh Plan provided an outlay of Rs.19,708 crores, out of which Rs.17,268 crores were for Central sector (excluding coal and petroleum, which form part of the energy sector) and the balance Rs.2,440 crores were in the Plans of States and Union Territories. The actual expenditure (at current prices) is estimated at Rs.23,175 crores in the Central sector and Rs.3,120 crores by States and Union Territories. Expenditure in the Central sector at constant prices has also been higher, being Rs.18,564 crores. Year-wise actual expenditure both at current prices and at constant prices in the Central sector is shown in Statement 5.2.

5.1.19 The overall outlay envisaged in the Eighth Plan for Industrial and Mineral programmes in the public sector is Rs.40,673.43 crores, out of which Rs.35,150 crores are for the Central Sector and the balance of Rs.5,523.43 crores is for the States sector. The Ministry/Department-wise outlays provided in the Central sector are detailed in Statement 5.3 and the State-wise outlays are detailed in Statement 5.4.

Outlook for the Eighth Plan

5.2.1 With a view to consolidating the gains already achieved during the 1980s and providing greater competitive stimulus to the domestic industry, the Government has introduced a series of reforms in the industrial, fiscal, trade and foreign investment policies. These reforms are intended to de-regulate or unshackle the industry and enable it to take decisions on its own without the need for Government approvals for specific actions. With these, the industry will be able to take timely steps to adjust to the changes in internal as well as external environment and meet the needs of a dynamic market. These reforms will lead to increased globalisation of the economy and its greater integration with the world economy. The freedom and flexibility allowed to the industry will enable it to optimise its operations and improve its competitiveness. In this background, there will be less emphasis on quantitative targets and the planning will become more "indicative". The desired growth of different sectors will be achieved primarily through modifications in industrial, trade, fiscal policies and changes in duties and taxes rather than through quantitative restrictions on imports/exports or licensing mechanism.

Role of Public Sector

5.3.1 The public sector has played a pioneering role in the development of the Indian economy and has a number of achievements to its credit. It deserves a major share of the credit for the self-reliant growth of the economy so far. However, there are some notable weaknesses too, the most important being the inability of the public sector to generate adequate resources for sustaining the growth process. Besides, the private sector has now come of age and has developed considerable entrepreneurial, managerial, technological, financial and marketing strengths. In this background, a review of the role of the public and private sectors is called for in order to enable them to jointly shoulder the responsibility for further development of the economy.

5.3.2 The new Industrial Policy of July 1991 has brought down the number of areas reserved for public sector from 29 -- earlier 17 areas were reserved exclusively for public sector while twelve other areas were to be progressively State-owned with State generally taking the initiative in establishing new undertakings -- to the following eight: arms and ammunition and allied items of defence equipment; defence aircraft and warships; atomic energy; coal and lignite; mineral oils; mining of iron ore, manganese ore, chrome ore, gypsum, sulphur, gold and diamond; mining of copper, lead, zinc, tin, molybdenum and wolform; minerals specified in the Schedule to the Atomic Energy (Control of Production and Use) Order, 1953; and railway transport.

5.3.3 The private sector is expected to play an increasing role in industrial activities, especially where security and strategic or social considerations are not very important. The public sector will concentrate increasingly on basic and core sectors. Even in these areas, emphasis will be on financing industrial and mineral projects primarily through internal and other extra-budgetary resources instead of depending on budgetary allocations. This is in line with the general philosophy of placing greater reliance on competitiveness of industries and efficiency of operations. The undertakings which are in a

position to finance their development plans on their own will be allowed greater freedom for growth and diversification as a self-sustaining process. In the case of undertakings which are operating in core areas and are largely dependent on budgetary support, limited support will be provided in the initial years to enable them to stand on their own in the later years of the Plan.

5.3.4 As a result of the recent policy reforms,the industrial sector is expected to undergo considerable restructuring. First, in the past there has been considerable stress on import substitution at any cost. With the emphasis now being laid on competitiveness, future growth will be more in those sectors where the country has comparative advantage. Secondly, the size of individual companies, which is very low by international standards, not a single Indian company figures in the list of first 500 `Fortune' companies, is expected to grow through expan- sions, amalgamations, mergers, etc. Thirdly, there would be greater integration of indigenous production with outside. Those components/ sub-assemblies whose production is uneconomic, will be imported. On the other hand, some other components/ sub-assemblies/ finished products will be increasingly exported. Finally, there will be joint ventures abroad to exploit the complementarities of resource endowments in this country and the concerned foreign country.

5.3.5 Among the metallurgical industries, the country possesses a good resource base in the case of iron and steel and aluminium. These two industries have the potential to record a very good growth rate in the long-run. However, in the medium-term, the prospects are not so good because of inefficient production and constraints of infrastructure in the case of former and lack of bauxite linkages and inadequate availability of power in the case of latter. In the case of aluminium, it will be worthwhile to explore possibilities of large scale manufacture of alumina in the country, partly for exports and partly for smelting abroad to meet the country's requirements of aluminium. Due to poor resource position, no major capacities are envisaged to be set up in the Eighth Plan in the case of copper, lead and zinc.

5.3.6 The capital goods industry has recorded impressive gains in the past in terms of quantitative increases in production. From a virtually non-existent base at the time of Independence, today the country is more or less self- sufficient in meeting the requirements of various user sectors. However, the qualitative performance of the industry leaves much to be desired. In most of the sectors, the performance of the indigenously manufactured capital goods is nowhere near the contemporary levels in terms of process technologies, quality of products, productivity and cost of production. This sector decides the efficiency of operations of the various user sectors. With increasing emphasis on competitiveness, the user sectors will be anxious to switch over to state-of-the-art technologies and processes. This will, therefore, be one sector which will be adversely affected by the opening up of the economy and allowing freedom to the entrepreneurs to select and import capital equipment and technologies. In due course, the leading capital goods manufacturers can be expected to go in for collaborations, foreign equity and import of technologies to update their products and emerge as suppliers of world class capital goods but in the medium-term, this sector will be adversely affected due to its inability to meet global competition.

5.3.7 In the areas of machine tools, transport equipment and accessories, electrical equipment and controls and instrumentation, the country has a good base. With upgradation of facilities through collaboration/foreign equity etc., it should be possible to build on this and achieve good growth in production as well as exports.

5.3.8 With low levels of capacity utilisation, poor productivity, inadequate ancillarisation, long delivery period and high cost of production, the ship building industry in the country is moribund. On the other hand, the ship repairing industry is reasonably competitive and has the potential to meet the growing demand and to save valuable foreign exchange. With greater attention to modernisation of ship repairing facilities, the industry is expected to achieve reasonable growth.

5.3.9 The growth of the electronics sector has been rather lopsided. The high growth rate recorded in the past has been largely due to the growth of the consumer electronics sector, especially the TV industry. The industry is characterised by a very weak components base and

consequent high import intensity, grossly uneconomic scales of production and high cost of production. In the case of controls and instrumentation, there is considerable capacity in the country for manufacture of hardware but the capability to provide the requisite systems design and support is inadequate. The exports of computer software have recorded reasonable increases in the recent past but it has hardly been possible to touch the fringe of the potential. The opening of the economy is expected to lead to restructuring of the entire electronics industry, including closure of a number of sub-economic units engaged primarily in screw driver technology, consolidations and amalgamations of units and increased tie-ups with foreign firms to provide a sound base for sustained development of the industry. As this restructuring process will take some time, the outlook in the medium term does not look very promising.

5.3.10 The fertiliser industry will be virtually by-passed by the economic liberalisation in view of the controls on inputs and administered prices of inputs as well as outputs of the industry. In the case of nitrogenous fertiliser, a decision on the pricing policy is imperative. On the one hand, the existing system of retention prices and subsidy is leading to increasing burden of subsidy on account of increases in production and costs of inputs, which are not matched by corresponding increases in the retail prices of fertilisers and on the other, adequate private sector initiative is not forthcoming because of lack of a clear cut policy and freedom to decide the feed stock as well as uncertainty about the returns from the investments. From time to time, ad hoc adjustments have been made in the norms for fixation of retention prices, creating considerable apprehensions among the potential investors about the viability of the projects. It is primarily on this account that there has been very slow progress in the three fertiliser plants which were to come up in the private sector along HBJ pipeline in the Seventh Plan. It is imperative to finalise the feed stock and fertiliser pricing at the earliest. The country may be heading for increased shortages and dependence on import of nitrogenous fertilisers.

5.3.11 In the case of phosphatic fertiliser, the country's resource base is very poor and purely on economic considerations, setting up of phosphatic fertiliser capacity is undesirable. In order to minimise dependence on large-scale imports of fertilisers, joint ventures abroad would need to be explored. For production within the country, a judicious mix of import of rock phosphate and sulphur, phosphoric acid and finished fertiliser would need to be adopted.

5.3.12 The prices of most of the petrochemical products in the country are well above the international levels, partly because of high administered prices of inputs and partly because of high rates of taxes. World over, the petrochemical products are finding increasing applications as substitutes for metals, alloys, etc. Large number of new applications are being found almost everyday. Similarly, in the textile sector, cotton is considered a luxury item and synthetic fibres are used for the common man's clothing abroad because of ease of convenience, durability etc. But in India, the reverse is the case. While the petrochemical industry has been delicensed, its growth will be guided to a considerable extent by the reductions in taxes and duties on its products.

5.3.13 India is a large producer of cement and cement machinery. In the last few years, the production of cement has risen substantially. The cement production in the country is internationally competitive. The cement industry is expected to record good growth in production as well as exports.

5.3.14 The sugar scenario has undergone a significant change during the past two years and the country has become a net exporter of the commodity from being a net importer for many years. The country is also a leading producer of sugar machinery and sugar production is quite competitive. With focus on increasing the per hectare yield of sugarcane, the sugar industry is likely to increase its production and exports substantially.

5.3.15 In spite of a phenomenal increase in exports of leather and leather goods in the recent past, India's share in world trade is minimal (0.7 per cent in the case of footwear, 9.5 per cent in footwear components and 4 per cent in leather garments). There is a growing market for leather products abroad and India can increase its exports substantially.

5.3.16 The textile sector has been undergoing a major restructuring. The mills in the organised sector are not able to meet competition from the powerlooms, though spinning continues to be profitable. Increasingly, the mills are modernising their plants and machinery and devoting greater attention to exports. A number of 100 per cent EOUs have also come up. This is a healthy development. This trend is expected to get accelerated and the textile exports are poised for a quantum jump. With improved availability of quality fabrics at competitive prices, the garments industry is also expected to record a healthy growth. The powerloom sector is likely to further increase its contribution and become the prime supplier of cloth for domestic market. The outlook for the handloom sector does not look promising. It will need to switch over to production of high value items and cater to the sophisticated exports market for specialised products.

5.3.17 A number of composite mills have closed down. In the context of the need to find resources for modernisation and growth of mills as well as paying legitimate dues of workers etc., it will be worthwhile to examine the possibilities of sale of land and buildings, which in many cases are surplus to the requirements of the concerned mills. While there are, no doubt, legal difficulties, the long term interest of the industry demands that all parties i.e., Union Government, State Governments, managements and trade unions should sit together and evolve a workable strategy for realising the full commercial value of the property and utilising it for modernisation/diversification of the concerned mills as well as rehabilitation/re-deployment packages for surplus labour.

5.3.18 The jute industry is surviving virtually on oxygen being provided by the Government. Unless the industry takes up modernisation in a big way, concentrates on high value products and diversifies into new areas, it has a bleak future.

5.3.19 Of late, there has been considerable interest in the agro-food processing industry and a number of ventures are in the offing, some of them in collaboration with leading foreign companies and others as joint ventures with foreign companies. The marine export has also attracted a lot of attention. With the recent policy changes, these two sectors are poised for a rapid growth.

Public Enterprise Reform

5.4.1 Public Enterprises embody a major national capability in terms of physical,financial, institutional and human resources. Their effective utilisation can lead to significant economic growth. In the framework of the new Economic Policy, Public Sector industry has an important role as an autonomous, competitive and efficient sector, to provide essential infrastructure goods and services, development of natural resources and areas of strategic concern. A positive and productive future awaits public sector industry. To reach that goal, considerable restructuring is involved. The Eighth Plan recognises this and proposes a major public sector reform initiative. This initiative will consist of the following integrated strategies:

i. Restructuring involving modernisation, rationalisation of capacity, product-mix changes, selective exit and privatisation is needed on a massive scale, to make public enterprises viable, efficient and competitive.

ii. Increase in autonomy and performance accountability of public enterprises is critical to make them a dynamic force. The system of Memoranda of Understanding between administrative ministries and central public enterprises which has been launched in the Seventh Plan has these objectives in its design. However, its effectiveness needs to be improved.

iii. Changes in management practices at specific enterprise level to promote efficiency, dynamic leadership, resourcefulness and innovation are needed.

iv. State level public enterprises have serious problems. Interference, lack of professionalism and ad-hoc investment and employment decisions have resulted in chronic sickness of many of them. A major effort is called for, in collaboration with the State Governments, to promote reforms in them.

v. In the changing economic environment, technology will be a major tool to improve

competitiveness and and efficiency of public enterprises. Their capability to develop import and use technology effectively or, to integrate technology in their corporate strategies (expansion, diversification, marketing etc.) is weak now. The new reform initiative needs to address this through building active linkages among R & D laboratories educational institutions and public enterprises. This is vital in the emerging inter-dependent and globalising economic environment.

vi. The organisation of Government (Ministries and agencies) for public sector has historically grown in a certain manner. Presently many regulations (price, distribution, investment and import controls) are being dismantled. This liberalisation not only calls for re-structuring of enterprises but also of the Government in the governance of industrial growth and management of inter-face with the enterprises. A new institutional capability is needed in Government that is responsive to environmental change, professional and can facilitate operation of market forces, through orchestrisation of the efforts of various (R&D, education, engineering, manufacturing, trade, etc.) organisations towards priority targets in select areas, by building a consensus and partnership among the different stakeholders.

5.4.2 The above call for a positive public sector reforms, by designed, selective and targetted interventions. The reform initiative needs to include: creating a knowledge base for reform, generating an institutional capability and developing a consensus among the stakeholders about policy goals and implementation strategies.

5.4.3 A network of institutions (academic, government, industry, consulting firms, financial institutions and international organisations) needs to be organised to design and implement the reforms. A coordinated strategy through a high powered task force is needed to mobilize the resources for achieving the objectives reforms in the Eighth Plan period.

Targets for the Eighth Plan

5.5.1 The capacity and production targets for selected industries for the Eighth Plan are contained in Statement 5.5. Brief highlights of industrial programmes and stratgies for major sectors are given in the subsequent paragraphs.

Metallurgical & Mineral Industries

5.6.1 The metallurgical and mineral industries constitute the bed-rock of industrial sector as they provide basic raw materials for most of the industries. Their easy availability is an essential pre-requisite for growth of most of the other sectors.

5.6.2 India continues to be a net importer of minerals and metals. The gap between the projected demand and supply of most of the minerals is likely to increase in the coming years.

5.6.3 Considering the time lag between discovery and eventual production of minerals, a greater thrust on mineral exploration activities needs to be given during the Eighth Plan particularly towards exploration by adoption of improved technology, including remote sensing and geophyiscal techniques. The exploration strategy has to be reoriented and emphasis should be on those minerals in which the resources are poor e.g. gold, base metals, platinum group of metals, diamond, nickel, tungsten and rock phosphate, etc.

5.6.4 The State sector's contribution in mining of industrial/non-metallic minerals is quite significant. Reorganisation and strengthening of the concerned departments of the State Governments will be accorded priority in the Eighth Plan. Most of the non-metallic minerals are produced through small scale mining which will continue to co-exist with large scale mining.

Iron Ore

5.7.1 Iron ore constitutes one of the major exports of the country with foreign exchange earnings of about Rs.1200-1300 crores in 1991-92. The major exporters are National Mineral Development Corporation (NMDC), Kudremukh Iron Ore Co. Ltd. (KIOCL) and private parties, particularly the Goan mine owners. The ore from Bailadilla mines of NMDC is by far the richest in the country. Until recently, the entire Bailadilla output was being exported, with the indigenous industry using inferior grades. It

is imperative to reduce the level of exports of very high grade iron ore (+65% Fe) and utilise it increasingly in indigenous steel plants, particularly for direct reduction.

5.7.2 As a significant proportion of iron ore reserves is in the form of fines and blue dust, greater efforts will have to be made for their utilisation for which necessary R&D work will be taken up. In this context, the NMDC will undertake a project in collaboration with the Department of Electronics(DOE) on development of process technology for manufacture of various types of ferrite powders using indigenous raw materials/blue dust and their pilot plant production.

Iron and Steel

5.8.1 During the Seventh Plan and 1990-92, the expansions of Bokaro and Bhilai steel plants to four million tonnes each, the second phase modernisation/expansion of Tata Iron & Steel Company and the first phase facilities of Visakhapatnam Steel Plant (except light and medium merchant mill) were completed. In addition, there has been impressive growth of production capacity in mini steel plants and induction furnace units in the secondary sector. The second phase of Visakhapatnam Steel Plant is expected to be completed in August, 1992.

5.8.2 Indian steel industry has been suffering from a number of disabilities. Obsolescence of plant, machinery, and technology has been important factor for low capacity utilisation, low productivity, high energy consumption and high production cost. It is interesting to note that in the sixties, the Indian Steel Industry was internationally competitive, but it is no longer so. The programme of development of steel industry in the Eighth Plan is aimed at improving the technological health of the existing integrated steel plants and modernisation and upgradation of technology so as to achieve international competitiveness in respect of both cost and quality. Modernisation of existing integrated steel plants at Durgapur and Rourkela in public sector and Tata Iron & Steel Co. in the private sector is expected to be completed in the Eighth Plan. Upgradation of steel making in the secondary sector has been taken up/being contemplated in the Eighth Plan. All these measures intiated in the Seventh Plan will bring the Indian steel industry at par with global standards. The modernisation and rebuilding of the IISCO plant at Burnpur is also expected to be taken up in the Eighth Plan.

5.8.3 Under the recent policy changes, no licence is required to set up iron and steel units. These policy changes are expected to give impetus to Indian steel industry to grow freely and also attract private investment. The initial response of the private sector to these changes appears to be encouraging.

Non-Ferrous Metals

5.9.1 During the Seventh Plan period, the non-ferrous metals sector made impressive progress with completion of the prestigious, integrated, multi-locational Aluminium complex of National Aluminium Company Ltd.(NALCO), setting up of a captive power plant for Bharat Aluminium Company Ltd.(BALCO), modernisation and debottlenecking of copper smelters and refineries of Hindustan Copper Ltd.and expansion of Vizag Zinc smelters of Hindustan Zinc Ltd. as well as Binani Zinc Plant in private sector, thereby raising capacities for aluminium, copper and zinc as targetted for the Plan. From a position of dependence on imports, India has emerged as a net exporter of aluminium. As far as other major non-ferrous metals are concerned, the share of imports in the consumption of lead and zinc registered some decline, whereas in case of copper, despite expansion of the existing capacity, dependence on imports increased.

Aluminium

5.10.1 With the commissioning of Orissa Aluminium Complex of NALCO, the country has emerged as a net exporter of aluminium. However, this situation is expected to last only for a couple of years more and by 1994-95, the country may once again turn a net importer of aluminium.

5.10.2 Considering the advantageous position in the resource endowment and in view of the production being competitive, it would be desirable to maintain an exportable surplus. In this context, the proposed expansion of Hindustan Aluminium Company Ltd.(HINDALCO) by 1.5 lakh tonnes would merit a high priority. NALCO's expansion by 1.15 lakh tonnes would also need to be considered as soon as they stabilise their production from the present capac-

ity. BALCO would need to concentrate on energy conservation and setting up of downstream capacity. A number of 100% EOU proposals for manufacture of alumina in the private sector have been made but these have been pending for quite some time now for want of finalisation of bauxite linkages. This needs to be expedited. Such plants could serve as the first step for setting up of aluminium smelters at a later date or joint ventures abroad for aluminium smelting.

Copper

5.11.1 During the Seventh Plan, a marginal increase in the capacity was achieved by debottlenecking and modernisation of the existing smelters of Hindustan Copper Limited (HCL) with small investments. Production of copper is not internationally competitive because of the low grade of copper deposits and small scale of operations in comparison to world standards. Malanjkhand copper deposit appears promising. After an evaluation of the results of the exploration and feasibility study currently under way, a view will be taken on augmenting copper production. Since the deposits in India are very low in copper content, possibilities of bio-acid leaching need to be examined.

Lead & Zinc

5.12.1 With the commissioning of Rampura-Agucha-Chanderiya integrated project of Hindustan Zinc Ltd. (HZL) in 1991-92, the country has achieved near self-sufficiency in zinc. The integrated project will need to stabilise its operations before embarking on any large scale expansion in the Eighth Plan. No major new projects are envisaged in the Eighth Plan except for a repaclement mine to feed Rajpura Dariba concentrator.

Nickel

5.13.1 The entire requirement of nickel in the country is imported. Considerable efforts made in the past for commercial production from large low grade nickel resources of Sukinda (Orissa) based on indigenous technology have not been successful. It will, therefore, be necessary to carefully examine the plans for indigenous production. It would be desirable to look for imported technology for upgradation of ores before taking any investment decision on production of nickel.

Gold

5.14.1 The gold deposits have been steadily getting poorer and deeper with production costs becoming increasingly uneconomic. The future of gold mining in India will depend on the low grade small scale deposits in which mill recovery is a sensitive factor. Mining of scattered shallow gold deposits will have to be considered. A new approach to gold exploration and recovery of gold from low grade ore deposits and tailings deserves consideration.

5.14.2 With the liberalisation of gold import and consequential decrease in the gold prices, the operations of Bharat Gold Mines Ltd. have become still more un-economic. The cost of production is two to three times the selling price of gold and the company is heavily dependent upon budgetary support even for its current operations. A hard look at the future of the company is overdue. The possibility of induction of private partners and `state-of-the-art' technology and closure of some un-economic mines with re-settlement of surplus manpower in new ventures will need to be explored.

A National Materials Initiative

5.15.1 There are significant and rapid changes taking place in the world of materials. The emerging unity of many disciplines and areas in materials science and technology; the growing integration of activities in the materials cycle ranging from design to disposal; the intensive engineering efforts for superior performance; the targetted, high priority and integrated efforts on materials in many countries and the large potential for materials technology-based industrial development in India, call for a coordinated Indian strategy in technology development and innovation, industrial structure, human resources development, infrastructure development and international linkages. Indian capability in Materials Scinence and Technology is large and diversified but is fragmented and has a poor impact on the production system. The Natinal Materials Policoy Project, under the auspices of the Technology Information, Forecasting and Assessment Council, Department of Science and Technology, has concluded that there is a priority need to promote a National Materials Initiative (NMI) to reach these objectives and has recommended the formation of a Materials Council with adequate resources to implement the strategy with and through other

institutions, to make india a competitive world player in select materials. This will involve doubling our current national investment in materials technology development from about Rs. 125 crores per annum to Rs. 250 crores per annum by 1995.

5.15.2 Material Science and Technology will be the central instruments to achieve the goals of the National Mateiral Initiative. Research and Technology Developent in the fllowing areas need to be promoted in collaboration with industry, R&D laboratories and Academmic Institutions:

Raw material upgradation;

Performance improvment of conventional materials;

Value added production;

Development of Advanced Materials;

Applications/use technology;

Materials use efficiency;

Synthesis, Processing and Manufacturing;

Energy intensity;

Substitution and Conservation;

Environmental Sustainability and

Materials Cycle linkages.

Material Technological Innovation in Industry can be promoted by a competitive environment as envisaged in the New Economic Policy. A "Materials Council", when formed can, by strengthening the infrastructure and appropriate joint funding arrangements, stimulate this process. One of the Council's tasks is to identify specific areas of priority and promote alliances and partnerships of various institutions for materials technology development and use. The Council will seek to coordinate the diverse ongoing efforts for synergy among them.

5.15.3 The Material Council, when established could be an autonomous body, and a collaborative venture of Industry, Government, S&T organisations and Financial Institutions. It could be set up through the initiative of the Department of Science and Technology and managed by an independent board. Initial funding by Government could be minimal in the Eighth Plan and larger resources can be raised with the help of financial institutions, international organisations, industry etc. A Materials Development Fund can be formed for this prupose. The main tasks of the Materials Council would be :

- Long term Industry/Technology forecasting and monitoring;

- Interagency coordination in materials technology;

-Promotion of partnerships and alliances among industry, S&T and academic institutions for the development and commercialisation of technology;

-Integration of materials science and technology with corporate strategy at the industry level;

-International linkages development (import of technology, foreign investment, S&T cooperation agreement, etc.) and

-Information services and outreach efforts.

The Council's role will be to orchestrate, facilitate and catalyse various programmes rather than direct intervention. It will not seek to duplicate any efforts, but build on them. The experience of Japan, South Korea, European Community and United States of America suggest such an approach. The Council's performance in the long run is to be measured by the extent it has been able to promote a competitive and materials-technology-based industrial development.

Engineering Industry

5.16.1 The engineering industry provides the key to economic growth with its diversified forward and backward linkages with almost every sector of the national economy. The share of engineering in the total organised industrial activity is about 31.0% of the value of output, 33.2% of value added, 29.7% of employment and 28.4% of invested capital. During the Seventh Plan, output of the manufacturing sector as a whole grew at 8.8%, while the engineering industry grew at 10.5% per annum. This sector

is mainly based on domestic resources and has good employment potential. The country has comparative advantage in this sector. However, the engineering industry has a number of weaknesses, the prominent being:

- Weak Design and Engineering base;

- Inadequate attention to modernisation and continued upgradation of technology;

- Inadequate R & D;

- Absence of companies of international standards which can take up turn-key and consultancy projects;

- Demand constraint leading to low capacity utilization;

- Paucity of domestic financial resources and availability of "tied aid" leading to avoidable imports;

- High cost of raw materials and other inputs;

- High cost of credit/finance and duty structure;

- Absence of sustained export initative;

- Inadequate attention to training and manpower development;

- Overmanning, which has often prevented modernisation and also increased overheads;

5.16.2 The stress in the Eighth Plan will be on qualitative upgradation and elimination of the weaknesses mentioned above. Greater stress would need to be laid on import of drawings and designs, than on import of equipment. Establishment of closer linkages between academic institutions, manufacturers of equipment, users of equipment, national laboratories and the Government is also necessary.

Ship-Building and Ship-repair Industry

5.17.1 At present there are about 40 shipyards in India. Out of these, seven are in the public sector, two in the State sector and the remaining in the private sector. The private sector shipyards are allowed to construct vessels of any size. However, at present the private sector shipyards are not capable of building more than 10,000 DWT size crafts. In spite of so many shipyards in the country, ship-building industry is in doldrums partly because of very high cost of indigenous ships, unduly long delivery periods and poor viability of the shipyards and partly because of the ability of foreign shipyards to offer ships at marginal cost and shorter delivery period consequent on world-wide recession in ship-building industry. Hence, it is not proposed to set up any new ship- building yards in the Eighth Plan. Efforts would, however, be made to improve productivity and viability of the existing yards. Certain other measures under consideration are introduction of revised pricing formula as recommended by BICP, treating the ship-building industry as 100% export oriented industry with all related benefits, allowing duty free imports up to a limit of 60% of the realisable price of the vessel, providing working capital loans to shipyards on soft terms, etc.

Ship Repair Facilities

5.17.2 The ship repair activity is far more profitable than ship-building. At the same time, substantial outgo of foreign exchange (to the tune of Rs.50 crores every year) on account of Indian vessels repairs at foreign shipyards can be avoided if domestic capabilities are strengthened. Keeping this in view, most of the units in this sector are drawing up plans to increase their capacities. The Government has recognised the strength of this industry and given it the status of deemed export industry. A number of concessions, as available to 100% export oriented units, have been provided.

Electronics

5.18.1 The electronics industry has the potential to be a powerful catalyst for improving productivity and efficiency in all sectors of the economy. It has achieved rapid growth, perhaps the fastest rate of growth among all industries over the past decade. The value of output of the electronics industry grew by about 25 per cent annually during the Sixth Plan and around 35 per cent per annum during the Seventh Plan. However, India's production of electronic goods is presently less than one percent of the world production which is valued at over U.S. $ 750 billion per annum. The industry is employment-oriented and provides direct employment to around 2.60 lakh persons and indirect employment to approximately 5.20 lakh persons. The electronics exports especially

software exports have recorded impressive increases but the import intensity of the sector is a cause for concern.

5.18.2 The status and weaknesses of the indigenous electronics industry have been detailed in para 5.3.9 above. The focus of attention in the Eighth Plan, in electronics industry would be on production at internationally competitive scales, encouraging export oriented production, technology development, manpower development, rural industrialisation and application of electronics in key socio-economic sectors. In the area of computer software exports, where the country has comparative advantage, Software Technology Parks are being set up. These would require certain facilities like quick and easy communications, already provided in a few centres. A project on Value Added High Speed Data Communication Network for Software Exports is being implemented.

5.18.3 Electronics has a very significant role to play in increasing productivity and reducing costs in virtually every sector of the economy. Over the last few years certain technologies have been developed for introduction of electronic systems and controls in a number of industries such as steel, cement, paper and pulp, sugar, tea and power and also in the areas of agriculture, social infrastructure and strategic electronics, which are apppropriate for the needs of the country. In the Eighth Plan, efforts will be made for intensive application of these technologies in various sectors.

5.18.4 Another area needing attention is the training of manpower required for the electronics industry. In order to achieve the desired growth and to attract foreign investors, it has become necessary to ensure that adequately trained manpower is available. At present, training in electronics is being imparted both in Government and private institutions. Government has supported more than 450 institutions during the Seventh Plan. In the Eighth Plan, this aspect will be given special emphasis by introducing more and more job oriented courses at ITI level and Post Diploma/Degree level in the area of repair/maintenance of consumer electronics, industrial electronics, electro-medical equipment and computer systems. Some institutions like Centres for Electronics Design & Technology (CEDTs) etc. will generate special manpower in this field. Government is giving recognition to a number of private institutions engaged in various courses in computer education. Keeping in view the future requirement of manpower, there is an imperative need for augmenting and improving the training facilities available in ITIs, Polytechnics, Engineering Colleges and other institutions.

Fertilisers

5.19.1 During the Seventh Plan, four gas-based nitrogenous fertiliser plants at Aonla, Vijaipur, Jagdishpur (on HBJ line) and Namrup Expansion III and DAP project at Paradeep were commissioned. Four gas-based projects are under implementation at Babrala, Shahjahanpur and Kota along HBJ line and at Kakinada in Andhra Pradesh. Even after this, there will be a shortfall of about 3 million tonnes of nitrogen in 1996-97.

5.19.2 As the expansion of the existing units provides considerable savings in infrastructure and utilities, doubling of plants at Bijaipur, Aonla and Jagdishpur should be undertaken without further loss of time. Discovery of gas in Krishna-Godavari and Cauvery basins offers an opportunity to add small--sized gas--based plants in these regions. Subject to finding an effective transport route, surplus gas available in North Eastern region can be utilised for fertiliser production. There is also a need to promote use of low cost bio-fertilisers.

5.19.3 The raw material reserves for phosphatic fertilisers in the country are negligible. The choice is to import either rock phosphate and sulphur or intermediates like phos-acid or phosphatic fertiliser itself. The policy of a judicious mix of import of finished fertilisers and production of fertilisers through raw materials and intermediates would continue.

5.19.4 The prices of fertilisers are controlled. As retail prices are considerably lower than the fair cost of production plus freight, the manufacturers are compensated for the difference under the production-cum-transfer subsidy system. Calculation of fair prices is based on reasonable norms of production level, energy consumption, working capital margin etc. The pricing norms have been gradually tightened over successive pricing periods, each lasting 3

years. Despite this, the subsidy burden has been steadily increasing due to (i) escalations in the costs of inputs which are not compensated by corresponding increases in the retail prices of fertilisers; (ii) increase in the volume of production of fertilisers and (iii) high capital costs of new fertiliser plants. On the other hand, the fertiliser industry has been complaining that th ugh it is assured of a 12 per cent post-- tax return on net worth, in actual practice, a number of items are excluded. Besides, there are inordinate delays in the release of the subsidy, adversely affecting the financial position of the fertiliser companies. There is a general feeling that the system of retention prices is not conducive to optimisation of the capital costs and operating efficiencies.

5.19.5 Complete de-control of prices can end the subsidy and pricing problem altogether. This will be in line with the philosophy of greater reliance on market forces and appears to be the most desirable option for solving the problem of mounting subsidies on the one hand and ensuring healthy growth of the fertiliser industry on the other. This will, of course, have to be accompanied by suitable increases in the procurement prices of agricultural products. However, this can have an adverse effect on the consumption of fertilisers especially by small and marginal farmers in the initial years. Phasing out subsidy will, therefore, have to be done gradually, giving time to farmers to adjust.

5.19.6 Group retention prices for newer plants based on gas can be introduced as an interim measure. This will be the second best option and it will give incentive to the new fertiliser plants to optimise the capital and operating costs.

5.19.7 There is a need to promote the use of slow release fertilisers through appropriate fiscal measures so as to optimise the nutrient usage. The use of bio-fertilisers also needs to be encouraged. These are environment - friendly, low cost inputs.

Petrochemicals

5.20.1 The petrochemicals industry, mainly based on a range of products derived from petroleum and natural gas, is highly capital and technology intensive. Being relatively new, the industry has the advantage of using state-of-the-art technologies, the production being internationally competitive. However, the industry suffers from the disadvantages of high input costs and high rates of taxes and duties. The result is that the prices of petro- chemicals in the country are way above the international prices.

5.20.2 During the Seventh Plan, implementation of Maharashtra Gas Cracker Complex (MGCC) at Nagothane, with a capacity of 300,000 tpa of Ethylene, was taken up by IPCL. Because of an unfortunate accident, the project got delayed and was commissioned only in the last quarter of 1991-92. Besides, IPCL has implemented a number of schemes for rehabilitation/expansion of its Polypropylene (PP) plant, revamping of its naphtha cracker, additional Xylenes production, Bicomponent Acrylic Fibre, etc. at its Baroda Complex. The other major facilities commissioned are: Aromatics plants of Bharat Petroleum Corporation Ltd. (BPCL), Bombay and Cochin Refineries Ltd.(CRL), Cochin and a number of downstream units based on availability of propylene from refineries at Vizag, Madras and Bombay.

5.20.3 The petrochemicals industry has now been delicensed. Letters of Intent were earlier issued for setting up crackers at Hazira, Auraiya, Gandhar, Vizag, Haldia and Assam and for expansion of NOCIL cracker. The work on these crackers is in initial stages. It is expected that based on market considerations, these crackers would get phased suitably.

5.20.4 During the Eighth Plan, greater emphasis would be laid on performance plastics, (polyamides, polyacetals, polycarbonates, ABS) consumption of which is linked to the growth of automobile, electronics, telecommunication and other consumer items. The changing Indian scene with multi-fold growth of above industries would push the growth in consumption of these performance plastics Application Development Centres are being set up to propagate use of performance plastics. Petrochemicals industry is technology intensive and linkages between research, manufacturing, design, engineering and academics are proposed to be strengthened.

Drugs and Pharmaceuticals

5.21.1 Indian drug industry manufactures a wide range of basic drugs and pharmaceuticals covering almost all therapeutic regimes. These include antibiotics, bacterials, steroids and hormones, vaccines, psychotropic preparations and a wide variety of synthetic drugs, including herbal preparations. The industry is quite widely distributed among FERA companies, public and private sector units and other medium scale units specialising in a few drugs. There were about 14,000 units producing drugs/formulations at the end of 1991-92. More than 30% of production of bulk drugs comes from units in the small scale sector, which, in turn, base their production on penultimate intermediates for a large number of items.

5.21.2 There are five public sector units namely, Indian Drugs and Pharmaceuticals Ltd.(IDPL), Hindustan Antibiotics Ltd.(HAL), Bengal Immunity Ltd.(BIL), Bengal Chemicals & Pharmaceuticals Ltd. (BCPL) and Smith Stanistreet Pharmaceuticals Ltd.(SSPL). All of them, except HAL, have been in the red mainly due to outmoded plants, inefficient technology, high labour costs, weak marketing efforts, concentration on bulk drugs manufacture and excessive reliance on institutional or traditional sales outlets etc.

5.21.3 Since introduction of the Drug Price Control Order (DPCO), 1986, the pharmaceuticals industry has witnessed a good growth and for the last three years, the country has been a net exporter of drugs. In line with the prevailing economic environment, there is a need to review the DPCO and allow greater freedom to the industry in the matter of price fixation. While price control may be countinued for a few life-saving drugs, the firms producing such drugs may be allowed to diversify into other areas where they can make enough profit to off-set these losses. Alternatively, the Government could consider subsidising the use of such essential life saving drugs by poorer sections of the society while allowing the fixation of their prices by the market.

5.21.4 A strong technology base for the drug industry is necessary for its healthy development. This calls for vigorous and sustained R&D efforts. So far, the main thrust has been on process improvement and not much effort has been made to produce new drugs from the basic stage. During the last decade, processes for some of the important intermediates and raw materials have been developed within the country. A number of R&D Programmes have been identified to be taken up in a co-ordinated 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 also receive due attention. Research and development in the area of bio-technology by an understanding of DNA replication mechanism related to the country's needs will also receive due emphasis. Pollution control measures, industrial safety and energy conservation will be considered as integral parts of production activities.

Pesticides

5.22.1 As more and more farmers are adopting multi-cropping practices using hybrid seeds, pesticides have become an important input to minimise crop losses and also as part of public health programme. Pesticides are first manufactured as technical grade chemicals, which are subsequently formulated in ready-to-use form both in the organised sector and small industries. As many as 137 pesticides have been approved for use in India, out of which, two (i.e. DDT/BHC) are high volume pesticides. The others are largely used by farmers for fighting pests of a variety of crops such as fruits, vegetables, cotton, groundnut, sugarcane, rice, wheat, etc.

5.22.2 The country is largely self-sufficient in the manufacture of pesticides but some of the intermediates as also new varieties of insecticides are being imported. During the Seventh Plan, a number of new pesticides such as Butachlor, Isoproturon, Monocrotophos as well as Pyrethroids were taken up for manufacture to meet the specialised needs of the agricultural sector.

5.22.3 There is now greater awareness of environmental pollution and safety aspects and the new pesticides have to satisfy these criteria before being certified for use. DDT has been banned in Europe and U.S.A. as it was found to enter the human food chain ultimately. DDT production by Hindustan Insecticides Ltd. would also need to be gradually phased out. Existing

centres in the country dealing with environmental and health monitoring of toxic substances under CSIR, ICMR and ICAR need to be upgraded to create facilities for regular monitoring of pesticides in the environment, with a view to minimising environmental and occupational health problems.

5.22.4 A UNDP aided Pesticides Development Programme has been taken up. The main objectives of this are:

(i) Development of new formulations of pesticides, suiting the requirement of crops and agro-climatic conditions of India;

(ii)To upgrade technical competence of personnel engaged in production, quality control and hazard management in the pesticide industry; and

(iii) Conducting training programmes on quality control for the industry personnel.

Cement

5.23.1 The gradual de-control of cement has resulted in progressive increase in cement production as well as upgradation of technology. The country has now emerged as an exporter of cement. Besides, a good resource base, India has locational advantage in respect of cement trade as a number of neighbouring countries are importers of cement. The newer cement plants compare well with the plants in the world in terms of productivity and production cost and the country can easily export about 5 million tonnes per annum by 1996-97.

Sugar

5.24.1 India is the largest producer of sugarcane as well as sugar in the world. The sugar industry is the second largest agro-based industry in India. While the new generation of 2500 tpd mills produce better results, a number of old mills are in need of modernisation. Introduction of co-genertion, electronic controls is being encouraged to optimise production parameters and improve productivity. Future sugar complexes should provide for down-stream industries using molasses and bagasse as raw-materials. To facilitate this molasses should be decontrolled so that the sugar complexes can be developed for optimal benifits. After many years, the country has resumed sugar export. Such exports should be on a continuous basis and should not be determined on a year to year basis.

Leather and leather goods

5.25.1 Leather and leather goods industry has emerged as one of the important foreign exchange earners in recent years. During the Seventh Plan, the value of exports rose from a level of Rs.584 crores to Rs.2030 crores. The exports in 1991-92 are expected to be around Rs.3200 crores.

5.25.2 There is a constraint on the availability of hides and skins, especially for export production. To bridge the gap between the requirement and availability of hides and skins, a series of measures would be necessary. These include setting up of a network of mini-modern carcass recovery centres all over the country, use of improved flaying tools and techniques and viable modern slaughter houses.

Textiles

5.26.1 Textile industry is the single largest industry in India, accounting for about twenty per cent of the total industrial output and providing employment to around 15 million people. It is also an important contributor to India's exports, accounting for 26 per cent of the total value of exports in 1990-91. The textile industry passed through a severe crisis in the early part of the Seventh Plan mainly due to high cost of raw materials and labour, obsolete machinery, demand recession and competition from the powerloom sector. In order to promote modernisation of the industry, Textile Modernisation Fund (TMF) was introduced in 1986 with a corpus of Rs.750 crores. The response of the industry has been quite encouraging and it is proposed to continue TMF during the Eighth Plan.

5.26.2 The progress and implementation of the Textile Policy, 1985 were reviewed by a high powered committee set up in May, 1988 under the Chairmanship of Shri Abid Hussain, the then Member, Planning Commission. The committee has focussed on the institutional arrangements needed for restructuring of textile industry for its integrated development. The major recommendations of the Committee include restructuring and modernisation of the organised mill sector and institutional arrangements like Textile Restructuring Asset Trusts

(TRATs) for improving its efficiency; institutional arrangements for area based development of handloom and powerloom sectors; upgradation of cotton processing facilities; pre-eminent role of cotton as the main raw material, realistic pricing of synthetic fibres/yarns; devising ways and means for increasing textile exports; and upgradation of technology in the readymade garments and textile machinery industries.

5.26.3 In the Eighth Plan, greater emphasis will be laid on production of value-added, diversified and quality goods for export and increasing capacity utilisation, sophisticated design and product-mix and appropriate technology. The organised mill sector would concentrate increasingly on exports with bulk of the indigenous demand being met by the powerloom sector. The handloom sector will concentrate on high value products for domestic as well as export markets. The textile exports are expected to be Rs. 28,000 crores in 1996-97 at a compound growth rate of 18% per annum. To achieve this, emphasis will be laid on exports of non-quota items, higher unit-value realisation and better marketing techniques.

Jute

5.27.1 The jute industry passed through a severe crisis in the early part of the Seventh Plan due to demand recession, imbalance in cost-price structure and competition from synthetic packaging materials. The absence of desired thrust on modernisation/diversification and widespread sickness in the jute industry led to closure of a number of mills. In 1986, the Government announced a package of policy measures consisting of Jute Modernisation Fund Scheme (JMFS) of Rs.150 crores, Special Jute Development Fund (SJDF) of Rs.100 crores, duty free import of identified jute machinery items for modernisation and mandatory usage of jute packaging materials by specified end- user sectors. However, the pace of modernisation has been rather slow. As stated earlier, not only is this to be speeded up but jute industry will have to concentrate on diversification and production of high value products. The mandatory usage of jute for packaging should only be a temporary feature. Ultimately jute must compete on its inherent strengths.

Paper and Paper Board Industry

5.28.1 Paper Industry in India is more than a century old. The capacity is almost evenly divided between the large units (organised sector) and a number of small paper mills scattered throughout the country and mostly based on non-wood materials such as bagasse, fibrous crop residues, jute cuttings, cotton waste, cotton rags and waste paper, etc.

5.28.2 The main problems facing the large paper mills are inadequate availability of forest-based raw materials, technological obsolescence, high energy consumption, high capital cost of modernisation, high cost of inputs, management deficiencies and scarcity of skilled labour. In the case of small paper mills, the problems are inefficient chemical recovery systems leading to high production cost as well as environmental pollution, obsolete equipment with low productivity and high energy consumption and shortage of raw materials. The National Forest Policy has ruled out captive industrial plantations and requires paper and other forest-based industries to procure their raw materials by establishing direct relationship with individual growers of trees. However, this arrangement has proved to be unworkable because growing trees takes 7-8 years. It is, therefore, imperative to review this aspect and consider making available degraded and waste lands to the industry for captive plantations. Privately owned lands should also be allowed to be used for plantations. The paper industry would also need to switch over as much of the existing capacity as possible to the use of bagasse and other agricultural wastes and modernise its equipment accordingly.

5.28.3 With steady increase in sugar production, there is a need for forward planning and integrating paper production with sugar production, using bagasse as the raw material. Such a plant has already been operating successfully in Tamil Nadu. Many more such plants need to be planned. This requires adequate supply of coal or some other alternative fuel, for feeding the boilers of sugar mills and co-generating power for paper production.

Newsprint

5.29.1 There are two major projects under implementation -- Uttar Pradesh bagasse based newsprint project of NEPA with a capacity of

89,000 tonnes per annum and 200 tpd composite newsprint and printing and writing paper project of Punjab Agro Newsprints Ltd. Both these projects are scheduled to be completed by the end of the Eighth Plan. The newsprint manufacture is capital intensive and involves long gestation period. Even though the prices are not administered, profitability is comparatively low and the private sector is not coming forward to take up manufacture of newsprint. The country is spending about Rs.300 crores of foreign exchange per annum on newsprint import. There is a need to encourage creation of bagasse based additional capacity in tandem with new sugar capacity. Such "Integrated sugar/newsprint Units" would have many external economies and would improve viability of both the industries.

Atomic Energy

5.30.1 The activities of the Department of Atomic Energy under Industry & Minerals sector pertains to requirement of heavy water, nuclear fuel, instruments and controls, spent fuel recovery and waste disposal for the nuclear power reactors.

5.30.2 During the Seventh Plan, the on-going heavy water project at Thal was completed and commissioned in 1986. The Manuguru project got inordinately delayed. It commenced production in March, 1991 alongwith the heavy water plant at Hazira taken up during the Seventh Plan.

5.30.3 The production of heavy water has been well below the capacity at most of the plants due to a variety of reasons such as feed limitation (Talcher, Nangal and Thal), steam and power limitations (Kota), reduced level of deuterium in the feed (Baroda, Tuticorin and Thal), etc. Efforts should be made to eliminate these limitations for a reasonable level of production.

5.30.4 The performance of Hazira and Manuguru Plants is expected to be quite good in view of the improvements made over the previous plants and provision of a captive power plant at Manuguru.

5.30.5 The Nuclear Fuel Complex (NFC) has undertaken two schemes for augmenting nuclear fuel supply : Expansion phase-I and Augmentation of Fuel and Zircaloy capacity. The NFC Expansion phase-I for raising production capacity of zircaloy from 35 tpa to 50 tpa and of fuel from 90 to 225 tpa, has been considerably delayed due to deficiencies in the design of equipment and delay in the import of sophisticated equipment like sintering furnaces and vacuum-arc melting furnaces. The scheme is now expected to be completed in 1992-93.

5.30.6 The capacity of NFC is being further augmented from fuel capacity of 225 tpa to 300 tpa and zircaloy capacity from 50 tpa to 80 tpa. The project is now expected to be completed together with phase-I expansion in 1992-93.

5.30.7 Augmentation of Nuclear Fuel capacity also requires additional mining and mill for uranium concentrates for which a Rs.495 crores project at Narwapahar & Turamdih was taken up in the Seventh Plan. The project, however, suffered a set-back due to two years' delay in getting environmental clearance. The project is now scheduled to be completed by the end of 1993.

5.30.8 The Orissa Sands Complex (OSCOM) Project of Indian Rare Earths Ltd. (IRE) in Orissa was delayed and commissioned in October, 1987. Due to various technical problems, plant performance remalned in the range of 10-20% of capacity before suspension of operations in 1991. Rectification of these problems is proposed to be taken up in the Eighth Plan.

5.30.9 The following new units are proposed to be taken up during the Eighth Plan:

i) A new Uranium Oxide Fuel Plant at Hyderabad;

ii) A new Uranium Oxide Fuel Assembly Plant at Hyderabad;

iii) Zirconium and Titanium Sponge Plants;

iv) A Spent Fuel Reprocessing Plant at a greenfield site.

5.30.10 Titanium Sponge Plant and Zirconium Sponge Plant will be put up in same premises as a number of facilities are common. The possibility of setting up these units in the private sector is being explored.

Statement - 5.1

Profitability Profile of Public Sector Enterprises

(Rs. in Crores)

SL.No.	Details	1980-81	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91
1.	No. of operating Enterprises	168	211	214	220	226	233	236
2.	Capital Employed	18207	42965	51835	55617	67629	84760	101702
3.	Gross Margin	2401	8270	9897	11082	13438	16412	18510
4.	% of gross margin to capital employed	13.19	19.25	19.09	19.93	19.87	19.36	18.02
5.	Depreciation & Deferred Revenue Expenditure	983	2983	3376	4142	4866	5790	7151
6.	Gross Profit	1418	5287	6521	6940	8572	10623	11358
7.	% of Gross Profit to Capital Employed	7.79	12.31	12.58	12.48	12.68	12.53	11.17
8.	Interest	1399	3115	3420	3587	4167	5329	7539
9.	Pre-Tax Profit/Loss	19	2172	3101	3353	4405	5293	3820
10.	Tax	222	1000	1329	1323	1411	1504	1452
11.	Net Profit/Loss	203	1172	1772	2030	2994	3789	2368
(a)	Profit of profit-making enterprises	557	2857	3478	3775	4917	5651	5432
	(no. of enterprises)	(94)	(119)	(108)	(114)	(117)	(131)	(124)
(b)	Loss of loss-making enterprises	760	1685	1706	1745	1923	1962	3064
	(no. of enterprises)	(74)	(90)	(100)	(103)	(106)	(98)	(109)
(c)	No. of enterprises making neither profit nor loss		2	6	3	3	4	3
12.	% of Net Profit/Loss to Capital Employed	1.11	2.73	3.42	3.65	4.43	4.47	2.33
13.	Dividends	83	191	297	320	353	323	365
14.	Retained Profit	286	981	1475	1710	2641	3466	2003

Statement 5.2

Actual Expenditure For Industry And Minerals Projects In The Central Sector

(Rs. in Crores)

Sl. No.	Ministry / Department	Seventh Plan Outlay	Actual Expenditure										Seventh Plan Expenditure	
			1985-86		1986-87		1987-88		1988-89		1989-90			
			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	6420	1487	1428	1345	1174	1485	1130	1857	1380	2268	1579	8441	6692
2.	Mines	2050	832	798	638	557	360	274	196	146	427	297	2453	2073
3.	Fertilizers	2661	627	602	831	726	807	615	574	427	408	284	3248	2653
4.	Petroleum & Natural Gas	293	66	63	56	49	68	52	77	57	68	47	335	268
5.	Chemicals&Petro-chemicals	707	168	161	284	248	469	357	579	431	525	366	2024	1562
6.	Industrial Development	335	116	112	142	124	126	96	187	139	159	110	730	581
7.	Public Enterprises	1663	450	432	339	296	391	298	322	240	547	381	2049	1646
8.	Surface Transport	137	32	30	24	21	13	10	18	13	11	8	98	82
9.	Electronics	471	73	70	69	60	89	68	108	80	181	126	521	405
10.	Atomic Energy	1075	297	285	317	277	208	158	232	172	227	158	1280	1050
11.	Civil Supplies	30	4	4	8	7	2	1	3	2	7	5	24	19
12.	Revenue	2	1	1	0	0	0	0	0	0	2	1	4	3
13.	Economic Affairs	1125	198	190	148	130	176	134	343	255	534	372	1399	1081
14.	Textiles	180	29	28	37	32	42	32	41	31	105	73	253	195
15.	DSIR	15	4	3	3	3	4	3	4	3	5	3	19	15
16.	Supply	15	2	2	2	2	2	2	2	1	0	0	8	7
17.	Commerce	80	22	21	30	26	21	16	18	13	26	18	116	94
18.	Ministry of Planning	0	29	28	28	24	34	26	38	28	43	30	173	137
19.	Department of Ocean Development	10	0	0	0	0	0	0	0	0	0	0	1	1
Total Industry & Minerals		17268	4437	4260	4300	3753	4296	3271	4600	3420	5542	3860	23175	18564

Note: A: At Current Prices.
B : At 1984 Prices.

Statement 5.3

Outlays For Central Industrial And Mineral Projects for The Eighth Plan (1992-97)

(Rs.in Crores)

Sl. No.	Ministry / Department	Outlay	B.S.*
1	2	3	4
1.	Ministry of Steel	14579	774
2.	Ministry of Mines	2083	337
3.	Deptt of Fertilizers	5484	1018
4.	Chem.& Petro-chem.	2402	62
5.	Surface Transport	152	150
6.	Electronics	588	475
7.	Textiles	177	97
8.	Deptt of Atomic Energy	1300	800
9.	Deptt of Heavy Industry	2771	388
10.	Deptt.Ind. Development	1162	1162
11.	Deptt.of Eco.Affairs (Banking Division)	1400	1400
12.	Petroleum & Nat.Gas	2552	0
13.	Supply	13	13
14.	Commerce	127	115
15.	Planning Commission (NIC)	300	300
16.	Civil Supplies	21	21
17.	Scientific & Ind. Research	19	18
18.	Ocean Development	15	15
19.	Bio-technology	5	5
	Total	35150	7150

Note: * - Includes external aid routed through the budget.

Statement 5.4

Eighth Plan (1992-97) Outlays - States / Union Territories

(Rs. in lakhs)

Sl. No.	States / Union Territories	Large & Medium Industries	Mining	Weights and Measures	Total
1.	2.	3	4	5	6
1.	Andhra Pradesh	8465	4625	0	13090
2.	Arunachal Pradesh	1074	75	245	1394
3.	Assam	20474	834	117	21425
4.	Bihar	24651	9131	118	33900
5.	Goa	1900	40	30	1970
6.	Gujrat	19500	3700	150	23350
7.	Haryana	8428	100	5	8533
8.	Himachal Pradesh	2600	225	45	2870
9.	Jammu & Kashmir	8090	1160	70	9320
10.	Karnataka	22419	350	75	22844
11.	Kerala	50000	600	52	50652
12.	Madhya Pradesh	34406	1579	42	36027
13.	Maharashtra	58394	474	0	58868
14.	Manipur	1700	80	20	1800
15.	Meghalaya	2690	469	47	3206
16.	Mizoram	425	250	50	725
17.	Nagaland	2000	1100	100	3200
18.	Orissa	18544	48625	25	67194
19.	Punjab	4300	0	0	4300
20.	Rajasthan	32329	4132	46	36507
21.	Sikkim	1100	100	0	1200
22.	Tamil Nadu	27700	400	0	28100
23.	Tripura	3000	10	40	3050
24.	Uttar Pradesh	29150	1660	25	30835
25.	West Bengal	83471	1655	270	85396
	TOTAL (STATES)	466810	81374	1572	549756
1.	A & N Islands	0	0	0	0
2	Chandigarh	20	0	0	20
3.	Dadra & Nagar Haveli	0	0	0	0
4.	Daman & Diu	0	0	2	2
5.	Delhi	300	0	50	350
6.	Lakshadweep	0	0	46	46
7.	Pondicherry	2151	0	18	2169
	TOTAL	2471	0	116	2587
	GRAND TOTAL	469281	81374	1688	552343

Statement 5.5

Capacity And Production For Selected Industries - Indicative Targets For 1996-97.

Sl.No.	Industry	Unit	1989-90 Actuals		1990-91 Actuals		1991-92 Actuals/Ant		1996-97 Ind.Target	
			C	P	C	P	C	P	C	P
1	2	3	4	5	6	7	8	9	10	11
	Mining									
1.	Coal	MT		200.85		211.73		227.50		308.00
2.	Lignite	-do-		11.00		11.72		12.12		19.50
3.	Crude oil	-do-		34.09		32.99		31.00		50.00
4.	Iron ore	-do-		51.47		54.15		56.50		72.00
	Basic Metals									
5.	Hot Metal (Integrated Steel Plants)	-do-	15.46	11.95	17.26	12.69	17.36	14.26	20.46	20.09
6.	Pig Iron for sale (Integrated Steel Plants)	-do-		1.23		1.39		1.48		2.16
7.	Steel ingots (Integrated Steel Plants)	-do-	14.70	10.59	14.80	11.17	16.35	12.63	18.53	18.23
8.	Saleable steel	-do-	15.07	12.61	16.67	13.12	20.12	14.26	25.43	23.22
9.	Saleable steel (Integrated Steel Plants)	-do-	11.57	9.03	11.67	9.42	13.00	10.58	16.33	15.94
10.	Alloy and special steels	Th. T	1490.00	1040.00	1650.00	1150.00	1650.00	1120.00	2250.00	1800.00
11.	Sponge iron	-do-	570.00	300.00	1370.00	680.00	1400.00	1150.00	7000.00	5000.00
12.	Aluminium	-do-	610.00	427.12	610.00	449.38	610.00	514.17	772.00	656.00
13.	Copper (Blister)	-do-	47.50	41.70	47.50	40.40	47.50	46.75	62.50	55.00
14.	Copper refined	-do-	47.50	41.18	47.50	40.60	47.50	45.50	62.50	55.00
15.	Zinc ingots	-do-	99.00	75.22	99.00	73.00	169.00	102.00	179.00	154.00
16.	Lead ingots	-do-	30.00	23.01	54.50	41.73	89.50	48.39	104.00	96.00
Non-Metallic Mineral Products										
17.	Cement	MT	60.00	45.30	63.00	49.00	65.00	53.00	90.00	76.00
18.	Petroleum products	-do-		48.30		51.77		50.21 *		61.57 *
	Basic Chemicals									
19.	Caustic soda	Th. T	1100.00	940.00	1138.00	999.10	1138.00	1022.70	1738.00	1600.00
20.	Soda ash	-do-	1460.00	1377.50	1557.00	1385.00	1557.00	1404.20	2200.00	2000.00

Statement - 5.5 (Contd.)

1	2	3	4	5	6	7	8	9	10	11
	Agricultural Chemicals									
21	Nitrogenous fertilisers	-do-	8148.00	6747.00	8148.00	6993.00	8247.00	7350.00	10940.00	9800.00
22	Phosphatic fertilisers	-do-	2750.00	1756.00	2750.00	2051.00	2750.00	2500.00	3100.00	3000.00
23	B.H.C. (13% isomers)	-do-	45.00	24.40	34.70	26.10	37.70	19.90	37.70	25.00
24	D.D.T.	-do-	9.10	7.50	9.10	7.00	9.10	7.00	9.10	8.00
25	Other pesticides	-do-	54.50	27.05	39.59	28.00	44.55	27.00	74.00	40.00
26	Malathion	-do-	12.34	3.35	9.00	3.10	9.00	3.10	9.00	4.00
Thermo Plastics and Synthetic Rubber										
27	L.D. polyethylene	-do-	112.00	85.00	192.00	95.00	192.00	120.00	192.00	180.00
28	H.D. polyethylene	-do-	50.00	34.40	185.00	40.00	395.00	44.00	680.00	400.00
29	Polyvinyl chloride	-do-	159.00	136.90	158.00	140.00	258.00	170.00	542.00	450.00
30	Polypropylene	-do-	55.00	44.60	115.00	45.00	115.00	64.00	215.00	155.00
31	Polystyrene	-do-	28.00	23.53	28.00	25.00	34.00	20.00	160.00	110.00
32	Styrene butadiene rubber	-do-	37.00	37.45	30.00	35.00	36.75	38.00	50.00	50.00
33	Polybutadiene rubber	-do-	20.00	15.12	20.00	15.00	20.00	16.00	28.00	25.00
	Petrochemical Intermediates									
34	Acrylonitrile	-do-	30.00	25.20	30.00	26.00	30.00	27.00	110.00	80.00
35	DMT/PTA	-do-	235.00	249.00	235.00	290.00	335.00	310.00	575.00	450.00
36	Caprolactam	-do-	20.00	20.64	70.00	30.00	70.00	50.00	220.00	150.00
37	Detergent Alkylate	-do-	153.00	125.57	150.00	138.00	163.00	180.00	203.00	200.00
38	Methanol	-do-	164.00	140.00	162.00	154.00	244.00	193.00	400.00	300.00
39	Phenol	-do-	60.00	49.00	60.00	48.00	60.00	46.00	100.00	75.00
	Man-made fibres									
40	Viscose filament yarn	Th. T	53.20	49.20	60.40	50.90	69.00	53.00	80.00	60.00
41	Viscose staple fibre	-do-	157.80	147.60	176.10	160.20	180.00	160.00	220.00	200.00
42	Viscose tyre cord	-do-	21.20	7.54	21.20	7.10	21.20	8.00	22.00	10.00
	Drugs and Pharmaceuticals									
43	Bulk Drugs	Rs.Crs		610.00		700.00		730.00		1500.00
44	Formulations	-do-		3360.00		3600.00		3840.00		6000.00
	Food Products									
45	Sugar	MT	9.34	10.99	9.85	11.90	12.00	12.00	16.00	15.50
46	Vanaspati	Th. T	2000.00	851.00	2161.00	820.00	2400.00	850.00	2600.00	1050.00

Statement No.5.5 (Contd.)

1	2	3	4	5	6	7	8	9	10	11
	Textiles									
47	Yarn (Cotton blended & mixed).	$	26.59	1639.00	26.67	1795.00	27.37	1780.00	30.00	2400.00
48	Cloth (mill sector)	+	1.81	2649.00	1.78	2590.00	1.84	2400.00	2.10	3500.00
49	Cloth (de-cent.sector)	Mill.Mtrs		13709.00		15228.00		15757.00		21200.00
50	Jute manufacture	Th. T	1625.00	1304.00	1625.00	1430.00	1625.00	1450.00	1700.00	1600.00
	Leather and Rubber Goods									
51	Leather footwear (Organised sector)	Mill.Pair	30.00	22.00	30.00	22.00	30.00	22.00	48.00	42.00
52	Rubber footwear	-do-	60.00	40.00	60.00	40.00	60.00	40.00	80.00	60.00
53	Bicycle tyres (Organised sector)	Mill.Nos	40.30	25.60	40.00	25.60	40.00	30.00	60.00	50.00
54	Automobile tyres	-do-	28.80	17.20	29.80	18.40	30.00	26.00	36.00	32.00
	Paper and Paper Products									
55	Paper and paper board	Th. T	3049.00	1820.00	3284.00	1956.00	3284.00	2100.00	3500.00	2900.00
56	Newsprint	-do-	300.00	277.00	313.00	280.00	313.00	295.00	350.00	300.00
	Soaps and Detergents									
57	Soaps (Organised sector)	-do-	435.00	394.00	435.00	434.00	500.00	480.00	600.00	580.00
58	Synthetic detergent (Organised Sector)	-do-	440.00	240.00	440.00	263.00	500.00	280.00	850.00	400.00
	Industrial Machinery									
59	Machine Tools	Rs.Crs.		728.10		867.00		875.00	1500.00	1150.00
60	Mining Machinery	-do-		95.80		63.40		80.00	170.00	130.00
61	Metallurgical Machinery	-do-		117.40		101.00		152.00	250.00	200.00
62	Cement Machinery	-do-		31.50		31.00		42.00	120.00	75.00
63	Chem. & Phar. Machinery	-do-		292.90		348.70		400.00	750.00	650.00
64	Sugar Machinery	-do-		49.40		72.00		90.00	200.00	150.00
65	Rubber Machinery	-do-		24.00		27.00		29.00	60.00	40.00
66	Paper & Pulp Machinery	-do-		14.20		33.40		48.00	80.00	60.00
67	Printing Machinery	-do-		30.00		31.00		32.00	60.00	40.00
68	Textile Machinery	-do-		530.00		565.00		600.00	1100.00	800.00
69	Boilers	-do-		884.10		887.80		800.00	1500.00	1050.00

Statement No.5.5(Contd.)

1	2	3	4	5	6	7	8	9	10	11
	Electrical Power Equipments									
70	Steam Turbines	Th.MW	4.50	4.17	4.50	2.33	4.50	2.50	4.69	3.96
71	Hydro Turbines	-do-	1.50	0.52	1.50	0.45	1.50	0.75	1.80	1.00
72	Transformers	MKVA	40.00	37.80	40.00	36.60	40.00	34.00	70.00	60.00
73	Electric Motors	MHP	8.50	5.20	8.50	6.00	8.50	5.50	10.00	8.00
	Construction Machinery									
74	Earthmoving Equipment	Nos.	6000.00	2631.00	6000.00	2690.00	6000.00	2600.00	6500.00	4200.00
	Agricultural Machinery									
75	Tractors	Th.Nos.	130.00	125.10	150.00	143.50	160.00	155.00	270.00	240.00
	Rail & Water Transport Equipment									
76	Elec.Locomotives	Nos.	140.00	130.00	140.00	140.00	140.00	140.00	200.00	200.00
77	Diesel Locomotives	-do-	230.00	220.00	230.00	225.00	230.00	225.00	300.00	290.00
78	Railway Coaches	-do-	2450.00	1554.00	2450.00	1800.00	2450.00	1800.00	3100.00	2500.00
79	Railway Wagons	Th.Nos.	32.00	22.20	32.00	23.00	32.00	25.00	45.00	40.00
80	Ship Buildings	Th. Dwt	260.00	175.00	260.00	175.00	260.00	175.00	280.00	200.00
	Road Transport Equipment									
81	Commercial Vehicles	Th.Nos.	264.00	126.70	264.00	145.80	264.00	135.00	290.00	200.00
82	Passenger Cars.	-do-	190.00	181.60	190.00	179.60	190.00	165.00	280.00	250.00
83	Jeeps	-do-	50.00	45.60	50.00	38.30	50.00	30.00	70.00	45.00
84	Scooters,Motor Cycles and Mopeds	-do-	2200.01	1750.40	2200.00	1863.20	2200.00	1800.00	3000.00	2400.00
85	Bicycle(Org.Sect)	Mill.Nos	8.00	6.79	8.00	6.76	8.00	7.40	10.00	9.00
	Mechanical Components & Consumer Goods									
86	Ball & Roller Bearnings	Mill.Nos	120.00	119.00	125.00	100.80	125.00	95.00	150.00	130.00
87	Typewriters	Th.Nos.	180.00	115.10	180.00	115.90	180.00	120.00	180.00	130.00
88	Sewing Machines (Org.Sect	-do-	568.00	146.60	568.00	92.80	568.00	130.00	568.00	160.00
	Electrical Components									
	Consumer Durables									
89	ACSR & A A Conductors	Th. T	150.00	46.80	150.00	59.70	150.00	70.00	150.00	100.00
90	Dry Cells	Mill.Nos	2200.00	1274.20	2200.00	1234.90	2200.00	1300.00	2500.00	2000.00
91	Storage Batteries	-do-	4.00	2.84	4.50	3.65	4.50	3.50	6.00	5.00
92	Domestic Refregerators	Th.Nos.	1200.00	1051.80	1300.00	1282.60	1500.00	1350.00	2500.00	2200.00
	Electronics									
93	Consumer Electronics	Rs.Crs.		2850.00		3000.00		4900.00		8500.00
94	Industrial Electronics	-do-		1360.00		1370.00		1800.00		5000.00
95	Professional Equipments	-do-		2065.00		2345.00		3020.00		7000.00
96	Computers including micro processor systems	-do-		835.00		820.00		1300.00		3300.00

Statement No.5.5(Contd.)

1	2	3	4	5	6	7	8	9	10	11
97	Softwares for exports	-do-		165.00		220.00		500.00		2600.00
98	Components	-do-		1520.00		1510.00		3100.00		7600.00
99	Production in free Trade zones	-do-		215.00		275.00		450.00		2000.00
	Total Electronics	-do-		9010.00		9540.00		15070.00		36000.00

$Capacity in Million Spindles and Production in Million Kgs.

+Capacity in Lakh Looms and Production in Million Metres.

*Includes One MT and 2.05 MT from Natural Gas for 91-92 & 96-97 respectively.

CHAPTER 6

VILLAGE & SMALL INDUSTRIES AND FOOD PROCESSING INDUSTRIES

Village and Small Industries

Overview

6.1.1 Village and small industries sector consists of two broad sub-sectors, viz, modern small industries and traditional industries. The former covers small scale industries and powerlooms and the latter khadi, village industries, handlooms, sericulture, handicrafts and coir industry. With effect from 2nd April, 1991, an industrial unit in which investment in fixed assets in plant and machinery does not exceed Rs.60 lakhs is regarded as a small scale undertaking. In the case of industrial units undertaking to export at least 30 per cent of the annual production by the end of the third year from the date of commencement of production, the ceiling of investment shall be Rs.75 lakhs. Further, in the case of ancillary industrial undertakings, the ceiling of investment in fixed assets has also been fixed at Rs.75 lakhs. This measure is expected to result in greater technological input and export thrust in the small scale sector.

6.1.2 A policy package for small, tiny and village industries has been announced in August, 1991 with the primary objective of imparting more vitality and growth impetus to this sector. The ceiling of investment in the case of `Tiny' enterprises has now been raised to Rs.5 lakhs, locational restrictions on setting of these enterprises have been removed and their scope has been enlarged to include all industry related service and business enterprises. Further, equity participation, not exceeding 24 per cent, by other industrial undertakings, including that by foreign collaborators in the small scale sector has been permitted with a view to encouraging modernisation and technological upgradation. Other salient features of this policy pertain to the setting up of a monitoring agency to ensure that the genuine credit needs of this sector are fully met; review of all statutes, regulations and procedures and their modification to ensure that their operation does not militate against the interests of the small and village enterprises; encouraging industry associations to establish quality counselling and common testing facilities; sub-contracting exchanges and expansion of entrepreneurship development programme; further liberalisation of schemes of National Equity Fund and Single Window Loans, etc.

Review

6.2.1 The progress of village and small industries sector during the Seventh Plan (1985-90) and Annual Plans (1990-91 and 1991-92) is indicated in Statements 6.1 and 6.2 respectively.

6.2.2 It will be observed from Statement 6.1 that the value of output in this sector increased, at constant prices, at a compound rate of 12.06 per cent between 1984-85 and 1989-90. However, the production of khadi, village industries, handloom cloth and coir yarn and coir products fell short of their respective target. Exports from this sector have increased, at current prices, at a compound rate of 26.57 per cent. In the case of employment coverage (full time and part time employment), while the rate of compound growth is 4.43 per cent, it is short of the Seventh Plan target. The growth rate achieved during the Seventh Plan is not likely to be maintained during 1990- 91 and 1991-92 on account of constraint of foreign exchange affecting the availability of imported raw materials, components and capital goods, credit squeeze, high rates of interest, recession in foreign markets, etc.

Eighth Plan

Approach and Strategy

6.3.1 The Eighth Plan aims at a growth rate of 5.6 per cent. The growth rates for the manufacturing sector and exports have been kept at 7.3 per cent and 13.6 per cent respectively. While no growth rate has been indicated for the village and small industries sector, it has to be higher than that of the manufacturing sector.

6.3.2 In the new orientation to planning during the Eighth Plan, people's initiative and partici-

pation would be a key element in the process of development. Greater emphasis will be laid on private initiative in industrial development. The public sector will become very selective in the coverage of activities and in making investment. Small enterprises in the village and small industries sector are, more or less, based on private initiative and entrepreneurship.

6.3.3 One of the areas of priority of the Eighth Plan is generation of adequate employment to achieve near full employment level by the turn of this century. Several activities pertaining to this sector like processing of agricultural produce in rural areas, sericulture and allied activities have been identified as critical goals in priority sectors. It is possible to dovetail programmes of khadi, village industries, handlooms, sericulture and handicrafts to integrated local area development programmes for selected villages for poverty alleviation through increase in employment. It is also envisaged that entry into the services sector, which is expected to play a major role in generating employment during the Eighth Plan, and the `informal' sector will be made free of innumerable rules, regulation and bureaucratic controls. Further, research and innovation in the tools and techniques of traditional occupations, including those of rural artisans, will be encouraged and their extensive adaptation will be induced.

Physical Targets

6.3.4 Indicative targets in respect of production, employment coverage and exports for village and small industries for the Eighth Plan are given in Statement 6.3.

6.4.1 Major activities envisaged for the Eighth Plan are discussed in the subsequent paragraphs, sub-sector wise:

Small Scale Industries

6.4.2 It will be observed from Statement 6.3 that the growth rates in respect of production, employment and exports relating to small scale industries envisaged for the Eighth Plan are lower than those achieved during the Seventh Plan. These rates have been worked out taking into consideration the prevailing difficult resource position. Quick estimate of Index of Industrial Production for April-September, 1991, vis-a-vis, the corresponding period of 1990 indicates negative growth rate of 1.9 per cent in manufacturing sector. Similarly, export performance, net of devaluation and inflation, for the above period has not been encouraging.

6.4.3 Credit continues to be crucial for the establishment and expansion of small industries. Advances from commercial banks to the small scale sector as on 23rd March, 1990, was Rs.15,543 crores as against Rs.6,766 crores at the end of June, 1985. This increased to Rs.17,151 crores as on 22nd March, 1991. In percentage terms, advances to the small scale sector were 15.7 per cent of the total bank advances in March, 1991. It would be necessary to increase the share of credit available to the SSI sector from commercial banks from the present 16- 18 per cent. It is needless to reiterate that timely and adequate availability of credit is of greater importance than concessional credit. This would call for strenthening of SIDBI and NABARD. With the establishment of SIDBI, certain new initiatives like sanction of composite loans under Single Window concept, concessional loans to State Corporations for infrastructure development and provision of factoring services have been introduced.

6.4.4 A development which is likely to increase the cost of credit to small scale industries is the deregulation of interest rates to be charged by banks on advances above Rs.2 lakhs. Its adverse effect would be felt by SSI units in general and tiny units in particular. Reserve Bank of India has appointed a Committee in December, 1991, to review the arrangements for meeting the working capital requirements of small scale industries and for the rehabilitation of sick small scale industries and to examine any other issues relating to small scale industries. The Committee will also look into the above issues with a view to ensuring that the interests of SSI sector are not adversely affected.

6.4.5 Entrepreneurs have limited access to quality raw materials. In the case of critical raw materials, new enterprises face problem in obtaining these in the absence of a proper and equitable policy of raw material distribution. After the decontrol of steel prices, drying up of canalising agencies (like MMTC, etc) and the devaluation of Rupee, the availability of raw materials, particularly to the small producer, has been severely affected. Industry associations will be encouraged to come forward and evolve

a suitable distribution mechanism so that the interest of this sector is protected.

6.4.6 In order to upgrade technology, greater emphasis has to be laid on the establishment of tool rooms and provision of training facilities. State intervention in improving the quality may be confined to establishment of tool rooms and assistance in the establishment of testing facilities. The operation of testing facilities should be the responsibility of the industry. During the Eighth Plan, a bigger programme of development of appropriate technology and technology upgradation has to be initiated.

6.4.7 Technological obsoloscence is high in small industries. To improve marketability, there is need to induct better and appropriate technology. Need is felt for an agency which can take up the functions of collection, documentation and storing information on technology, conducting studies and preparing technology guidelines, assessing the need for establishment of tool rooms, testing centres, PDTCs etc., provision of technology inputs, import of samples from abroad, assimilation of technology, assisting entrepreneurs in obtaining suitable know how from indigenous sources, coordination with organisations engaged in technology development and its transfer. NSIC can handle these functions both for small industries as well as for others.

6.4.8 According to the All-India Census of Small Scale Industrial Units, with 1987-88 as the base year, registered working SSI units and closed units as on 31.3.1988 were 5,82,368 and 3,01,390 respectively. It is indicative of extensive sickness in the small scale sector. Though sickness is reported in all market economies, locking of resources in the form of bank loans, materials, equipment and loss of employment are serious matters of concern. The Centrally Sponsored Scheme for revival of sick SSI units has not proved effective. The causes of sickness are many, like selection of unviable projects, inadequate availability of raw materials, power shortage, marketing problems, obsolete technology, inadequate working capital, inefficient management, etc. In order to prevent sickness at the incipient stage, it is necessary that SFCs and commercial banks should properly monitor the project. The quality of consultancy, particularly in technology has to be improved. Rehabilitation of sick units is very difficult and it requires not only proper diagnosis but also effective coordination among the various organisations involved.

6.4.9 In the State sector, a number of programmes of subsidies on investments in fixed assets, purchase of diesel generating sets, electricity duty, etc, are under implementation leading to unhealthy competition among the States and Union Territories to attract private investment. Further, concessions on purchase of land and exemption from the payment of sales tax for a specified period/investment limit are also provided to entrepreneurs. These schemes, generally, lead to flight of investment from less developed States to developed ones. It is imperative to evolve a uniform policy on the above issues based upon consensus among the State Governments in the interest of growth of industry on healthy and equitable basis.

6.4.10 The cumbersome procedures and a large number of returns that entrepreneurs have to furnish, distract them from production and marketing activities. It is, therefore, necessary to undertake a comprehensive review of laws and procedures and to simplify them so that entrepreneurs are able to concentrate on efficient running of their units.

6.4.11 Marketing is one of the intractable problems of the SSI sector. Marketing assistance through Small Industries Corporations, NSIC, etc, has so far been able to cover only a very small fraction of turnover in this sector. The existing fiscal regime and the operation of labour laws are not conducive to vertical growth of SSI sector. There is need to modify them suitably. Industry associations will be encouraged to form marketing organisations which, besides marketing, will go into the quality aspect of products.

6.4.12 The Growth Centre approach has already been accepted as a suitable measure for industrial dispersal and is under implementation in large and medium industries sector. During the Eighth Plan, establishment of 70 Growth Centres has been envisaged. It is proposed to earmark a certain percentage of developed industrial area for small industries. There is also need to establish functional industrial estates at suitable locations in areas with substantial agricultural, vegetable and horticultural produce.

Besides the growth centres, integrated infrastructure development centres for tiny units in rural and backward areas would be set up involving the Centre, State Governments and industry associations.

6.4.13 The experience of economic growth the world over indicates that greater employment generation takes place in the tertiary sector. Hence, there is need for emphasis on the promotion of industrial units catering to services and maintenance of equipment. In rural areas and small towns such facilities do not exist. A programme of suitable training and provision of tool kits needs to be taken up.

Khadi & Village Industries

6.5.1 The production of khadi cloth in 1989-90, estimated at 107.47 million sq. metres, is less not only than the Seventh Plan target of 180 million sq. metres but also than the level of production of 127.82 million sq. metres achieved in 1984-85. Similarly, employment coverage of 14.12 lakh persons in khadi sub-sector in 1989-90 is less than the target as well as the employment of 14.58 lakh persons in 1984-85. This trend in production persisted in 1990-91 and 1991-92. In the case of village industries, the value of output in 1989-90 was Rs.1,101 crores at constant prices and Rs.1,705 crores at current prices against the Seventh Plan target of Rs.1,700 crores. However, the employment coverage in village industries in 1989-90 estimated at 32.14 lakh persons is marginally higher than the Seventh Plan target of 30 lakh persons. In 1990-91, there is a slight fall in employment coverage in village industries, vis-a-vis, the target. However, in 1991-92, the target of employment coverage of 35.40 lakh persons in village industries is expected to be achieved.

6.5.2 The decline in the growth of khadi sub-sector is attributable to several factors. Spinning on traditional charkhas in the northern belt could not be expanded due to low level of earnings and consequent decline in the number of traditional home spinners as well as preference of weavers for yarn produced by New Model Charkha (NMC). In some States adequate number of weavers are not willing to take up khadi weaving. The present structure as well as guidelines regarding lending to khadi institutions do not permit the Khadi & Village Industries Commission (KVIC) to advance loans to those institutions which have received over Rs.3 crores. These institutions have requisite infrastructure and expertise to increase the production of khadi, whereas new institutions which are eligible for funding take a lot of time to develop infrastructure and expertise. Further, as the production of khadi is bound by several restrictions such as certification, cost chart and its sale on no profit no loss basis, very few voluntary organisations come forward to take up this programme. It is, however, relevant to state in this context that the production of polyvastra which is a blend of polyester and cotton presently covered under village industries has been increasing during this period and in value terms it has increased from Rs.2.17 crores in 1984- 85 to Rs.16.61 crores in 1989-90.

6.5.3 There are other areas in KVIC programmes in which performance is not satisfactory. A large number of artisans' cooperatives engaged in village industries have continued to remain dormant. Though the productivity and earnings of artisans have improved, they are lower than those obtaining in the farm sector. The linkages between KVI programmes and general programmes of area development like IRDP, are inadequate. The gaps in performance are partly attributable to the fact that since its inception, KVIC has continued the policy of assisting institutions/private individuals registered with it directly and consequently the State Governments have not been according priority to its programmes.

6.5.4 The main objectives of khadi and village industries (KVI) programmes during the Eighth Plan would be to create additional employment opportunities in the non-farm sector and to ensure increased wages/earnings to rural workers. For this purpose, it would be necessary to reorient khadi programme and identify thrust areas among village industries keeping in view the growth potential and the consumer demand, provide escort services to artisans and adopt aggressive marketing approach.

6.5.5 The KVIC depends on institutional finance, besides budgetary support for the implementation of its programmes. But the flow of funds to the KVI sector has not been commensurate with its requirements.Thus,the institutional finance flowing to the KVI sector under the

interest subsidy scheme increased from Rs.40.94 crores in 1984-85 to Rs.120.61 crores in 1990-91.The KVIC issued interest subsidy eligibility certificates to State KVIBs and directly aided institutions for an amount of Rs.234.27 crores in 1990-91, but KVI received only Rs.120.61 crores of institutional finance during 1990-91. It is, therefore, essential to ensure adequate institutional finance for the stepped-up activities of KVIC. In this context, it is necessary to increase the active involvement of banks in funding of KVI programmes and in this process to reduce their dependence on the budgetary support. It is also necessary to review the subsidies which are presently being provided for the development of khadi and village industries. The present policy of KVIC to advance loans for the development of village industries to the beneficiary organisations at 4% rate of interest also needs to be reviewed in view of the hike in the lending rates of commercial banks.

6.5.6 Artisans engaged in khadi and village industries face problem in obtaining assured and timely supply of raw materials of requisite quality as well as quantity at reasonable rates to enable them to produce quality goods at competitive cost on account of their weak resource base. Though KVIC has arrangements for supply of some raw materials, like cotton, raw wool, polyester fibre, silk cocoons, edible and non-edible oilseeds and splints and veneers, requisite support in regard to supply of essential chemicals and raw materials for the remaining village industries, including the expanded village industries, needs to be provided.

6.5.7 It has been noted that the utilisation of S&T funds by KVI sector has not picked up during the past seven years. There is urgent need to develop new types of tools, equipment and machines. They should be tested on pilot basis before being recommended for adoption on a wide scale. It is, therefore, imperative that technical problems of this sector should be recognised by national laboratories and they should help this sector in a big way to produce marketable products. R&D should pay attention not only to production process but also to quality finishing, packaging etc. For agro and food processing industries in rural areas, the activities of CSIR and other research institutes functioning under its aegis, including CFTRI, should be reoriented and coordinated for development of appropriate technologies.

6.5.8 Due to their traditional character, the khadi products are unable to withstand the competition from the organised textile sector. It is, therefore, essential to adopt an aggressive marketing approach which takes into account the consumers' taste, price and other related factors for increasing production of khadi. This would necessitate diversification of markets as also the product mix; introduction of modern marketing techniques; better inventory control; and better management practices etc. The question of rebate on the sales of khadi has been examined in depth by the Committees headed by Shri M. Ramakrishnayya and Shri Abid Hussain. These Committees have favoured its continuance in the khadi sector. However, restructuring in respect of silk khadi needs to be considered but any decision in this regard should cover both handloom and khadi sectors. In providing thrust to khadi sector, greater emphasis needs to be placed during the Eighth Plan on those activities which are economically viable without the support of subsidies. To achieve these objectives it would be necessary to popularise the New Model Charkha, diversify production of cloth so as to improve its blending with polyester, wool as well as silk and produce readymade garments in accordance with the customer's taste and latest trends in fashion.

6.5.9 Though the network of sales outlets set up by KVIC and State KVIBs would appear to be adequate, it is not so and the cost of rendering marketing assistance to artisans is high. While product diversification, design and fashion development and fashion shows in major cities would assist marketing of khadi, marketability of products of village industries could be enhanced by improving quality and packaging. Greater stress on R&D, besides ensuring improvement in quality, would help increase productivity and thereby reduce cost. Apart from sale of KVI products through Bhavans, Bhandars, mobile vans, and three wheelers in big cities, their marketing on commission basis at district and taluka market besides weekly *haats* needs to be encouraged.

6.5.10 For generating employment opportunities in rural areas, it is necessary to expand the coverage of villages and identify the thrust areas

among the village industries for development. It is imperative to widen the base of village industries and increase productivity and thereby ensure higher earnings to artisans which would sustain them in the activity. Though 96 village industries are presently within the purview of KVIC, it would be desirable initially to concentrate on about 15 industries in respect of which requisite infrastructure and expertise is available. It would also be necessary to provide training to artisans in respect of improved tools as well as implements and methods of production. It would be necessary to upgrade their skills to enable them to produce quality products which would find ready acceptance in the market. The greatest weakness in the expansion of village industries programme is in the area of providing training facilities. The KVIC's departmental training centres and those assisted by it and run by voluntary organisations numbering about 100 can take care of the training of only trainers. Hence, skill transfer at the grassroot level to the artisans is the real problem in view of diversity of industries and the large number of people who are required to be trained. For this purpose, efforts should be made to link it up with the Plus Two vocational education system, to reorganise the syllabus and the training programmes devised by the Education Department and to include KVI trades in the vocational curriculum wherever they are not already included.

6.5.11 For effective promotion and development of khadi and village industries, it is necessary to ensure full participation of the State Governments in the implementation of KVI programmes by providing adequate outlays in the State Plans.

Coir Industry

6.6.1 Indian coir industry is an important cottage industry contributing significantly to the economy of the major coconut growing States and Union Territories, i.e., Kerala, Tamil Nadu, Andhra Pradesh, Karnataka, Maharashtra, Goa, Orissa, Assam, Andaman & Nicobar, Lakshadweep, Pondicherry, etc. About 5.5 lakh persons get employment, mostly part time, in this industry. The exports from this industry are around Rs.70 crores. The coconut production in India is estimated at 9283 million numbers in 1989-90. Coconut husk is the basic raw material for coir products. Around 50 per cent of the available coir husk is used to produce coir products. Hence, there is scope for growth of coir industry.

6.6.2 During the Seventh Plan, while the production of `white fibre' has remained stagnant, the production of `brown fibre' has registered more than 55 per cent increase. The production of white fibre and brown fibre was 1,24,900 tonnes and 67,600 tonnes in 1989-90 against the respective level of 1,24,800 tonnes and 39,600 tonnes in 1984-85. During this period, the export of coir yarn and other products has increased from Rs.26 crores to Rs.33.32 crores. The production of coir fibre in 1991-92 is anticipated to be 2.20 lakh tonnes against the target of 2.26 lakh tonnes. Exports are anticipated to be of the order of Rs.66.16 crores.

6.6.3 During the Seventh Plan period, encouragement was given for expansion of the home market through publicity and advertisement, product diversification, adoption of new technology, research and development, training for artisans, including women and social welfare measures for coir workers, most of whom are SC/ST and women.

6.6.4 The Eighth Plan programmes for coir industry aim at increased utilisation of coconut husk for production of coir fibre, growth of the domestic market, strengthening of research and development to find out new uses for coir fibre especially in the areas of geo-fibre, fire retardant, cement and gypsum polymer development, acquisition of new technology like PVC-tufted coir products, encouragement to cooperativisation and provision of social welfare, civic amenities and medical facilities to the coir workers. Emphasis would be laid on mechanisation in a phased manner without affecting employment to make Indian coir products competitive in the export market. The production of brown coir fibre would be encouraged by providing seed capital assistance. Modernisation of coir units has been envisaged by providing incentives for installation of modern equipments to make coir industry more competitive in the export market.

6.6.5 Special training programmes have been formulated for women artisans. Improved modern treadle ratts would be provided to trained women artisans to increase employment and

earnings. Medical facilities, creche for children of coir workers, model coir villages for SC/ST coir workers and social welfare schemes would be implemented during the Eighth Plan period.

6.6.6 Emphasis has been laid on developing devices/equipment/ machinery through R&D to reduce drudgery and to improve productivity of coir workers. Development of improved variety of ratts and looms would help in improving the production of coir yarn spinning, coir mats, etc. In order to boost exports, the scheme of cooperative publicity programmes in the export markets which was started in the Seventh Plan would be continued.

6.6.7 The indicative target of production for coir fibre has been set at 2.77 lakh tonnes for the Eighth Plan. Export target is Rs.100 crores. The schemes to be implemented during the Eighth Plan would aim at increasing the share of full-time employment in this sector from the present level.

Handloom Industry

6.7.1 The handloom industry provides the largest employment among the traditional industries, next only to agriculture. By the end of the Seventh Plan, the estimated employment coverage in this industry was 76 lakh persons. The performance of the handloom industry in terms of production of handloom cloth, employment and exports during the Seventh Plan fell short of the respective targets. However, the anticipated achievements in the handloom industry in 1990-91 and 1991-92 are expected to equal the target.

6.7.2 The Textile Policy of 1985 envisaged preservation of the distinct and unique role of this sector. However, the permisssion for installation of new loomage given to the organised mill sector and the decentralised powerloom sector, fibre freedom and liberal imports had posed strong competition to the handloom industry and acted as deterrents to its growth.

6.7.3 During the Seventh Plan, the focus of developmental programmes for handloom industry was on cooperativisation, strengthening of Central and State level corporations, modernisation of handlooms, design development, training of weavers, assured minimum earnings through Janata Cloth scheme, etc. The inputs of technology, design and training were made available through Weavers' Service Centres (WSC) and Indian Institites of Handloom Technology (IIHT); the latter functioning at Salem, Varanasi and Guwahati. Primary and apex societies of handloom weavers were given share capital assistance, managerial subsidy, assistance for opening new sales outlets, design collection and development, participation in exhibitions and Expos, organising publicity, etc. The National Handloom Development Corporation (NHDC) further enlarged its activity of supply of hank yarn, dyes and chemicals. Hank yarn has been made available in yarn deficit States at mill gate prices to handloom weavers. The National Cooperative Development Corporation (NCDC) assisted handloom weavers' cooperatives to establish, modernise and expand yarn spinning mills to increase spindleage and availability of hank yarn to the weavers.

6.7.4 The Janata Cloth Scheme in the handloom sector was operational in 18 States and one Union Territory during the Seventh Plan.Production of Janata cloth increased from 397 million metres in 1985-86 to 548 million metres in 1989-90. Subsidy disbursement to all the States on Janata cloth was Rs.488 crores during the Seventh Plan. This scheme met partially its main objectives of providing consistent wages to weavers and making available cloth at reasonable prices to the weaker sections of society. However, the operation of this scheme has led to deskilling of weavers.

6.7.5 Inspite of implementation of developmental schemes,the economic condition of handloom weavers did not improve as envisaged. Cooperative coverage is limited to only 30 percent of the total weavers. Inadequate enforcement of, the challenging of the Handloom Act of 1985 in several High Courts and the stays granted to the powerloom operators by these Courts have rendered the Law ineffective and encroachment on handloom products still continues.The inherent weaknesses of the handloom industry like weak organisation, officialisation of handloom cooperatives, inadequate credit from financial institutions, inadequate marketing infrastructure etc. have made it more vulnerable to competition from the organised mills and the decentralised powerloom sector.Steep increase in cotton yarn prices, build up of unsold stock and delayed payments to primary societies by apex societies, etc. further deteriorated weavers' condition.

6.7.6 The Institute of Rural Management, Anand had carried out an evaluation of the development programmes of handlooms in 1989. Based on this study, a change in the delivery system was effected and a new approach for the developmental and promotional schemes was adopted from Annual Plan 1990-91. The approach of `project package' as indicated in the new Industrial Policy of August, 1991, has been adopted and it is proposed to do away with the limitation of routeing assistance only through cooperative/corporate organisations.

6.7.7 The programmes in the Eighth Plan for handloom industry seek to encourage employment generation, ensure reasonable wages for weavers, supply of hank yarn at reasonable prices, establish silk yarn bank, set up marketing infrastructure, help export development, etc. besides continuing the existing schemes for publicity and exhibitions, training and upgradation of technology through WSCs and IIHTs, research and development, enforcement of Handloom (Reservation of Products) Act, 1985 and welfare schemes. Production of Janata cloth is proposed to be phased out.

6.7.8 To retain employment in the handloom sector State intervention would be desirable for placing the Handloom Reservation Act 1985 under the IX Schedule of the Constitution. The present list of reserved items would be revised. The revised list of reserved items would include selected products of handloom sector and only those items would be included which have higher design input, border and motif which are the strength and speciality of handloom sector.

6.7.9 During the Eighth Plan, the setting up of integrated handloom villages at places of concentration of weavers has been envisaged. These handloom villages would have worksheds and houses, pre and post loom facilities, depots for raw material, marketing infrastructure, banks, communication facilities and basic civic amenities for weavers.

6.7.10 With a view to providing marketing assistance, infrastructural facilities would be developed at the village, taluka, block and district levels besides metropolitan cities and important tourist places.

6.7.11 The apex societies along with NHDC would continue to be assisted to supply raw materials to the weavers throughout the country. Additional financial support would be required for their expanded activities to cover larger number of weavers. The apex societies would further augment assistance to the primary societies in the supply of raw materials and marketing.

6.7.12 To increase hank yarn availability to the handloom weavers, NCDC would provide financial support to weavers' cooperatives to instal new yarn spinning mills to improve the availability of hank yarn.

6.7.13 The State Governments would be encouraged to establish IIHTs and WSCs for upgradation of technology and increasing training and design inputs to the weavers. The workshed-cum-housing scheme would be taken up at enhanced level to provide more houses and worksheds to the weavers to improve their working condition and productivity.

6.7.14 The Indian handloom products have the potential to attract foreign buyers because of their natural fibre base, unique design, appearance and aesthetic appeal. Strict adherence to high quality standards from fabrics to made-ups and new design inputs to handloom sector would boost the exports. Funds would be provided to the apex societies and corporate organisations for export, arrangement of quality raw material for export orders, strict quality control and marketing expenses abroad, etc.

6.7.15 The Handloom Census (1987-88) data would be scientifically processed for planning for handloom sector. Information from the Census,1991 about weavers would be integrated with the Handloom Census,1987-88 data to provide a strong data base to the handloom industry.

Powerlooms

6.8.1 The Textile Policy, 1985 provided an opportunity for regularising unauthorised powerlooms and installation of new powerlooms. This sector has grown rapidly during the Seventh Plan period from a level of 8.36 lakh powerlooms as on 1.1.1985 to 11 lakh as on 31.3.1990.

6.8.2 During the Seventh Plan, production of powerloom cloth increased from 4,930 million

metres to 7,457 million metres. This is anticipated to rise further to 11,036 million metres by the end of 1991-92. Further, the employment in this sub-sector increased from 32.19 lakh persons to 45 lakh persons during the Seventh Plan. This is expected to go up to 53 lakh persons by the end of 1991-92.

6.8.3 To assist powerlooms in updating designs, training, testing facilities for yarn and fabrics and to give advice on technical matters, the Government has established 13 Powerloom Service Centres (PSCs) under the control of the Textile Commissioner. Encouragement of powerloom cooperative societies and provision of assistance for share capital has helped cooperative sector in Maharashtra, Tamil Nadu, etc.

6.8.4 The State Governments of Maharashtra, Gujarat, Tamil Nadu and Assam have adopted certain measures for the welfare of powerloom weavers during the Seventh Plan. However, these measures were not commensurate with the growth of this sector. Powerloom workers did not get statutory wages and facilities like provident fund, medical facilities, social welfare benefits, safe working environment, education for their children and training, etc., due to the extra- legal status of powerlooms during the Sixth Plan period. The position in this regard did not improve during the Seventh Plan in spite of the legal status given to this sector by the Textile Policy of 1985.

6.8.5 The major problems in this sector relate to non-availability of yarn at stable prices, obsolete looms and outdated technology, inadequate pre-loom and post-loom facilities, inadequate financial assistance through financial institutions and dependence on middlemen for finance at high rates of interest.

6.8.6 In the Eighth Plan, efforts would be made to tackle the problems of weaver-owned powerlooms and powerloom cooperatives in the decentralised sector. There is need to extend working capital assistance to small powerloom weaver-owners by SFCs.

6.8.7 The Eighth Plan indicative target for cloth production in decentralised powerloom sector has been kept at 15,280 million metres, which implies a compound growth rate of 6.7 per cent. The employment target is set at the level of 75 lakh persons in 1996-97.

Sericulture

6.9.1 Sericulture, an agro-industrial activity based mainly on land and water, is carried on in 52,000 villages on 3.32 lakh hectares of irrigated and rainfed land under mulberry plants and on forest land and village grazing reserves in the case of non-mulberry sericulture employing about 55 lakh persons in planting, seed preparation, silkworm rearing, reeling, weaving and other operations. Non-mulberry sericulture, namely, tasar culture, ericulture and muga culture, is mainly practised by the tribals. Mulberry silk, accounting for more than 90 per cent of the total silk produced in the country, is concentrated in the States of Karnataka, Andhra Pradesh, Tamil Nadu and West Bengal. India, with a production of 12,450 tonnes of mulberry silk in 1991-92, holds the second position in the world, next to China whose production of mulberry silk was 35,800 tonnes in 1987. However, most of Chinese silk is of bivoltine variety whereas ours is multi x bivoltine. About 70 per cent of our silk is used by handlooms.

6.9.2 The Seventh Plan target of production of raw silk was exceeded. However, tasar and muga silks did not fare well. In the case of bivoltine silk, the performance was disappointing. As against the target of 500 tonnes, the production was estimated at 150 tonnes. The export of silk made-ups and goods was encouraging. However, imports of silk doubled from about 1181 tonnes in 1984-85 to about 2,500 tonnes in 1989-90. A National Sericulture Project costing Rs.555 crores with assistance from IBRD/IDA and Swiss Development Cooperation was taken up in 1989-90. Production of silk during 1990-91 was slightly above the target but in 1991-92 a shortfall in achievement of the target is anticipated. Exports in quantitative terms have also not increased. The National Sericulture Project under implementation by Central Silk Board in 12 States and by the State Governments in Karnataka, Andhra Pradesh, Tamil Nadu, West Bengal and Jammu & Kashmir made poor progress except in terms of coverage of land under mulberry, particularly in the the case of Andhra Pradesh.

6.9.3 During the Eighth Plan, the production of raw silk is envisaged to reach the level of

21,400 tonnes, including 2,000 tonnes of bivoltine variety. Whereas the productivity of mulberry silk in terms of kg/ha has risen from 32.09 in 1984-85 to 38.29 in 1989-90, the target set for the terminal year of the Eighth Plan is ambitious and would call for greater efforts in R&D. Sustained efforts are necessary to bridge the gap between productivity levels obtaining in India and those in countries like China and Japan. Production of bivoltine cocoons is essential for meeting the seed requirements, larger production of quality silk and lessening dependence on imports.

6.9.4 In Karnataka, a leading State in silk production, all the sericultural activities from plantation to weaving of fabrics have been promoted in an integrated manner. Similarly, in the States of Andhra Pradesh, Tamil Nadu and West Bengal, though reeling is not as extensive as in Karnataka, all other sericultural activities are integrated. Further, raw silk is also used in the production of silk khadi and weaving of silk carpets. Thus, sericulture has linkages with the sub-sectors of khadi, handlooms and handicrafts. The programmes for the development of sericulture during the Eighth Plan, therefore, will be dovetailed to achieve both the vertical and horizontal integration. This would result in harmonisation of the various sub-sectors and generation of employment in khadi, handlooms and handicrafts.

6.9.5 Another aspect which has caused considerable concern in the recent past is the outbreak of pebrine disease. In order to prevent its spread and contain it, emphasis will be laid on thorough moth examination and providing assistance to sericulturists and private graineurs.

6.9.6 So far, the emphasis has been on evolving improved varieties of food plants and silk worm races. However, reeling is an important activity. During the Eighth Plan, greater attention will be paid to improve reeling. Reelers will be trained and assisted in the establishment of cottage basins. Apart from the acquisition of skill in reeling, a reeler is handicapped on account of large requirement of working capital for the purchase of cocoons. There is provision of working capital loans through refinance from IDBI under NSP. Reeling under private sector would be promoted during the Eighth Plan.

6.9.7 There is hiatus in the availability of raw silk and weaving capacity in States like U.P., Bihar, Assam and Orissa. In these States, there is concentration of silk handlooms but production of mulberry silk is concentrated in Karnataka, Andhra Pradesh and Tamil Nadu. In order to remedy the regional imbalance and to improve the availability of raw silk to weavers, schemes for silk production would be taken up in new areas.

6.9.8 Finally, R&D activities have so far been directed towards mulberry sericulture. Since non-mulberry sericulture is practised by the tribals, there will be re-orientation of research activities so that production, employment and earnings of tribals engaged in these activities are improved and sustained.

Handicrafts

6.10.1 Handicrafts are not only a part of the country's rich cultural heritage but they have also been a unifying factor in the national life. Handicrafts items, which blend utility with beauty, cater to the needs of the elite as well as other classes of the population. They also occupy an important position in the economy of the country both from the point of view of employment and export potential. The value of output in handicrafts sub-sector increased from Rs.3,500 crores in 1984-85 to Rs.7,067 crores (1984-85 prices) in 1989-90 and exports from Rs.1,700 crores to Rs.6,400 crores during the same period. The production of handicrafts in 1991-92 is expected to reach a level of Rs.13,260 crores.

6.10.2 The implementation of various schemes for promotion and development of handicrafts upto the end of the Seventh Plan has not been able to provide assistance to large sections of craftsmen in so far as production-related inputs are concerned and the marketing of their products is still left largely to the private trade. Consequently, they have not made any discernible impact on their earnings and standard of living. Its potential in terms of employment and exports remains unexploited. The country's share in the global market for the handicrafts (1.5%) is little more than the share of exports in general (0.5%) but it is insignificant compared to the enormous possibilities for growth. It is, therefore, necessary to reorient the schemes so that the basic needs of the artisans relating to raw

material, credit and marketing are adequately met. In this context, the voluntary organisations can play an active and significant role. Further, the activities so far have been sponsored and implemented mainly by the Central Government and the role as well as involvement of State Governments have been inadequate. It is, therefore, imperative to remodel certain schemes in such a manner that would ensure the participation of these agencies also.

6.10.3 The main objectives of the Eighth Plan for the handicrafts sub-sector would be to enhance opportunities of employment and income from crafts as an economic activity and harness the export potential of crafts for increasing foreign exchange earnings of the country.

6.10.4 For promoting the growth of handicrafts, it is essential to service the production base of craftsmen. The services needed to support production include supply of raw material of requisite quality at reasonable prices, common facility, skill upgradation, design as well as technical guidance etc. and other related services. As handicrafts sector is decentralised and crafts are dispersed in the country, these services would be provided in a package in identified crafts pockets through the establishment of Crafts Development Centres (CDCs) by the States, cooperatives and voluntary organisations. It would be necessary to assess the impact of the 14 CDCs which have been set up recently before embarking on further expansion.

6.10.5 The importance of timely availability of raw materials in handicrafts cannot be over-emphasised. All materials have periodic spells of short supply. However, wool for carpets, silk for carpets, scrap metal and virgin metal for artmetalware, wood particularly sandalwood, seesum and teak, cane and shells are identified as critical to the sector. As the availability of the first three is dependent on import policy and the remaining two on forest policy, close liaison should be maintained with the concerned Ministries to make the forest policy and the import policy conducive to augmenting raw material supply for the handicraft sector. The Craft Development Centres should take up supply of raw material/processed raw material to the craftsmen according to their needs.

6.10.6 Though refinance to the handicrafts sub-sector is available from NABARD, the credit available to craftsmen and promotional organisations under these schemes is inadequate. It is, therefore, imperative that NABARD's response to the credit requirements of handicrafts should be both adequate and positive. It should also extend refinance for providing the working capital for corporations and promotional organisations so that they could get cash credit facilities at concessional rate of interest.

6.10.7 Training is presently being imparted to artisans through 515 departmentally run training centres, Master Craftsmen under the Apprenticeship Training Scheme and other organisations such as Corporations, voluntary agencies, etc. Out of 515 departmental training centres, 436 are for carpet weaving, started in 1976 when the limited production base in carpet weaving could not cope with the heavy demand for Indian carpets in the international market. This activity should now be curtailed in the Central sector and carried on by the States and voluntary agencies. To begin with, instead of conducting basic and advanced training separately, each centre should conduct one course for basic and one course for advanced training with the ultimate objective of conducting only advanced training course because the aim of imparting training in handicrafts is to upgrade the skill of craftsmen rather than merely creating basic skills. During the Eighth Plan, the strategy would, therefore, be the promotion of other handicrafts like artmetal, wood carving, hand printed textiles, cane and bamboo, bidriware, metal mirrors, brassware, embroidery, imitation jewellery, lacquerware, zari work, etc. Greater emphasis would be placed on training through master craftsmen under the Apprenticeship Training Scheme as well as training through voluntary agencies. Efforts would also be made for the revival of languishing crafts so as to protect employment and earnings of craftsmen. Training schemes relating to departmentally-run training centres need to be evaluated by an independent agency with a view to taking decisions regarding effecting modifications or their continuation in future.

6.10.8 The existing Regional Design and Technical Development Centres (RDTCs) and specialised craft Institutes such as Institute of Hand-printed Textiles at Jaipur, Institute of

Carpet Technology at Bhadohi and Cane and Bamboo Development Institute at Agartala are unable to cater to the needs of handicrafts as they are too dispersed. Moreover, it is also necessary to attune the activities of these Centres to the marketing needs. It would, therefore, be necessary to reorient their activities during the Eighth Plan. Accordingly, the RDTCs, instead of merely evolving their own designs, would also solicit design orders from private trade and public sector organisations, establish linkages with the envisaged CDCs and collaborate with apex institutes such as NID, NIFT, etc. for design development, particularly in export-oriented crafts. Assistance would also be provided to other organisations like corporations, cooperatives and voluntary organisations to engage consulting designers.

6.10.9 As the impact of existing schemes on the marketing of handicrafts has not been significant on account of their implementation without any coordinated thrust and absence of innovative marketing, new marketing approaches would need to be adopted in the Eighth Plan so that the wages and income levels of artisans could be increased. As the rapidly expanding rural market offers great potential for consumer products including handicrafts, simple low-cost utility handicrafts should be evolved and their sale organised in local haats and market places. Though there is substantial demand for cane and bamboo products in various parts of the country and the raw material is available in abundance in the North Eastern Region, this potential is not being exploited fully on account of high transportation costs. To ensure cost effectiveness, it would be necessary to despatch processed raw materials to such centres where there is good demand for cane and bamboo products and artisans could assemble and produce the finished products there. Apart from organisation of traditional melas, fairs and exhibitions, selected market places in rural areas, towns and cities would be identified and craft complexes would be developed at pilgrimage, tourist centres and metropolitan cities for marketing of crafts.

6.10.10 Out of the estimated total exports of handicrafts valued at Rs.8100 crores in 1990-91, the share of gems and jewellery is 85 per cent. The value addition in gems and jewellery is about 30 per cent. In view of the potential of gems and jewellery industry to earn foreign exchange, it would be necessary to set up functional estates with facilities of trading, training, establishment of units and other infrastructure. Further, the industry would need easy availability of foreign exchange for import of raw materials, machinery, tools and equipments, training facilities, market information about the latest trends in fashion and designs preference in importing countries for sustained growth.

6.10.11 In view of envisaged thrust on sericulture, there would be significant increase in the domestic silk production during the Eighth Plan which should be utilised for the production of silk carpets for boosting their exports as there is good demand for them in overseas markets. While India's exports of handicrafts are mainly handmade, the large part of the global trade belongs to articles and items which cater to the common man's needs and tastes which have to be produced in bulk. Although made by hand, they need mechanical support in processing and finishing. As the export market for `cultural crafts' is limited, reliance will have to be placed on those crafts which cater to the common man's needs and tastes for boosting exports during the Eighth Plan. It would be necessary to ensure timely availability of both indigenous as well as imported raw materials and credit to boost exports. Further, mechanisation in certain areas which do not affect basic skill input but pertain mainly to processing and finishing should be encouraged. Both the designing and technical assistance should aim at adapting crafts to the utility based foreign market. Market research would also assist in the growth of exports and Export Promotion Councils should play an active role in the dissemination of requisite information to exporters. For encouraging the growth of exports, it would also be necessary to improve packaging and for this purpose the assistance as well as guidance of the Institute of Packaging should be solicited.

6.10.12 The absence of a comprehensive data base in handicrafts is a serious limitation in planning for and monitoring of the development in the sub-sector. Presently, the data base is mainly the Economic Census of 1977 and 1980 and figures maintained or extrapolated by the office of Development Commissioner (Handicrafts) on the basis of the aforesaid census. These census did not delineate handicrafts as such and figures are compiled from 47 industry

groups which correspond to handicrafts. Consequently, the data are neither realistic nor reveal the actual status of the industry. It is, therefore, essential to conduct a comprehensive survey of handicrafts in the country during the Eighth Plan.

Wool Development

6.11.1 India has the fifth largest population of sheep in the world. The sheep population is around 40 million and wool production was 43 million kgs. in 1989-90. However, productivity in wool production was 900 grammes per sheep which is quite low as compared to 5520 gms/sheep and 5320 gms/sheep in Australia and New Zealand respectively.

6.11.2 Sheep breeding and wool production are done mostly by tribals and the main problems faced by this sector are low productivity, poor quality of wool, non-existence of grading facilities, non-availability of good breeds, low level of education of the sheep breeder and migratory character etc. The wool industry also suffers from various problems like technological obsolescence and the fact that most of the units are in small scale and unorganised sector. Wool exports are negligible and there is vast scope to improve upon.

6.11.3 The Wool Development Board, set up in 1987, would promote the industry by way of assistance for wool marketing, establishment of wool testing and grading centres, industrial service centres, setting up of scouring and carbonising plants and collecting marketing intelligence. It will also implement other schemes like integrated sheep and wool development project, machine-shearing-cum-training centres, diversification of products and utilisation of coarse wool, etc. These development programmes will be supplemented by other schemes implemented in the handlooms and handicrafts sub-sector relating to promotion of exports of woollen carpets, Hill Area Wool Development Projects, Carpet Training Centres, encouragement to artisans, etc.

Science and Technology

6.12.1 With a view to reducing technological obsolescence, improving competitiveness and raising the level of earnings of artisans and craftsmen engaged in this sector, several programmes are being implemented. Ten tool rooms and training centres and specialised institutes, three PPDCs, five PDTCs with five subcentres, one service and training centre for electronics, four regional testing centres, 20 field testing stations, two footwear training centres, 27 SISIs, 31 branch institutes and 37 extension centres are providing technological assistance and other common facilities to the small scale sector. Besides, modernisation programmes are run for 20 industries on all-India basis and for 38 industry groups on State concentration basis.

6.12.2 The KVIC implements several projects, both departmental and institutional, for technology development, transfer of technology, substitution of alternate raw materials, product diversification, quality control, standardisation and testing of tools, equipment and new machinery. These projects would continue during the Eighth Plan. The R&D programmes for coir industry relate to improved methods in coir extraction, reducing drudgery of workers, spinning of coir yarn, weaving of coir matting on improved looms with higher productivity, development of new products of coir, such as geo-textiles, coir polymer composites, coir gypsum composites, use of coir in improving soil stabilisation and erosion control, use of coir for cooling buildings by roof-surface-evaporation techniques, etc. For handloom weavers, assistance in design development, modernisation and cloth processing, etc, is being provided by the three IIHTs and 23 WSCs. Professional institutes are being engaged to carry out research and development and to study special problems of the handlooms sector. The Central Silk Board undertakes R&D activities relating to evolving of high yielding plant varieties, package of practices of culivation of plants and silkworm rearing, control of pests, evolving of suitable silkworm races, etc. Under National Sericulture Project, breeding laboratories would be strengthened and additional laboratories for evolving region-specific improved silkworm races and disease-resistant races suited to different agro-climatic conditions of the country would be established. For craftsmen involved in different handicrafts, the programmes include strengthening the existing RDTCs and Craft Institutes like Institute of Hand Printed Textiles at Jaipur, Institute of Carpet Technology at Bhadohi and Cane Development Institute at Agartala.

6.12.3 During the Eighth Plan, two tool rooms with Danish assistance and three tool rooms with German assistance are proposed to be established. It is envisaged that NSIC will be entrusted with the responsibility of collection and dissemination of technology and other relevant information to SSI units. Besides strengthening the existing R&D infrastructure for other industries, it is envisaged to modernise SISI workshops.

Food Processing Industries

6.13.1 The agricultural sector contributes 31.3 per cent to our gross domestic product. The annual production of fruit is estimated at about 28 million tonnes, next only to Brazil. Similarly, India ranks second in the world after China in vegetables with an annual production of 69 million tonnes. The cattle population in the country is estimated at 15.4 per cent of the world cattle population. Our milk production is the highest among the developing countries. However, hardly 1.5 percent of our food output and 0.5 percent to 1.0 percent of fruit and vegetables are processed. Post harvest losses of cereals and legumes are currently placed around 15 to 20 percent and those of perishable fruit and vegetables at 20 to 30 percent. The development of the food processing industries in the country has, therefore, assumed importance and urgency taking into account the prevailing favourable conditions and the vast potential for export of its products.

6.13.2 The food processing industries in India are broadly classified into (a) unorganised and cottage scale industries; and (b) organised processed food industries, with further division into the following sub-sectors:

i) Primary food processing;

ii) Spice and Horticultural products;

iii) Dairy and Livestock products;

iv) Fish and fish products; and

v) Consumer Goods Industry (other processed foods).

Primary Food Processing

6.13.3 The production of principal raw materials for food processing industries in the initial and the terminal year of the Seventh Plan and in the last two years is shown in the Statement 6.4. Exports from food processing industries in 1991-92 amounting to Rs. 2813 crores are indicated sub sectorwise in Statement 6.5. India's share in world exports of food items has come down from 1.2 per cent in 1978 to 0.44 per cent in 1988. The use of processed food is becoming popular due to various socio-economic changes such as urbanisation, change in tastes, high cost of household labour, increase in the number of working women, improvement in the living standard of people in general etc. The demand for processed and fast foods by large urban population of the country is, therefore, likely to grow steadily in the near future.

6.13.4 Grain processing, which includes rice milling, flour milling and pulses processing, is the biggest component in the food sector constituting over 40 percent of the total value. This notwithstanding, even the present capacity for processing paddy is not fully utilised. There are substantial grain losses due to obsolete machinery. Installation of modern rice hullers and rice mills is therefore being encouraged by the Government. There are 306 solvent extraction units in the country at present for extracting rice bran oil. While flour milling is done in the organised sector through licensed flour mills, in the unorganised sector it is through country flour chakies.

6.13.5 The pulse milling is mostly in the unorganised sector. The disconcerting feature, however, is that about 10 to 15 per cent of the pulses are lost due to obsolete technology used in the process.

6.13.6 The annual production of fruit in India, which is about 28 million tonnes, is targetted to increase to 40 million tonnes by the end of the Eighth Plan. Similarly, the annual production of vegetables in India, which is about 69 million tonnes, is also targetted to increase to 94 million tonnes by the end of the Eighth Plan. The total installed capacity of fruit and vegetables processing industry, which is around 9 lakh tonnes, is grossly under-utilised at the level of 30 per cent. In India, hardly one percent of the annual production of fruit and vegetables is processed, while in Brazil and USA it is 70 per cent, in Phillipines 78 per cent, in Malaysia 83 per cent and in Thailand 30 per cent. High cost

of packaging, non-availability of packaging machinery, non-availability of quality raw material at reasonable rates, lack of basic infrastructural facilities, etc., are some of the constraints faced by this sector.

Dairy and Livestock Products

6.13.7 The annual milk production is around 56 million tonnes, of which 30 percent is being converted at present into milk products, ghee alone accounting for more than 85 per cent. While production of milk powder and infant milk increased from 22,000 tonnes in 1970 to 1,65,000 tonnes in 1989, it slid down to 1,55,000 tonnes in 1990. Production of malted milk food and cheese was 39,000 tonnes and 2,000 tonnes respectively in 1990. The Government has recently de-licensed production of dairy products subject to locational parametres, with ice cream continuing to be reserved for the small scale sector. Development of the milk product industry further is, however, dependent on the availability of liquid milk in adequate quantity and increase in milk output per cattle .

6.13.8 With huge cattle population, India has the potential to be one of the top producers of meat and meat products but the position is none too happy. Cattle and buffalos, when they outlive their productive life, are slaughtered. Sheep are reared mostly for raising wool and not for producing meat. While a few modern slaughter houses have come up in big cities like Bombay, Aurangabad, Hyderabad, Durgapur and Panjim, most of the slaughter houses in the country, numbering around 3,600, are suffering from poor water supply, insufficiency of electricity, processing/storing facilities as also lack of adequate arrangements for moving carcasses. During the Fourth Plan, eight bacon units were set up for manufacture of value-added pork products to ensure remunerative prices to pig rearers. The capacity remained by and large under-utilised. Nonetheless, buffalo meat constitutes the largest proportion of meat exports from India. There is good demand of buffalo meat in the Middle East countries but the export is inadequate due to lack of modern processing houses, prevalence of diseases like rinderpest and those of mouth in the animals. Unhygienic and filthy conditions in the slaughter houses also shy away prospective importers. The quality and quantity of nutrition provided to animals is very poor leading to low rate of growth. Apart from taking remedial measures, there is need to develop other meat sources like rabbit, etc. Loss of by-procuts like blood, offals, glands, bones, etc. also need to be avoided in the meat industry so as to afford additional profit to the meat producers.

Fish and Fish Products

6.13.9 India has a coastline of 7,500 kms and an Exclusive Economic Zone (EEZ) extending to 2.02 million square metres with vast potential for marine fishery. There are 1.8 lakh country crafts (non-mechanised), 23,000 mechanised fishing vessels and 179 deep sea fishing vessels operating in the Indian Exclusive Economic Zone. The annual production of marine and inland fish and exports of marine products are indicated in Statement 6.6. Shrimp alone remains so far the major component of the marine exports from India. The export of marine products was approximately 20,000 tonnes during 1990-91 and the reasons for the abysmal level of exports in this sector can be traced to the inadequate fish processing capacity. There are at present 216 freezing plant with a freezing capacity of 2,200 tonnes per day and 25 canning units with a total capacity of 90 tonnes per day. On-board fish processing facilities are non-existent in the country. While Individual Quick Freezing Plants (IQFP) have recently been established, their capacity is inadequate as compared to that available in the advanced countries. As many as 5,000 cold storages, now available in the country, are also inadequate for handling the present volume of fish catches. In all, the deep sea fishing industry today stands on a very weak footing. Maritime Zone of India (Regulation of fishing by foreign vessels) Act, 1981 is implemented by the Coast Guards but they possess inadequate communication facilities. The Fishery Survey of India, Bombay is the nodal agency for conducting surveys and assessment of marine fisheries in the Indian waters.

6.13.10 To increase marine exports, there is need to use fish catches other than shrimps. New shrimp ground and non-shrimp resources also need to be identified by Fishery Survey of India since exploitation of the existing resources for shrimp catches have reached saturation level. Other aspects requiring greater attention are quality improvement, technology upgradation, value added products, development of infra-

structure, improved methods of handling and preservation, etc.

Consumer Goods Industry

6.13.11 The consumer industry for eatable food processing items has a very wide spectrum and it is concentrated largely in the organised sector including public sector units and large corporations in private sector. There are more than 18,000 factories producing food products worth Rs.9,000 crores. There are large number of units in urorganised sector producing items like Pasta goods, traditional foods, Poha etc. This sector is also playing an important role. The Confederation of Indian Food and Trade Industry (CIFTI) is the apex body of food product manufacturing units while Agricultural and Processed Food Products Export Development Authority (APEDA) is promoting exports of a wide range of Indian agricultural products and processed foods Under the new industrial policy announced by the Government in July, 1991, licensing of food product industry has been dispensed with, except for non-potable alcohol, beer etc. Broad- banding has also been extended to all processed food items excluding the items reserved for the small-scale sector.

6.13.12 Two Central Public Sector Undertakings, namely, Modern Food Industries (India) Ltd. (MFIL) and North Eastern Regional Agricultural Marketing Corporation (NERAMAC) are engaged in the production and marketing of food products. MFIL is manufacturing bread, soft drinks, ready-to-serve food/drink, edible oil, wheat products, nutritional diet, etc.

6.13.13 The NERAMAC is, on the other hand, engaged in the marketing and processing of fruit and vegetables grown in the North Eastern States. The unit also markets citronella oil, ginger, mustard oil cake, aromatic products of the regions, etc. It has a pineapple juice processing plant at Nalkata in Tripura having a capacity of producing 48 tonnes of pineapple juice per annum. This unit is incurring losses since its inception. Unless a major revamp is effected, it may not become viable.

Packaging Material for Food Industry

6.14.1 Several new trends have now emerged in new packaging materials like tatrapacks, multi-layered aseptic cartons, flexible plastic pouches, thermofarm cups and tray packing, shrink film transport packing, etc. Container transport mode introduced by the Indian Railways has improved transportation facilities, much needed for the food processing industries. The increased shelf-life of the products of food processing industries have made these products popular and also, to some extent, prevented post-harvest losses in fruit and vegetables.

6.14.2 The high cost and inadequate availability of quality packaging materials, coupled with their irregular supply where these are available and high excise duties, have resulted in serious constraints in the development of packaging industry. The main thrust in `R&D' has to be on development of cost-efficient sophisticated packaging and consumer packs to meet international standards.

Food Processing Machinery

6.15.1 The requirements of food processing machinery are being met by chemical processing machinery manufacturers, specialised machinery manufacturers and small-scale units. Most of them do not have the necessary design and infrastructure for developing new products and cost efficient machinery and equipment. There is need to upgrade technology available with the Indian manufacturers by enlisting foreign collaborations where required, for design knowhow back-up. The Central Food Technology Research Institute, Mysore, would be actively involved in the research in food processing machinery. Encouragement to food processing industries would ipso facto increase demand of latest food processing machinery. Incentives and other facilities to Indian machinery manufacturer would, therefore, be required to enable them to enlist new foreign collaborations for food processing machinery as well as for high speed packaging machinery.

Eighth Plan

6.16.1 Government has recently liberalised the foreign investment norms as also equity participation up to 51 per cent. With liberalisations and other incentives, substantial investment is expected in food processing industries sector which may create additional 2.5 lakh jobs by the end of the Eighth Plan. From the present level of Rs.2,813 crores, export is expected to reach Rs. 6,000 crores. Further promotion of food processing industries would require establishment of large private sector units in rural

areas for production of processed food items. When these come into being, they will serve as nucleus plants for small- scale units to be set up around these plants. Some large industrial houses have made investment and provided extensive services which has resulted in higher production and exports of food products.

6.16.2 Development of the food processing industries also helps in conserving energy which otherwise gets used by the households for cooking of foods. The R&D should focus on processed foods using enzymes so as to save energy. Adoption of low-cost preservation techniques like sun-drying of fruit and vegetables, storing of fermented vegetables, extension of shelf-life of fruit and vegetables in cool chambers, storage of fruit pulp/juices by addition of simple preservatives, etc. also need to be taken up.

6.16.3 Facilities would be created in conformity with the latest EEC or USDA standards to promote export of meat and meat products. A National Livestock Products Development Council is proposed to be set up to formulate policy measures for promotion and development of modern processing facilities for pork, sheep, goat, rabbit, poultry and egg, buffalo meat, development of infrastructure for storage and transport of meat export, etc. A National Marine Fisheries Development Board is proposed to be established to look after the promotion of deep sea fishing industries.

6.16.4 It is proposed to acquire deep sea fishing vessels by offering differential interest rate subsidy and provision of loans through Shipping Credit & Investment Corporation of India to Indian entrepreneurs. During the Eighth Plan period, three freezing storages (at -40 to -20 degree celsius) at major ports would be set up. Private sector entrepreneurs would be provided financial assistance for acquiring refrigerated vans.

6.16.5 Financial assistance is proposed to be given to food processing units for strengthening backward linkages between processors and growers and encouragement for contract farming. To encourage mushroom cultivators to set up spawn laboratories, compost-pasteurisation and other processing facilities along with supporting structures for mushroom growing, financial assistance would be given. To train rural artisans in food processing techniques, it is proposed to establish food processing and training centres in rural areas. These centres would provide functional education through `hands on' experience to entrepreneurs. Diversification/modernisation/restructuring plans for MFIL and NERAMAC would be implemented so that these PSUs may become viable during the Eighth Plan period.

Statement 6.1

Village & Small Industries - Targets And Achievements In Seventh Plan (1985-90)

Industry		Estimated Production			Employment (Lakh Persons)			Export (Rs. Crores)		
Sl.No.		1984-85	1989-90		1984-85	1989-90		1984-85	1989-90	
	Unit	Achiev.	Target	Achiev	Achiev	Target	Achiev.	Achiev	Target	Achiev
Modern Small Scale Industry										
1 Small Scale Industries	Rs/Crores	50520	80220	92080	90.00	119.00	119.60	2350.00	4140.00	7626.00
2 Powerloom cloth	Mill.Mts.	4930	6400	7457	32.19	35.32	45.00			
	Rs/Crores	6423	8320*	9865						
Traditional Industries										
3 Khadi cloth	Mill.Mts.	127.82	180	107.47	14.58	20.00	14.12			1.39
	Rs/Crores	170	300	203						
4 Village Industries	Rs/Crores	759	1700	1101	22.41	30.00	32.14	3.65	5.90	3.66
5. Handloom cloth	Mill.Mts.	3600	4600	4155	74.66	98.13	76.00	348.86	485.00	342.00
	Rs/Crores	2880	3680	3377						
6 Sericulture - Raw Silk	Tonnes	6754	10900	12016	43.20*	52.77*	50.00	129.05	190.00	400.61
	Rs/Crores	316.57	453*	493						
7 Handicrafts	Rs/Crores	3500	5400	7067	27.4	35.8	42.15	1700.00	2591.00	6400.00
8 Coir fibre	Lakhtonne	1.64	2.23	1.92	5.00*	7.50*	5.50	26.00	32.00	33.32
	Rs/Crores	100	170	128						
Total (VSI):	Rs/Crores	64668.57	100243	114314	309.44	398.52	384.51	4557.56	7443.90	14806.98

* Revised

Statement 6.2

Village And Small Industries - Targets And Achievements In 1990-91 And 1991-92

S.No. & Industry		Estimated Production				Employment (Lakh Persons)				Export (Rs. Crores)			
		1990-91		1991-92		1990-91		1991-92		1990-91		1991-92	
	Unit	Target	Achiev.	Target	Ant. Achv.	Target	Achiev.	Target	Ant.Achv.	Target	Achiev.	Target	Ant.Achv.
Modern Small Scale Industry													
1 Small Scale Industries	Rs/Crores	159062	155340	160000	160000	125.50	124.30	133.30	126.00	7100.00	9100.00	7981.00	12658.00
2 Powerloom cloth	Mill.Mts.	10500	9469	11036	11036	63.36	63.36	53.00	53.00				
	Rs/Crores	13680	12337	14378	14378								
Traditional Industries													
3 Khadi cloth	Mill.Mts.	120	109	127	114	14.61	14.15	14.61	14.61		0.14		
	Rs/Crores	260	286	310	278								
4 Village Industries	Rs/Crores	1745	1994	2150	2150	31.28	34.42	35.40	35.40		6.29		
5 Handloom cloth	Mill.Mts.	4500	4541	5000	5000	100.27	100.27	106.00	106.00	360.00	360.00	450.00	450.00
	Rs/Crores	3600	3633	4064	4064								
6 Sericulture - Raw Silk	Tonnes	12633	12665	14060	13535	62.00	52.00	55.00	54.50	500.00	440.27	600.00	606.00
	Rs/Crores	866	868	1038	996								
7 Handicrafts	Rs/Crores	11325	11325	13260	13260	43.84	43.84	48.25	48.25	8100.00	8100.00	9215.00	9215.00
8 Coir fibre	Lakh tonne	2.23	2.11	2.26	2.20	5.54	5.46	5.46	5.46	42.00	48.33	51.48	66.16
	Rs/Crores	170	161	172	168								
Total (VSI):	Rs/Crores	190708	185944	195372	195294	446.40	437.80	451.02	443.22	16102	18055.03	18297.48	22989.16

Statement 6.3

Village And Small Industries - Eighth Five Year Plan (1992-97) - Indicative Targets

S.No. & Industry	Unit	Production		EMP.(Lakh Persons)		Export(RS./Crs.)	
		1991-92 Achiev.	1996-97 Target	1991-92 Achiev.	1996-97 Target	1991-92 Achiev.	1996-97 Target
Modern Small Scale Industry							
1 Small Scale Industries	Rs/Crores	160000	233436	126.00	150.50	12658.00	20200.00
2 Powerloom cloth	Mill.Mts.	11036	15280	53.00	75.00		
	Rs/Crores	14378	19907				
Traditional Industries							
3 Khadi cloth	Mill.Mts.	114	160.00	14.61	16.50		
	Rs/Crores	278	560				
4 Village Industries	Rs/Crores	2150	3760	35.40	46.25		
5 Handloom cloth	Mill.Mts.	5000	7000	106	117	450.00	1000.00
	Rs/Crores	4064	5690				
6 Sericulture - Raw Silk	Tonnes	13535	21400	54.50	65.00	600.00	1000.00
	Rs/Crores	996	1590				
7 Handicrafts	Rs/Crores	13260	29620	48.25	77.65	9215.00	27915.00
8 Coir fibre	Lakh tonne	2.2	2.77	5.46	5.84	66.16	100.00
	Rs/Crores	168	212				
Total (VSI):	Rs/Crores	195294	294775	443.22	553.74	22989.16	50215.00

Statement 6.4

Production Of Principal Raw Materials For Food Processing Industries

(Million Tonnes)

Commodity	1984-85	1989-90	1990-91	1991-92 Ant. Ach.
1.Foodgrains	145.54	171.04	176.23	172.60
2.Oilseeds	12.95	16.92	18.45	17.80
3.Milk	41.50	51.40	53.70	56.38
4.Fruit	23.76	26.80	28.20	30.00
5.Vegetables	35.84	40.00	42.45	45.68
7.Meat,Poultry Prod.	1.10	1.40	1.44	1.50
8.Eggs(billion Nos.)	14.25	20.20	21.55	22.00
9.Marine Fish	1.70	2.28	2.30	2.35

Statement 6.5

Exports From Food Processing Industry

(Rs. in Crores)

Sub Sector	1991-92	1996-97 Target
Fish & Fish Products	1,373.96	3,000
Grain Milling (Rice & Wheat)	876.45	1,150
Fruit & Vegetable Products	332.37	650
Meat & Meat Products	230.52	500
Other Processed Products	- -	700
Total	2,813.30	6,000

Statement 6.6

Production of Fish And Exports of Marine Products

Year	Fish Production (Lakh Tonnes)			Exports of Marine products	
	Marine	Inland	Total	Quantity (000tonnes)	Value (in Rs.Crores)
1986-87	17.13	12.29	29.42	85.80	460.67
1987-88	16.58	13.01	29.59	97.20	531.20
1988-89	18.17	13.35	31.52	99.80	597.85
1989-90	22.75	14.02	36.77	110.80	635.00
1990-91	23.00	15.36	38.36	138.40	890.40

CHAPTER 7

LABOUR AND LABOUR WELFARE

Objectives and Thrust

7.1.1 Improvement in the quality of labour, productivity, skills and working conditions and provision of welfare and social security measures, especially of those working in the unorganised sector,are crucial elements of the strategy for quantitative and qualitative enhancement of employment opportunities. The programmes in the sector `Labour and Labour Welfare', therefore, lay emphasis on skill formation and development, strengthening and modernisation of employment service, promotion of industrial and mines safety, workers' education, promotion of self-employment, rehabilitation of bonded labour, enforcement of labour laws especially those relating to unorganised labour and women and child labour, promotion of a healthy industrial relations situation and encouragement of workers' participation in management.

Vocational Training

7.2.1 Craftsmen Training and Apprenticeship are two major programmes of skill development designed to meet the diverse skill needs of the economy. At present, a network of 2,240 Industrial Training Institutes/Centres (ITIs/ITCs), with an intake capacity of 3.70 lakhs is imparting training in 40 engineering and 27 non-engineering trades. Besides courses on these trades, a number of short-term courses are also conducted by ITIs in some States and Union Territories. Seven Advanced Training Institutes, one Central Training Institute, two Foremen Training Institutes, a Central Staff Training and Research Institute and a Central Instructional Media Institute take care of advanced level training for workers in industry, training of instructors, development of curricular and instructional material and research in training.

7.2.2 Vocational training facilities for women have been expanded and diversified over the years. There are 154 Women ITIs/ITCs and 129 women's wings in General ITIs, which specifically cater to the vocational training needs of women. In addition, a National Vocational Training Institute for Women at NOIDA in Uttar Pradesh and six Regional Vocational Training Institutes for Women at Bombay, Bangalore, Calcutta, Hissar, Trivandrum and Tura provide facilities for training in a three-tier system, namely, basic skills, advanced skills and instructional training in selected trades having high employment potential. Part-time, short-term and ad hoc courses are also organised by these institutes as per the needs of local industries. Some courses are also organised for the benefit of housewives and others in trades like repair and servicing of common domestic appliances, hair and skin care, dress- making, etc.

7.2.3 The Apprenticeship Training Programme provides practical training at the shop-floor level to 1,34,000 trade apprentices in 138 trades in various industries under the Apprentices Act, 1961. Under the provisions of this Act, apprenticeship training is also provided to engineering graduates and diploma holders (graduate and technician apprentices) in 76 fields of engineering and technology and also to those passing out of the vocational stream of the 10 + 2 system of education.

7.2.4 While expansion and diversification of vocational training facilities in relation to needs is necessary, continuous upgradation of training, curricula and equipment, tools and other infrastructure is equally important. A major attempt was made in the Seventh Plan through a Centrally Sponsored Scheme for upgradation of the quality of ITIs which envisaged replacement of obsolete equipment. Subsequently, a six-year Vocational Training Project, assisted by the World Bank,for quality upgradation and modernisation of vocational training was launched in 1989-90. The project consists of Central Sector schemes as well as Centrally Sponsored Schemes, expenditure on the latter being shared on a 50 : 50 basis by the Central Government and the individual State Governments. The schemes making up the project envisage : modernisation of equipment in ITIs, expansion and strengthening of the network of women ITIs and Regional Vocational Training Institutes (RVTIs) for vocational training of women; diversification of training programmes including introduction of high-tech and self-employment-oriented

courses; media resource centres; strengthening of the Apprenticeship Training Programme and staff development. The size and scope of the project is being enlarged in the Eighth Plan to expand the coverage of schemes like modernisation of equipment and high-tech courses, establishment of new Women ITIs/Wings besides introduction of new trades in existing women ITIs/Wings and new schemes like upgradation of Vocational Rehabilitation Centres for the Physically Handicapped and hostels for women ITIs. It is expected that the project will supplement the efforts to expand and diversify training facilities, especially for women and upgrade and reorient the quality and content of vocational training in general to cater to emerging needs of the economy.

Employment Service

7.3.1 A large network of employment exchanges including University Employment Information and Guidance Bureaux provide registration, guidance and placement services to job-seekers. Employment exchanges in some States also implement self-employment schemes. For instance, in West Bengal, a Self-Employment Scheme for the Registered Unemployed (SESRU) provides subsidy, subject to a ceiling of 25 per cent of the loan sanctioned by banks. In Madhya Pradesh, assistance towards margin money is provided to entrepreneurs seeking loans from banks. In other States, employment exchanges motivate and guide the job-seekers for self-employment, in general, and in relation to the specific self-employment schemes, in particular. Self Employment for Educated Unemployed Youth (SEEUY) of the Development Commissioner, Small Scale Industries, the schemes for self employment of the educated in Jammu & Kashmir and Nagaland, the schemes run in Andhra Pradesh by the Societies for Training and Employment Promotion (STEPs) and the Society for Employment Promotion and Training in Twin Cities of Hyderabad-Secunderabad (SETWIN) for imparting training to youth to enhance their skill and entrepreneurial talents and the Sanjay Gandhi Swavalamban Yojana of Maharashtra providing assistance for promoting small self-employment ventures are some major schemes of this kind. The role of exchanges in the promotion of self-employment should be strengthened and expanded. The State Governments and other agencies concerned should ensure that the necessary mechanisms and procedures are created to facilitate such an expanded role.

7.3.2 Another important function performed by the employment exchanges is the collection and dissemination of information on employment in the organised sector of the economy and on various aspects of job-seekers registered with the exchanges. The exchanges should extend their information collection functions beyond the organised sector of the economy to cover labour market information in the unorganised sector through sample surveys and studies at regular intervals. Such efforts would strengthen the information base for the formulation and execution of decentralised employment strategies and plans. The exchanges need to be assigned an important role in employment planning and promotion, especially self-employment promotion at the district level. The State Governments and other agencies concerned should ensure that the mechanisms necessary to facilitate such a role by the exchanges are created.

7.3.3 In order to provide more efficient and quicker services to the employers and employment seekers as also to tackle effectively the rapidly increasing work load at the employment exchanges, a scheme to provide Central Assistance to the State Governments/Union Territory Administrations for computerisation of employment exchanges is being implemented since the Seventh Plan. So far, 117 employment exchanges have been covered under the scheme and are at various stages of computerisation. It is proposed to continue the scheme in the Eighth Plan with the ultimate objective of covering all the District Employment Exchanges in a planned manner.

7.3.4 A new area, where employment exchanges could play a useful role, is the assessment of the magnitude of labour adjustment in the wake of steps like restructuring of trade and industry, liberalisation of the trade regime and deregulation of industry and in retraining and redeployment of labour in self-employment and other wage/salary employment in alternative expanding sectors and activities.

Manpower Planning and Research

7.3.5 In the context of the rapidly changing structure of the economy, significant changes are likely to occur in the employment patterns

and potential of different sectors and activities as well as in the pattern of skills and manpower requirements. These changes would need to be regularly studied in the short, medium and longer term perspectives so as to provide necessary inputs for planning development of trained manpower at different levels. In this context, the Institute of Applied Manpower Research (IAMR), set up by Government of India in 1962 with the broad objectives of advancing knowledge on all aspects of human resource development, providing perspectives of requirements of trained manpower for economic development and evolving methods and techniques of manpower assessment, is expected to play a particularly significant role. The Institute has been endeavouring to meet its objectives through programmes on research, training and consultancy on the basis of regular funding from the Planning Commission and sponsorship from other national and international agencies. The Institute is also implementing the National Technical Manpower Information Service (NTMIS) with the sponsorship from the Ministry of Human Resource Development.

7.3.6 In the specific context of the Eighth Plan, the Institute has reorganised its research activities into five major research areas : Employment and Unemployment; Science, Technology and Industry; Human Resource Development; Social Concerns; and Manpower Information Systems. It is also envisaged that the training programmes of the Institute will be re-oriented towards the new concerns in the areas of manpower and employment planning. It is proposed to strengthen the Institute's infrastructure and technical capabilities to carry out its new programmes on the basis of suitable financial support during the Eighth Plan. An outlay of Rs.7 crores has been provided in the Central sector of the Plan for the purpose.

Labour Welfare

7.4.1 Adequate levels of earnings, safe and humane conditions of work and access to some minimum social security benefits are the major qualitative dimensions of employment which enhance quality of life of workers and their productivity. Institutional mechanisms exist for ensuring these to workers in the organised sector of the economy. These are being strengthened or expanded to the extent possible. However, workers in the unorganised sector, who constitute 90 per cent of the total workforce, by and large, do not have access to such benefits. Steps need to be taken on a larger scale than before to improve the quality of working life of the unorganised workers, including women workers.

Unorganised Workers

7.5.1 A statutory provision of minimum wages for employments has been included in the schedule to the Minimum Wages Act, 1948. However, its coverage and implementation has been inadequate and the actual wages on the ground are often much lower than those fixed by the appropriate Governments under the Act. While the tendency to fix minimum wages at unrealistically high levels should be checked, implementation of wages once fixed should be ensured. While machinery for enforcement of the Act has been strengthened over the years and is also envisaged in the programmes included in the Plan, it is desirable that a greater role is played by the workers' organisations, non-governmental voluntary organisations and organised trade unions in ensuring implementation of minimum wages, instead of solely relying on the official enforcement machinery.

7.5.2 Suitable organisational arrangements would need to be developed to provide a minimum measure of social security for unorganised workers. A number of models are available for adoption. The Welfare Boards for Mine Workers, Beedi and Cigar Workers etc. set up by the Government of India and financed out of the cess levied on the production of the commodity concerned and the Welfare Boards for cashew workers and coir workers set up by the Government of Kerala constitute one set of models. Mutthadi Workers Board in Maharashtra and Jathu Hamal Boards being set up in Andhra Pradesh form the second model. A third model is the set of insurance schemes launched by Governments of Gujarat, Kerala, Karnataka and Madhya Pradesh for landless agricultural labourers. A fourth alternative is a Central Fund with tripartite contribution (bi-partite in the case of the self employed).

7.5.3 A National Child Labour Programme has been taken up to make effective intervention to prevent exploitation of child labour in the unorganised sector. Nine Child Labour Projects with the main aim of suitable rehabilitation of the children withdrawn from employment, by

providing them welfare inputs have been launched. Programmes for women labour include financial assistance to voluntary organisations for taking up action-oriented projects, studies relating to women labour, organisation of child care centres for the benefit of women workers, welfare projects for women workers in the construction industry and strengthening of the enforcement of the provisions of the Equal Remuneration Act.

7.5.4 The Rural Workers' Education Programmes, which cover landless labour, agricultural workers, marginal farmers, fisheries labour, tribal labour, forest labour and rural artisans, are intended to help rural workers to solve their problems through self-help and to develop their own organisations. The Central Board of Workers' Education (CBWE) has developed schemes keeping in view the need to educate the workers on industrial health, safety and environment as well as to develop leadership among workers. As part of the national effort to increase the rate of literacy, especially among women and persons belonging to SC/ST and other educationally disadvantaged and socio-economically backward groups as also workers in unorganised sectors, the CBWE has been conducting Functional Adult Literacy Classes for workers engaged in plantation and mining industries where illiteracy is predominant. During the Eighth Plan, literacy programmes for the rural workers would be continued.

Rehabilitation of Bonded Labour

7.6.1 Under the Bonded Labour System (Abolition) Act 1976, the responsibility for identification, release and rehabilitation of bonded labour rests with the State Governments. With a view to supplementing the efforts of the State Governments, a Centrally Sponsored Scheme has been in operation in the Seventh Plan under which financial assistance on a matching grant basis was provided to the State Governments for rehabilitation of bonded labour. As per reports received from the State Governments, the total number of bonded labour identified and freed by March 31, 1991 was 2,55,608, out of which 2,22,935 had been rehabilitated. As many as 14,585 were reported not available for rehabilitation due to double counting, death, etc., leaving a balance of 18,088 bonded labourers to be rehabilitated. The target for rehabilitation of bonded labourers for the year 1991-92 was set at 4,109. Identification of bonded labour and their subsequent release and rehabilitation is a continuous process. Efforts are made to identify bonded labour through periodic surveys by existing agencies in the States and it is expected that such identified bonded labourers will be rehabilitated in due course of time. Voluntary agencies are also involved in Government's effort to identify and rehabilitate the bonded labour. A scheme for providing grants-in-aid to the voluntary agencies for this purpose initiated towards the end of the Seventh Plan is being continued.

Industrial and Mines Safety

7.7.1 With the adoption of advanced technology and increase in the use of various kinds of chemical substances in different sectors of economic activity, an increasing proportion of the workforce, as well as the population in general, are exposed to work-hazards and environmental pollution. Modernisation of the industry has also brought, in its train, problems of occupational hazards arising out of work-posture and man-machine environment. Greater attention than before will, therefore, have to be paid to the assessment and control of hazards to workers and the general population and to the development of safety devices, protective gears, appropriate design of machines and tools, plant lay-out and work and workplace lay-out . Among the programmes envisaged in the labour sector are application of ergonomics for improvement of working conditions in factories and docks, establishment of a system of chemical safety, strengthening of the system for monitoring improvement of the occupational health status and certification of personal protective equipment. In the field of mines safety, it is proposed to augment S&T support capabilities of the Directorate General of Mines Safety (DGMS) to deal with problems relating to humidity, mine fires, ground control, stability of illumination, etc. It is also proposed to develop computer programmes for health monitoring of miners. Establishment of a Mines Safety and Health Academy is also envisaged for upgrading the technical know-how and professional skill of the officers of the Directorate General of Mines Safety (DGMS).

Labour Participation in Management

7.8.1 Labour participation in management is a means of bringing about a state of industrial democracy. Ever since Independence, the Government has been stressing the need to introduce workers' participation in management and various schemes were notified from time to time. However, the results have fallen far short of expectations. The need to bring forward a suitable legislation for effective implementation of the scheme has been felt. Besides legislation, proper education and training of workers and cooperation from both employers and employees to overcome problems arising out of the existence of multiplicity of trade unions and inter-union rivalry will go a long way in promoting the system of participative management.

Outlay

7.9.1 An outlay of Rs.333.72 crores had been provided in the Seventh Plan for Labour and Labour Welfare and the actual expenditure during the Seventh Plan period was Rs.485.14 crores. An outlay of Rs.1315.39 crores has been provided for Labour and Labour Welfare in the Eighth Plan.The Central and State sector outlays are indicated in the table below:

Table 7.1 Plan outlay and expenditure - Labour and Labour Welfare

(Rs. Crores)

Sector	Seventh Plan		Eighth Plan
	Outlay	Actual Expd.	Outlay
Centre	95.44	102.00	451.00
States & UTs.	238.28	383.14	864.39*
Total	333.72	485.14	1315.39*

* Includes outlays for Special Employment Programmes.

CHAPTER - 8

ENERGY

Background

8.1.1 The strategy for energy development forms an integral part of the overall economic development strategy. Efficient use of resources and long-term sustainability are the two important objectives of economic planning. The concept of sustainability takes account not only of natural resource and ecological balance but also of economic equity and self reliance. Any strategy for energy planning has, therefore, to be consistent with these broad objectives.

8.1.2 The short and medium term strategies of energy planning will, however, have to reckon with the available resources and the technological constraints that are prevalent in the system. As against this, there is the immediate compulsion to meet the priority needs of the economy. Parallel action is, therefore, necessary to ensure that the short-term concerns do not detract the economy away from the long-term goals referred to above.

8.1.3 The demand for energy in the economy arises mainly from the requirements of lighting and cooking in the household sector, irrigation and other agricultural operations, transport of passengers and freight, fuel and feedstock requirements in the industry and from the energy input needs of various other related activities of the services sector. A sizeable share of these requirements, especially those of the rural household sector, is met from non-commercial sources. The traditional sources of energy include fuelwood, crop residue and animal waste as well as human and draught animal power. The levels of efficiency at which useful energy is presently being realised from the resources are very low, varying between 10 to 15 per cent. However, non-commercial energy resources are steadily getting replaced by coal, oil and electricity which provide energy of a much higher quality and efficiency and involve at the same time high capital cost. Over the last several years, decentralised sources of energy based on non-conventional technologies have also appeared on the energy scene. Some of these new sources are likely to have considerable energy potential for the future.

Changes in the Pattern of Energy Supplies

8.2.1 The total energy supplies, including both commercial and non-commercial forms, increased from 82.7 MTOE (million tonnes of oil equivalent) in 1950-51 to about 291 MTOE in 1990-91. In this, the share of non-commercial fuels has declined from 74 per cent in 1950-51 to 41 per cent in 1990-91. Fuelwood alone accounts for 65 per cent of the total non-commercial energy consumed in the country.

8.2.2 Among the indigenously produced primary commercial fuels, the relative share of oil and gas has increased from 1.2 per cent in 1950-51 to 33 per cent in 1990-91, whereas the share of coal has declined from about 98 per cent in 1950-51 to 61.8 per cent in 1990-91.

Commercial Energy Production

8.3.1 Over the last four decades, the country has taken major strides in stepping up the production of commercial energy as shown in Table 1.

8.3.2 While 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. Between the two, natural gas is likely to play an increasingly more important role in providing energy in the coming years. Implementation of a large number of projects has also resulted in the increased availability of hydro-electricity. Finally, there have been additions to nuclear power generation capacity and nuclear power has contributed, though on a modest scale, to the overall electricity supplies in the country.

Traditional Primary Energy Resources

8.4.1 Fuelwood is an important source of energy for the rural and, to some extent, urban households. The total forest area in the country was earlier assessed at 75 million hectares, a

Table 1. Trends in Production of Primary Commercial Energy

Energy Form		Production				
	Unit	1950-51	1960-61	1970-71	1980-81	1990-91
Coal	Million Tonnes	33	55.67	72.95	114.01	211.73
Lignite	"	-	0.05	3.39	4.80	14.07
Crude oil	"	0.26	0.45	6.82	10.51	33.02
Natural Gas	MCM	-	-	1445	2358	17998
Hydro Power	Bkwh	2.52	7.84	25.25	46.54	71.54
Nuclear Power	"	-	-	2.42	3.00	6.24

major portion of which has been left today with little tree cover. The growth in demand for wood for industry, house construction, domestic use etc. has far exceeded the annual incremental availability of wood, leading to the gradual denudation of vast areas of tree cover and consequent adverse impact on the environment. This is a process that needs to be reversed.

8.4.2 Fuelwood is supplemented by dung and crop residues in meeting domestic energy needs in the rural areas. The annual availability of wet dung is estimated to be about 960 million tonnes at present. The use of dung cake in its present form deprives the country of a valuable organic manure. The net annual availability of crop residues, which can be used as fuel, is currently estimated at about 50 million tonnes.

8.4.3 The draught animal population in the country has been estimated at 70 million and animal energy continues to be used predominantly in agriculture and rural transportation.

Coal

8.5.1 India accounts for about 0.8per cent of the total geological reserves and 5.7 per cent of the proved reserves of coal in the world. The geological coal reserves in the country are now estimated at 196 billion tonnes compared to 156 billion tonnes assessed at the beginning of the Seventh Plan. There has been an increase in the estimated coal reserves in Orissa and new discoveries have been made in Birbhum district of West Bengal and in Madhya Pradesh. Based on the present techno-economic parameters, the mineable reserves are estimated at 142.35 billion tonnes. The coal deposits in the country are unevenly distributed over the regions.

Lignite

8.6.1 The Seventh Plan laid considerable emphasis on the exploration of lignite especially in the States of Tamil Nadu, Rajasthan and Pondicherry. Reserves in Tamil Nadu are now estimated at 7730 million tonnes as against 3300 million tonnes estimated at the beginning of the Seventh Plan. As against an estimate of 362 million tonnes in Rajasthan at the beginning of the Seventh Plan, the reserves are now estimated at 870 million tonnes. The reserves in Pondicherry and Gujarat are placed at 586 million tonnes and 383 million tonnes respectively. All these States are located far away from the coal bearing areas. These lignite deposits have been found suitable for power generation and are already being exploited for this purpose in Tamil Nadu.

Hydro Power

8.7.1 Based on a systematic survey carried out during the Seventh Plan, the hydro-electric potential in the country is now estimated at 600 Bkwh (billion kilowatt hour) as against 472.15 Bkwh estimated earlier. The regionwise estimate of the potential is given below:

Table 2. Regionwise Hydro-Electric(HE) Potential

Region	HE Potential(Bkwh)	
	1984	1987
Northern	157.76	225.0
Western	36.95	31.4
Southern	68.25	61.8
Eastern	41.65	42.5
N. Eastern	167.54	239.3
All India	472.15	600.0

8.7.2 The present assessment of hydro power potential is provisional as further studies are in progress and the estimates are yet to be firmed up. Out of the total potential available, nearly 18 per cent 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. Fifty six sites have been identified for this with a probable potential of 94,000 MW (Megawatt). There exists another nearly 5000 MW of potential for exploitation through mini/micro hydel schemes. A number of such schemes are under implementation.

Oil and Natural Gas

8.8.1 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, 5.32 billion tonnes only. It is assumed that half of the prognosticated resource represents natural gas, of which only 12 per cent has been till now established. The possibility of discovering significant reserves of natural gas in the future will need to be kept in view for the purpose of planning.

Nuclear Resources

8.9.1 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.

Other Resources

8.10.1 There is also substantial potential in the form of solar and wind energy in India. While the availability of solar energy is abundant, subject to the techno-economic feasibility of converting it into useful energy, it is estimated that wind energy potential is of the order of 10,000 MW. There is also some scope for exploiting geothermal, ocean thermal and tidal energy at certain specific locations. Extensive and intensive afforestation at the village and regional levels can meet the local biomass requirements such as fuel, fodder etc. Appropriate technologies are required to convert the biomass into energy in an efficient manner. Afforestation will also generate new employment opportunities apart from protecting the environment. Finally, there is considerable potential for conversion of both animal and human excreta into organic manure, extracting methane in the process, which can be used extensively for both cooking and lighting purposes.

Pattern and Growth of Commercial Energy Consumption

8.11.1 Final commercial energy consumption increased from 19.76 MTOE in 1953-54 to 101.5 MTOE in 1990-91 at an implicit average annual growth rate of 4.52 per cent . During the last four decades, there have been changes in both the sectoral and the fuel patterns of consumption. Changes in the relative shares of the different forms of energy in final commercial energy consumption are indicated in Table 3.

8.11.2 It will be seen that the relative shares of oil and electricity in the total final commercial energy consumption has increased steadily over the years. Since these figures relate only to final energy consumption, only the direct use of coal in industry, household sectors etc. has been considered, excluding coal used in power generation. About 65 per cent of the total quantity of coal consumed in the country is used as fuel for thermal power generation. In terms of primary energy consumption, the relative share of coal still continues to be significant. The use

Table 3 Percentage share of Different Fuels in Commercial Energy Consumption+

	1953-54	1960-61	1970-71	1980-81	1990-91*
Coal	79.6	74.1	59.1	52.6	39.0
Oil& Gas	17.1	20.9	31.3	35.7	43.4
Electricity	3.3	5.0	9.6	11.7	17.6

* Provisional

Table 4. Percentage share in Final Energy Consumption by different Sectors

	Percentage share in Consumption				
Sector	1953-54	1960-61	1970-71	1980-81	1990-91
Industry	39.8	40.7	51.6	57.0	50.4
Transport	46.2	44.9	29.4	23.5	24.5
Household	9.9	10.6	14.3	12.3	13.8
Agriculture	1.7	1.8	3.8	6.1	9.0
Others	2.4	2.0	0.9	1.1	2.3

of oil products and gas for power generation, non-energy uses and as feedstocks is similarly excluded from the final energy consumption shown in Table 3.

8.11.3 Table 4 shows the changes in the relative shares of the different sectors in final commercial energy consumption over these years.

8.11.4 The share of industry in commercial energy consumption has increased steeply over the years upto 1980-81 but has shown a declining trend thereafter. The reason for the decline in the share of the transport sector is mainly the replacement of coal in railways, by diesel and electricity which are more energy efficient than coal for transportation.

Energy and Economy

8.12.1 Table 5 shows the average annual rate of growth in commercial energy consumption during the last four decades.

8.12.2 During 1953-54 to 1990-91, the average decennial rate of growth of commercial energy consumption ranged between 4.21 per cent and 5.47 per cent. An important point to note in this connection is that in view of the shortages and restrictions, the past trend of consumption of commercial energy does not really represent the growth of demand for such energy but merely reflects the growth of its actual availability.

Table 5. Rate of growth in Commercial Energy Consumption

Period	Rate of Growth (% per annum)
1953/54-1960/61	5.47
1960/61-1970/71	4.29
1970/71-1980/81	4.21
1980/81-1990/91	4.52

8.12.3 The coefficients of elasticity of final consumption of the different forms of commer-

cial energy with respect to GDP during the past four decades have been as shown in Table 6.

8.12.4 The rather steep decline in the observed overall point to point elasticity in the eighties is somewhat deceptive. This needs to be interpreted with due care. As the GDP growth rate tends to fluctuate unduly under the influence of monsoons, such elasticity estimates are affected by the fluctuation and the choice of the terminal year. However, significant lowering in the elasticity of energy use with respect to GDP between 1953-54 and 1990-91 could still be viewed as an evidence of changing technology of the economy and changing pattern of demand for the different forms of energy.

8.12.5 In the case of coal, the GDP elasticity of consumption reflects only the response in terms of reduced use of coal by sectors other than power. The steel plants have used increasing quantities of imported low ash coking coal. There has also been substitution of kerosene oil and LPG for soft coke in the household sector and of diesel for steam traction and electricity for diesel traction in the railways.

Table 6. Elasticities of Consumption of Commercial Energy w.r.t. GDP

Period	Elasticity of Consumption with reference to GDP			
	Coal	Oil	Electricity	Total Commercial Energy
1953/54-1960-61	1.10	2.14	3.02	1.37
1960/61-1970/71	0.53	2.31	3.04	1.16
1970/71-1980/81	0.98	1.83	2.06	1.37
1980/81-1990/91	0.31	1.12	1.57	0.82

8.12.6 The development of commercial energy is highly capital intensive. Furthermore, energy costs enter into the cost strcuture of all productive sectors of the economy as a universal input. This emphasizes the need for reducing specific energy consumption and specific energy costs. Investments in this sector have steadily increased during the successive Five Year Plans. The share of investment in commercial energy as a percentage of total Plan outlay has risen steeply from the Fourth Plan onwards.

8.12.7 It will be seen from Table 7 that the share of the energy sector in the total Plan outlay has increased from 19.7 per cent during the First Plan to 28.2 per cent during the Seventh Plan. This brings out the crucial importance of this sector in the planning process.

Table 7. Share of commercial energy sector in total Plan outlays

Plans	% Share of energy sector
First	19.7
Second	11.8
Third	18.5
Annual Plans	17.9
Fourth	21.2
Fifth	25.2
Annual Plan	24.9
Sixth	28.1
Seventh	28.2

8.12.8 One adverse consequence of our pattern of energy consumption is the dependence on import for crude oil and petroleum products, causing a heavy drain on the foreign exchange reserves of the country. The Table 8 indicates changes in the ratio of oil imports to total exports and the share of consumption of petroleum products met from indigenous sources over time.

8.12.9 The import bill on petroleum products continues to be substantial and in fact has increased in later part of the Seventh Plan, as the level of demand satisfaction from indigenously available crude oil has declined from 70 per cent in 1985-86 to 56 per cent in 1990- 91. This is on account of the stagnation in domestic crude oil production levels. Any further increase in dependence on oil imports, due to an increase in demand, is likely to put severe pressure on foreign exchange reserves and in view of the

Table 8: Oil imports in relation to Domestic Oil Production and Total Exports

	Value of net imports of crude oil & Petroleum Products	Oil imports as % of total exports	% of oil demand met through indigenous sources (Rs. Crores)
1970-71	136	8.6	35.4
1975-76	1242	30.8	35.2
1980-81	5258	78.4	31.8
1985-86	4316	42.1	70.1
1989-90	5622	20.8	61.6
1990-91	9775	30.0	56.3

uncertainty of world oil prices, make the economy more vulnerable. It would therefore be necessary to examine the oil intensity and dependence on petroleum products in each sector of the economy and to find ways to contain, and where possible to compress, the demand for the oil products.

8.12.10 The ratio of oil consumption in different sectors to the total consumption of oil in the country, the Oil Application Ratio (OAR) provides a measure of the importance of that sector in the consumption of petroleum products. Table 9 indicates the changes in OAR for different sectors over the last two decades.

8.12.11 The transport sector has remained the largest user of oil, its relative share having increased. Another important user is the household sector. Among other sectors the share of industry has declined while that of agriculture has shown some increase .

8.12.12 The intensity of oil use in a sector can be described in terms of the Oil Use Ratio (OUR), defined as the ratio of oil consumption in that sector to total energy consumption in that sector. Table 10 indicates the changes in OUR for different sectors over the last two decades.

8.12.13 There have been substantial increases in the intensity of oil use in the transport and household sectors over the years. In other sectors, the intensity of oil use has been declining.

8.12.14 The share of oil in the total commercial energy consumption has thus increased contrary to the recommendations of the Working Group on Energy Policy. One of the major factors contributing to this was the relatively lower prices and easy availability compared to alternate fuels. This led to a rapid growth in the consumption of LPG, Kerosene oil (SKO), motor spirit (MS) and diesel oil (both HSD and LDO). In the context of non-availability of alternate fuels for cooking and lighting at affordable prices, the demand for kerosene which is sold at subsidised price has increased steeply over the years. LPG is also priced low and the consumption of LPG has been constrained by the supply position. The demand for MS has been growing fast as a result of a rapid growth in the population of personal transport vehicles. The

Table: 9 Oil Application Ratio (OAR)

Sector of consumption	1970-71	1973-74	1980-81	1985-86	1990-91*
Industry	0.28	0.17	0.15	0.11	0.09
Transport	0.30	0.32	0.32	0.33	0.35
Household	0.18	0.14	0.14	0.17	0.18
Agriculture	0.04	0.08	0.10	0.09	0.09
Electricity generation	0.06	0.06	0.08	0.08	0.07

*Provisional

Table: 10. Oil Use Ratio (OUR)

Sector of consumption	1970-71	1973-74	1980-81	1985-86	1990-91*
Industry	0.18	0.20	0.18	0.11	0.10
Transport	0.38	0.44	0.61	0.76	0.89
Household	0.50	0.50	0.51	0.61	0.76
Agriculture	0.77	0.78	0.69	0.68	0.58
Electricity generation	0.15	0.14	0.14	0.08	0.07

*Provisional

steep increase in the demand for HSDO has been caused largely by the large scale introduction of agricultural pumpsets based on diesel and the rapid rate of growth of road traffic in preference to both freight and passenger traffic carried by the railways.

8.12.15 The relative shares of LPG, MS and HSDO in the total consumption of petroleum products have changed during the last two decades as shown in Table 11.

8.12.16 HSDO and SKO together constituted about 54 per cent of oil consumption in 1990-91 and their share is likely to increase further unless suitable measures are taken to contain this trend. Both these products are imported at the margin in addition to the import of crude oil.

8.12.17 The world oil prices, after a steep fall in the late eighties showed a steep upward trend during the Middle East War. Despite the end of this crisis and a fall in crude prices, substantial outgo of foreign exchange is taking place even for meeting the existing level of oil demand. Considering the prospects of different onshore and offshore basins in the country and the investment that can be visualised during the next decade or so, it does not appear feasible to augment the level of indigenous production on a large scale during the next 10-15 years. Against this background, if the demand for petroleum products is permitted to grow unhindered, it will lead to an increased dependence on oil imports which the country can ill-afford. This will place a serious strain on the limited foreign exchange resources of the country. It is from this point of view that there is an urgent need for demand management in the petroleum sector.

Table 11: Share of LPG, Motor Spirit and Diesel oil in POL consumption

	% share in consumption (excluding RBF)			
	1970-71	1979-80	1984-85	1990-91*
LPG	1.0	1.4	2.4	4.4
Motor Spirit	8.1	5.0	5.4	6.5
HSD	21.4	32.8	35.3	38.6
LDO	6.1	4.2	3.1	2.7
SKO	18.3	12.9	15.4	15.4

* Provisional

Energy Conservation

8.13.1 Energy conservation has been receiving considerable attention right from the first oil shock in 1973. The Fuel Policy Committee and the Working Group on Energy Policy had both 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 a comprehensive legislation on energy conservation. The Petroleum Conservation Research Association(PCRA) under the administrative control of Ministry of Petroleum & Natural Gas has done pioneering work in bring-

ing about general awareness of the need to conserve the use of oil. Recently, the Department of Power has set up the Energy Management Centre to undertake studies and suggest an action plan for energy conservation and more efficient use of energy.

8.13.2 There has been some improvement over the years in the efficiency of use of commercial energy in several sectors of the economy. However, these efficiency improvements have been far too inadequate to make any visible impact on the pattern of growth of demand for commercial energy. The targets to be set in this regard for the Eighth Plan period need to be quantified and the performance continually monitored with a view to bringing about efficiency in the use of energy in the different sectors. Further details in this regard are indicated in the section on Energy Conservation.

Energy Pricing

8.14.1 During the Sixth and Seventh Plans, emphasis was placed on evolving a rational pricing policy to reflect the true resource costs of energy production and supply to the economy. However, the regime of administered prices with implicit subsidies continues to exist, despite the recent price adjustments implemented in the case of some of the oil products. A tariff structure that does not fully reflect the cost of production and supply of domestic or imported energy resources is not conducive to efficient use of energy and optimum inter-fuel substitution. Moreover, such a tariff structure does not also provide adequate returns to the producing agencies so as to enable them to expand their operations in tune with the growing demand for energy. It is, therefore, imperative that a rationalised tariff structure is adopted in respect of different forms of energy. If subsidies are inescapable from the point of view of socio-economic imperatives, the concerned target groups need to be identified and subsidies restricted strictly to the target groups only. Indeed, alternate means of delivering the intended benefits to those target groups need to be carefully examined. This is particularly relevant in respect of electricity and certain petroleum products such as LPG and Kerosene oil. The tariff structure should be such that it optimises the use of energy for alternative productive purposes.

Long Term Energy Planning

8.15.1 Several expert bodies in the past, such as Energy Survey of India Committee (1965), the Fuel Policy Committee (1974), the Working Group on Energy Policy (1979) and the Advisory Board on Energy (1983-88), have emphasised the need for integrated long-term energy planning. The Planning Commission has, therefore, carried out studies on long -run sectoral energy demand as well as long-run energy supply system optimisation. However, the earlier Five Year Plans have tended to reflect more of the short-term and medium-term concerns than the long- term policy imperatives in energy planning. Besides this, the emphasis of the earlier Plans has all along been on supply problems of the sector rather than on economy in the end-use of energy through conservation. During the Eighth Plan, importance will be given to long-term integrated planning with emphasis on energy end-use as well as efficient strategy of long-run energy supply. The studies of Planning Commission, as referred to above, need to be updated from time to time depending on the changes taking place in the internal and external environment and be used as a basis for integrated energy planning.

Energy Strategy for the Future

8.16.1 Against the above background, it is desirable to adopt a long-term energy strategy which is consistent with sustainable development. Such a strategy should ensure that the highest priority is accorded to meeting fully the basic energy needs of the rural and the urban poor in the immediate future. It should also ensure gradual shift from non-renewable resources to renewable ones with increasing emphasis on demand management, conservation and efficiency. The short-term, medium-term and long-term priorities should accordingly be as follows.

Short-Term

1. Maximise returns from the assets already created in the energy sector.

2. Initiate measures for reducing technical losses in production, transportation and end-use of all forms of energy.

3. Initiate action to reduce the energy intensity of the different energy consuming sectors

of the economy and promote conservation, demand management through appropriate organisational and fiscal policies.

4. Initiate steps for meeting fully the basic energy needs of the rural and the urban households, so as to reduce the existing inequities in energy use.

5. Maximise satisfaction of demand for energy from indigenous resources.

Medium-term

6. Initiate steps towards progressive substitution of petroleum products by coal, lignite, natural gas and electricity so as to restrict the quantum of oil imports to the current level.

7. Initiate action for accelerated development of all renewable energy resources, especially the available hydro- electric potential.

8. Promote programmes to achieve self-reliance in the energy sector.

9. Promote R&D effort on decentralised energy technologies based on renewable resources.

10. Initiate appropriate organisational changes in the case of different energy sub-sectors consistent with the overall energy strategy.

Long-term

11. Promote an energy supply system based largely on renewable sources of energy.

12. Promote technologies of production, transportation and end-use of energy that are environmentally benign and cost efficient.

8.16.2 The Eighth Plan programme of energy development will be so oriented as to be consistent with this strategy.

OIL AND NATURAL GAS

Demand for Petroleum Products

8.17.1 Despite the concern expressed time and again, the demand for petroleum products continued to rise rapidly and the share of oil in commercial energy supply registered a steep increase during the last few decades. The growth of the sector during the Seventh Plan and thereafter and the major areas of concern for the Eighth Plan are discussed below.

Seventh Plan Review

8.18.1 As against the actual consumption of 38.8 million tonnes of petroleum products in 1984-85, the consumption in the terminal year of the Seventh Plan, i.e. 1989-90, was 54.1 million tonnes. This represents an average annual growth rate of 6.9% during the Plan which is higher than the growth rate of 6.4% anticipated for the Seventh Plan. This was also higher than the 5.4% per annum growth of consumption of petroleum products registered during the Sixth Plan. The factors contributing to this were broadly referred to in the preceding paragraphs.

8.18.2 On the other hand, as indicated in the following paragraphs, the increase in the indigenous availablity of crude oil has not kept pace with the rapid increase in the demand for petroleum products leading to a steady increase in oil imports.

8.18.3 The position ,however, underwent some change in 1990 when the world market price of oil and oil products increased sharply consequent to the Gulf crises and the Government had to increase the domestic price of petroleum products and impose a series of physical restrictions on the supply and distribution of motor spirit, diesel etc. As a result, the consumption of petroleum products could be restricted to 55.04 million tonnes in 1990-91 which represented a growth of only 1.7% over the previous year. Even during 1991-92, the level of consumption is expected to be around 56.7 million tonnes.

8.18.4 The actual achievements in relation to the goals set out in the Seventh Plan are briefly reviewed below.

Exploration

8.19.1 The exploratory effort put in by the Oil and Natural Gas Commission (ONGC) and Oil India Limited (OIL) led to an achievement of 2324.49 thousand meters of exploratory drilling as against the target of 2820.8 thousand meters set for the Seventh Plan. Even though the achievement in exploratory drilling was only 82% of the target, geological reserve accretion of 1536 million tonnes of oil and oil equivalent of natural gas was achieved against the originally anticipated target of 1453 million tonnes. As a result, in spite of a substantial step up in the level of production of crude oil during the Seventh Plan, the Reserve-to-Production (R/P) ratio at the end of the Plan was as high as 21:1 against 17:1 at the beginning of the Plan. The achievements in exploratory drilling during 1990-91 and 1991-92 were also lower than the targets. Exploratory drilling in 1990-91 was 615.65 thousand meters against a target of 738.04 thousand meters. In 1991-92, about 628.52 thousand meters of exploratory drilling is expected to materialise against a target of 652.05 thousand meters.

8.19.2 When the Seventh Plan was formulated, equal emphasis in exploration was proposed to be placed on both Category I basins with commercial production and Category II basins where hydrocrbons have been discovered but commercial production is yet to start. This strategy was largely based on the premise that exploration in Category I basins had reached a mature stage of exploration and any incremental exploration investment would yield lower returns. However, the position altered slightly during the course of the Seventh Plan when significant discoveries (e.g. Dahej and Gandhar in Cambay basin and Neelam field in Bombay offshore basin) were made in the relatively less explored parts of Category I basins. The experience gained in the Seventh Plan therefore, suggests that prospects of future discovery of hydrocarbons are reasonably good in the structural and stratigraphic traps of Category I basins. Exploration in such areas is likely to lead to hydrocarbon discoveries at a low-risk, even though the size of the discoveries may be small. This has also been true for Category II basins which have recently been upgraded to Category I basins (e.g. Krishna-Godavari, Cauvery, Assam-Arakan) and where only 13-15% of the "resources" have been so far upgraded to "reserves". Intensive and extensive exploration work will need to be carried out in those basins which were explored in the past without success.

Production of Oil and Gas

8.20.1 During the Seventh Plan, the level of production of natural gas increased by almost two and a half times, whereas crude oil production increased by about 20% as shown in Table 12.

Table 12 : Oil and Gas Production in the Seventh Plan

	1984-85	1989-90	1990-91	1991-92
OIL (Million Tonnes)				
(i) Offshore	20.14	21.72	21.19	18.96
(ii) Onshore	8.85	12.37	11.83	11.38
TOTAL	28.99	34.09	33.02	30.34
GAS (Billion CuM)				
(i) Offshore	4.41	13.09	14.08	13.88
(ii) Onshore	2.83	3.90	3.92	4.40
TOTAL	7.24	16.99	18.00	18.28

8.20.2 The total cumulative production of crude oil during the Seventh Plan was 157.13 million tonnes against a target of 159.14 million tonnes. As far as natural gas is concerned, cumulative production during the same period was 59.65 billion CuM against a target of 59.68 billion CuM. However, actual despatches of natural gas for sale to consumers were only 40.41 billion CuM. The balance of the gas produced had to be flared due to technical constraints, non-lifting by consumers, non-availability of downstream facilities for utilising gas and also inadequacy of compression and transportation facilities for associated gas. The fall in oil production during 1990-91 and 1991-92 as compared to 1989-90 was largely due to the disruption in the oil production activity in Assam and technical constraints in other parts of the country.

Refining and Marketing

8.21.1 The total refining capacity in the country increasd from 45.55 million tonnes at the end of the Sixth Plan to 51.85 million tonnes at the end of the Seventh Plan. The net imports of crude oil and petroleum products during the Plan period were 85.13 million tonnes and 11.37 million tonnes respectively. The middle distil-

lates like HSD and kerosene constituted the bulk of the product imports.

Eighth Plan Programme

8.22.1 Based on the experience of the Seventh Plan, the major areas of concern during the Eighth Plan will be: (i) the need to restrict oil imports to a reasonable level; (ii) the need to eliminate the flaring of natural gas at the earliest, in any case not later than 1996-97 and (iii) accelerating the pace of indigenisation of the exploration and development activity. The programme for the Eighth Plan will accordingly be as follows.

Demand for Petroleum Products

8.23.1 The unrestricted demand for petroleum products in the terminal year of the Eighth Plan i.e. 1996-97 has been estimated at 81.19 million tonnes. Against this, as explained in the following paragraphs, the level of crude oil production from the different basins may at best reach 47.08 million tonnes by that year. This will be equivalent to about 44 million tonnes of products and will leave a gap of 37.2 million tonnes to be covered by imports. In other words, the level of oil imports will increase from 29.4 million tonnes in 1991-92 to 37.2 million tonnes by 1996-97, representing an increase of 26.5% over the 5-year period.

8.23.2 It is not going to be easy to find sufficient foreign exchange resources to sustain such a sizeable increase in the quantum of oil imports. Moreover, any further increase in the quantum of oil imports will correspondingly increase the vulnerability of the economy to the uncertainties in the external oil markets. It will be prudent to manage the oil budget so as to restrict the level of oil imports, as far as possible, to the level obtaining in 1991-92. This will call for the following strategy.

(a) Improve the efficiency of use of petroleum products in different sectors of the economy.

(b) Promote demand management programmes aimed at reducing the oil- intensity of the consuming sectors (e.g. shifting freight movement from road to rail, increased dependence on public transportation etc.)

(c) Encourage substitution of petroleum products by coal, natural gas, electricity etc.

Efforts should be made during the Eighth Plan to achieve a demand reduction of at least 6-7 million tonnes through these measures in the year 1996-97.

8.23.3 Simultaneously, it will also be necessary to maximise indigenous production of crude oil. Efforts should be made by the oil producing agencies to realise an additional production of 1.5 to 2.0 million tonnes per year by 1996-97 by rehabilitating sick and idle wells and other appropriate measures. Private sector investments in oil exploration and development activity during the Eighth Plan period is also expected to yield an additional production of 0.75 million tonnes per year by 1996-97. This will imply total indigenous crude oil production of about 50 million tonnes in 1996-97.

Exploration and Reserve Accretion

8.24.1 As stated earlier, the exploration strategy for the Eighth Plan envisages intensive exploration in Category I basins, specially in parts adjacent to the known producing areas and the blocks still inadequately explored. Emphasis will be laid on exploration in new Category I basins (Krishna-Godavari, Cauvery and part of Assam-Arakan). An optimal mix of intensive exploration (following trends) and extensive exploration (for identifying new target areas) will be adopted in zones where encouraging leads have been obtained - e.g. Rajasthan and Kutch (Offshore) basins.

8.24.2 Limited exploratory drilling with emphasis on close-grid seismic data acquisition will be taken up in other Category II and III basins. In addition, a phased exploration programme will be initiated in the deeper continental shelf (more than 200 metres depth).

8.24.3 Indian participation in overseas exploration ventures will be substantially increased in the Eighth Plan.

8.24.4 There will be greater emphasis in the Eighth Plan on 3-D seismic surveys. With progressive technological upgradation of 3-D survey methodology, this will have the advantage of marginally reducing the exploratory drilling efforts needed for delineating new structures.

Total exploratory drilling in the Eighth Plan is envisaged to be 3041.83 thousand metres i.e. 31% more than the level of achievement in the Seventh Plan.

8.24.5 Total geological and recoverable reserve accretion during the Eighth Plan is expected to be 980.60 million tonnes and 276.30 million tonnes respectively in the case of oil and 344.40 billion CuM and 178.10 billion CuM respectively in the case of natural gas. These targets are exclusive of reserve accretion, if any, on account of the exploratory effort to be put in by private contractors. The following are the targets set out for exploration in the Eighth Plan.

Development Drilling

8.25.1 The total development drilling metreage of 3809.36 thousand metres planned for the Eighth Plan invoives a step up of 37% over the Seventh Plan achievement of 2774.12 thousand metres. The development and production strategy during the Eighth Plan will involve (a) drilling of infill wells for improved recovery , (b) maintenance of production through faster liquidation of sick wells, (c) adoption of suitable Enhanced Oil Recovery (EOR) methods, (d) stimulation of poor producers, (e) accelerated development of new fields and (f) placing new fields in isolated areas on Early Production System(EPS).

Production of Crude Oil and Natural Gas

8.26.1 Against an oil production level of 34.09 million tonnes reached in the terminal year of the Seventh Plan, the corresponding production level in the terminal year of Eighth Plan is targetted to be 50 million tonnes. The actual cumulative oil production in the Seventh Plan and the expected cumulative production in the Eighth Plan are 157.13 million tonnes and 197.32 million tonnes respectively.

8.26.2 So far as natural gas is concerned, the terminal year production will increase from 16.99 billion CuM in the Seventh Plan to 30.17 billion CuM in the Eighth Plan. Necessary infrastructural facilities such as augmentation of the capacity of existing pipelines, adequate compensation and evacuation facilities etc. will be created to ensure that flaring of associated gas is minimised and any produced gas is fully utilised.

8.26.3 The production targets for crude oil and natural gas are indicated in Annexures 8.1 and 8.2.

Technological Upgradation in Oil Exploration and Production

8.27.1 For enhancing the capabilities of finding hydrocarbons at an optimum cost, the oil companies will continue to adopt the latest techniques and equipment in horizontal and deep water drilling, sub-sea completions and laying of pipelines, installation of Early Production Systems(EPS), the use of floating process platform in offshore areas, exploration of heavy oil deposits, adoption of suitable Enhanced Oil Recovery(EOR) techniques for tertiary recovery from depleting wells etc.

8.27.2 There is need to adopt improvements in refining technology for maximising the yield

			ONGC	OIL
Onland Seismic Survey				
2-D	(a) Departmental	(SLK)	101455	12400
	(b) Contractual	(SLK)	15070	6650
3-D	(a) Departmental	(Sq.Km)	3043	200
	(b) Contractual	(Sq.Km)	45	600
Offshore Seismic Survey				
2-D	Departmental	(LK)	93000	-
3-D	Departmental	(LK)	39000	209.0
Exploratory Drilling (000 meters)				
	Onland		2052.70	209.0
	Offshore		768.13	12.0

of middle distillates for meeting the requirements of the country.

Indigenisation of Oil Exploration and Production

8.28.1 While the dependence on imports in the high technology area of exploration and production will continue, all efforts towards progressive indigenisation of oil field equipment will be supported by the ONGC and OIL. The foreign exchange content of offshore drilling projects still ranges between 65 and 75 per cent of the total cost despite the efforts made by ONGC and OIL over the years to indigenise their activity to the maximum extent feasible. During the Seventh Plan, indigenisation was achieved in the manufacture of onland and offshore drilling rigs (jack- ups and drilling ships), well platforms, offshore supply vessels and certain types of casings. The efforts towards indigenisation will continue during the Eighth Plan. The indigenisation process cannot however, be pushed beyond a certain level due to the very low demand for certain items and the rapid obsolescence involved in the "high - tech" equipment used in the oil industry. The thrust during the Eighth Plan for indigenisation will be development of adequate capacity for all sizes of casing pipes, indigenous capability for services like mud-logging, cementation, well stimulation and equipment inspection services. Indian companies and joint venture companies will continue to be encouraged to provide oil and gas field services in future.

Oil Refining and Marketing

8.29.1 By the end of the Tenth Plan, the demand for oil products is estimated to reach a level of 125 million tonnes. In determining the refining capacity that needs to be added during the Eighth and Ninth Plan periods, due consideration will be given to the region-wise pattern of demand, the sources of indigenous crude oil and optimal choices regarding the location and technology of new refining capacity.

8.29.2 Against these projections, the indigenous refining capacity at the end of the Seventh Plan was 51.85 million tonnes. Considering that indigenous crude availability in 1996-97 has been targetted at 50 million tonnes and that in addition to this quantity, a minimum of about 15 million tonnes of imported crude oil of appropriate quality needs to be processed specially to meet the domestic requirements of lubricants and bitumen, it is necessary to augment the refining capacity to about 65 million tonnes by 1996-97. Any further addition to refining capacity will depend upon the relative economics of import of crude oil vis-a-vis petroleum products. This needs to be evaluated carefully in the context of the prevailing uncertainties in the world oil market, the progress of inter-fuel substitution and other relevant factors.

8.29.3 In planning additions to the refinery capacity, the highest priority will be accorded to cost-effective debottlenecking schemes and low-cost expansions. An additional refining capacity of 12.2 million tonnes can be expected from such expansions. These projects are refinery expansions at Koyali (3 million tonnes), Cochin (3 million tonnes), Madras (0.9 million tonnes), Vizag (2.5 million tonnes), Bongaigaon (1 million tonnes), Barauni (0.5 million tonnes), Guwahati (0.15 million tonnes), Digboi (0.65 million tonnes) and Bombay (0.5 million tonnes). Added to this, new refineries at Cauvery (0.5 million tonnes), Mangalore (3 million tonnes) and Karnal (6 million tonnes) will also get commissioned during the Eighth Plan. Advance action on any additional grassroot refining capacity to be commissioned in the Ninth Plan needs to be initiated during the Eighth Plan. However, keeping in view the heavy investments required for setting up new refineries, such proposals will have to be carefully evaluated in relation to the relative economics of import of crude vis-a-vis petroleum products in the context of the trends in the world oil market. In such an evaluation, security of supplies and the future prospects of availability of crude oil and products are important factors that need to be considered.

8.29.4 In the choice of technology for secondary processing in the refining sector, due consideration will be given to the techno-economic implications of different processes like FCC, Hydro-cracker etc. in relation to the need to maximise the production of middle distillates.

8.29.5 In the refinery sector, priority will be given to energy use optimisation, energy conservation and schemes for quality improvement of MS/HSDO. Efforts will be made to reduce the technical losses in the refining process. It is also proposed to optimise the product

yield pattern in the various refineries through the use of digital process control systems.

8.29.6 In view of the increase in the demand for petroleum products, expansion of various facilities for the distribution and marketing of petroleum products will be required. Some of the existing pipelines will have to be extended, while some pipelines like Koyali-Ahmedabad pipeline will have to be expanded. There is also need to construct new product pipelines wherever found economical. Major ports like Paradeep and minor ports such as Kakinada, Karwar etc. will need to be developed in order to cater to increased traffic involving imports/coastal movement.

8.29.7 In the context of the severe limitations on resources, it will not be feasible to take up all these schemes in the public sector. It is, therefore, imperative to attract private investments to the maximum extent possible in refining and marketing operations.

Research and Development

8.30.1 The Eighth Plan will place considerable emphasis on R&D projects aimed at indigenisation and improving the overall efficiencies of this sector through technological upgradation and cost optimisation.

Oil and Gas

8.30.2 The ONGC's R&D efforts are backed by five R&D institutes. Two more institutes are in the process of being set up. The institutes are briefly described below.

(i) The Keshava Dev Malviya Institute of Petroleum Exploration, Dehradun is engaged in various research activities in the field of hydrocarbon exploration.

(ii) The Institute of Reservoir Studies, Ahmedabad, concentrates on development plans of new fields, studies on Enhanced Oil Refinery (EOR) methods including designing and implementation of EOR projects, improving the well productivity, and recovery of sick wells and gas.

(iii) The Institute of Drilling Technology, Dehradun deals with the problems of drilling, improvement of drilling techniques specially for deep wells, prevention and control of blowout, directional and horizontal drilling of wells etc.

(iv) The Institute of Production Technology, Bombay examines problems related to well design, well repair techniques, underwater production systems, process engineering, transport of oil and gas etc.

(v) Institute of Engineering and Ocean Technology, Bombay deals with problem areas connected with offshore systems, such as engineering for offshore structures, corrosion, deep sea monitoring systems, barge mounted processing systems, logistic systems etc.

(vi) A separate institute is being set up in Jorhat to carry out studies in two specific areas viz. bio-technology and its application to crude oil production and treatment and geo-tectonics which deals with the tectonic framework of basins evolution.

(vii) The Institute of Petroleum Safety and Environment Management is being set up at Goa and this Institute will look into aspects relevant to safety and environment management in oil exploration and development.

Oil India Ltd. (OIL)

8.30.3 OIL has R&D facilities at Duliajan which deal with problems related to production and development drilling, application of EOR methods, well stimulation techniques and environmental and pollution control measures.

Refining & Marketing

8.30.4 In the case of refining processes and product development, areas for study have been identified after considering the product needs and product development requirements in the country. In addition, pilot plant studies for deasphalting at Madras Refineries Ltd.(MRL), crude test distillation facilities at Cochin Refineries Ltd.(CRL), Fludized Catalytic Cracker at CRL, dearomatisation of ATF/SKO at Hindusthan Petroleum Corporation,, Bombay have also been planned.

8.30.5 Studies will be commissioned on product development and application with particular

reference to lubricants and automotive fuels. Indigenous development of additives will also be included in the R&D programme.

8.30.6 The Centre for High Technology (CHT), which was established during the Seventh Plan, has identified several areas for R&D works including project-oriented basic research and fundamental research work. These studies will be undertaken at the different R&D centres of the companies under the overall coordination of CHT.

Natural Gas Utilisation Policy

8.31.1 The use of natural gas should be consistent with the need to ensure long run resource conservation and optimum utilisation of the limited hydrocarbon resources. The different fractions of natural gas can yield valuable chemical products. Natural gas can also be used for power generation. While gas- based power generation projects have the advantage of a short gestation period, it is desirable in the long run to promote the use of natural gas as a feedstock for producing valuable chemical products. It is necessary to carefully analyse the short and long term implications of alternative uses of gas and evolve a policy of inter-sectoral allocation of gas consistent with the objective of maximising its value to the economy.

8.31.2 Production of LPG from natural gas will also be maximised to reduce its import. Facilities for city gas distribution will be set up to replace mainly kerosene oil and LPG, in areas where natural gas supplies are easily available like Bombay city, Baroda and Ahmedabad. The use of compressed natural gas (CNG) for substituting motor spirit and HSDO in the transport sector will be promoted. Pilot plants will also be commissioned for the conversion of natural gas into middle distillates for assessing the techno-economic feasibility of the process. All public sector organisations will be encouraged to introduce schemes to conserve petroleum products, use natural gas wherever feasible and to improve the efficiency of equipment and operational processes.

8.31.3 Possibilities of substituting natural gas for petroleum products, such as naphtha will also be explored and utilised to the extent feasible.

8.31.4 It should be mentioned, however, that the latest projections regarding the availability of natural gas fall short of the earlier expectations. This calls for a close examination of the production profile of natural gas in the case of different basins and a periodical review of the supply-demand scenario. This is to ensure that the supply and utilisation of natural gas can be planned in the long-run in an integrated and optimal manner.

Outlay

8.32.1 The Eighth Plan outlay for petroleum sector is Rs.24,000 crores as compared to Seventh Plan expenditure of Rs.16025.22 crores. These figures are exclusive of the outlays for petro-chemicals. The outlay includes Rs. 20,000 crores for exploration and production and Rs. 4,000 crores for refining and marketing.

COAL AND LIGNITE

8.33.1 Coal and lignite are major energy resources available in the country and the development of these resources constitutes an important element of the long-term energy strategy. Both the development and management of the coal industry were mostly in the private sector till the industry was nationalised in early seventies. The industry was reorganised in 1975 with the creation of Coal India Ltd. (CIL) as a holding company. The Singareni Collieries Company (SCCL), however, continued as a jointly owned company of Andhra Pradesh State Government and the Central Government with the former continuing to have the major shareholding. The development of lignite is being looked after by a seprate centrally owned company viz. Neyveli Lignite Corporation (NLC).

Review of the Seventh Plan

8.34.1 The development of the industry in the Seventh Plan and during 1990-91 and 1991-92 and the priority areas that should receive attention during the Eighth Plan are discussed below.

Coal Resource Inventory and Allied Exploration

8.34.2 Systematic surveys during the Seventh Plan increased the coal reserves of the country from 156.0 billion tonnes at the beginning of the Plan to 186 billion tonnes as on 1.1.90 The reserves as on 1.1.1992 stand at 196.02 billion tonnes. Exploratory work carried out in Madhya Pradesh revealed occurrence of superior

grade non-coking and coking coal reserves which were hitherto largely confined to Bengal and Bihar Coalfields. There were substantial additions to coal reserves in Orissa Coalfields and new discoveries were also made in Birbhum District of West Bengal. The latter, adjoining the Rajmahal trap, are fairly thick seams but the geo-mining conditions there pose technological problems because of their depth, penetration of the trap and low recoverability of coal from very thick seams in the underground mines. A methodology for efficient coal extraction in this area using special expertise is under consideration.

8.34.3 The Seventh Plan laid special emphasis on regional exploration to broaden the base for detailed exploration and project formulation with an adequate range of choice. A separate Plan fund was created for that purpose as different from project linked detailed exploration. The aim was to provide a new thrust to resource-oriented regional exploration as distinct from production-oriented detailed exploration.

8.34.4 As against a detailed exploratory drilling target of 21.67 lakh metres during the Seventh Plan, the actual achievement was 21.10 lakh metres i.e., nearly 98% of the target.

8.34.5 Based on tentative estimates, out of the 196 billion tonnes of in-situ reserves as on 1.1.1992, around 144 billion tonnes may now be considered mineable. Out of this around 70 billion tonnes can be extracted economically on the basis of present technology.

Demand for Coal

8.35.1 Coal consumption during the Sixth Plan registered an average annual growth of 5.5% . When the Seventh Plan was formulated, the demand for raw coal in 1989-90 i.e, the terminal year of the Seventh Plan was estimated at 236.70 million tonnes. At the time of the mid-term appraisal, however, this had to be scaled down to 222 million tonnes. Finally, the actual consumption in 1989-90 was only 199.79 million tonnes, repersenting 84% of the original projection. Against the projected growth rate of 11.2% per annum during the Plan, the actual growth was only 7.34 percentage. The growth of coal consumption in the power sector, which continues to be the major consumer of coal, was 12.7% per annum whereas the growth in demand from the other sectors remained sluggish at around 2.3 per cent.

Coal Production

8.36.1 At the time of the formulation of the Seventh Plan, the coal production target for 1989-90 was set at 226 million tonnes. This took into account the anticipated drawals from the large accumulated pit-head stock of coal which stood at 29.70 million tonnes at the begining of the Plan. The need for importing limited quantities of superior grade coking coal for the steel industry was also considered in fixing this target.

8.36.2 As against this target, the actual production achieved in 1989-90 was only 200.89 million tonnes which implied a shortfall of 11 per cent. As against the projected annual growth growth rate of production of 8.9% during the Plan, the actual annual rate in production has been only 6.4 per cent. The shortfalls in production in the case of CIL and SCCL were 9% and 26% respectively. The shortfall in SCCL, which was expected to cater to the requirements of the consumers in the South to a very large extent, resulted in ad-hoc changes in coal linkages to the consumers and, consequently, considerable irrational movement of coal.

Supply-Demand Mismatches

8.37.1 Even though the shortfalls in the consumption and production of coal in 1989-90, were 16% and 11% respectively at the all-India level, there were serious mismatches in the supply vis- a-vis demand throughout the Plan period as indicated below.

(i) Due to various constraints including railway transportation bottlenecks, the pit-head stock of coal, increased from 29.70 million tonnes as on 1-4-1985 to about 37.43 million tonnes as on 1-4-1990. The stock build-up was largely in the coal fields of Bihar and West Bengal whereas there was considerable unsatisfied demand in the Southern and Western regions.

(ii)The stock build-up was also partly on account of problems of coal quality, particularly for the steel industry, as a substantial quantity of coking coal was not found suitable for use in the blast furnaces of the integrated steel plants. Consequently, 4.45 million tonnes of coking coal had to be imported

in 1989-90. A number of improvements were suggested by an Expert Committee constituted immediately after the formulation of the Seventh Plan to facilitate increased coal production from Bihar and West Bengal. These included the setting up of captive power plants in the coal mining areas in the region. These projects which were to be commissioned in the Seventh Plan have however now slipped into the Eighth Plan. Some of the improvements to be effected in the case of washeries for coking coal supplies to the steel industry also have similarly got delayed.

(iii) Against the originally envisaged share of 44%, the underground mines contributed only 37% of the coal production in 1989-90. The output per manshift (OMS) in underground mining operations remained stagnant at around 0.55 tonnes. The OMS in the case of opencast mines increased from 2.07 tonnes in 1984-85 to 3.11 tonnes in 1989-90 in Coal India against an envisaged level of 3.0 tonnes in that year.

(iv) Due to various factors including industrial relations, the SCCL fell short of its production targets leading to an annual shortfall of around 3 to 4 million tonnes for the consumers in the South throughout the Seventh Plan period. This led to ad-hoc allocation of coal from the Orissa and Wardha Valley coalfields of CIL to consumers in the South resulting in high costs of transportation of coal and its adverse impact on the cost of electricity generation.

(v) Despite the emphasis placed time and again on the propagation of soft coke and Special Smokeless Fuel (SSF) as substitutes for petroleum products and fuelwood for domestic use, the availability of these fuels continued to remain at a marginal level throughout the Plan period. Soft coke production in 1989-90 was only 1.3 million tonnes (raw coal equivalent) against the target of 5 million tonnes. Both pricing and distribution problems have come in the way of promotion of these fuels.

(vi) Coal shortages and problems of quality continued to have an adverse impact on the economy throughout the Seventh Plan. Against 56% of the coal produced from different coal fields passing through Coal Handling Plants (CHPs) at the begining of the Seventh Plan, about 95% of the coal despatched as on 1-4-1991 passed through CHPs.

Environmental Implications of Coal Mining

8.38.1 Coal mining and associated processes have environmental implications especially in terms of degradation of valuable agricultural and forest land, displacement of population etc. The coal projects are subject to detailed environmental impact assessment before they are approved for implementation. The necessary safeguards are built into the project profile to ensure that these projects do not adversely affect the environment. However, subsidence of certain coal mines in the Raniganj area continued to pose problems.

Delays in Project Implementation

8.39.1 As a result of the continued efforts made by the concerned agencies, the proportion of delayed projects in the total number of projects taken up, declined from 40% as at the beginning of the Plan to about 26% at the end of the Plan. However, delays in the acquisition and the taking over of physical possession of land, delays in environment and forest clearance of projects, slippages on the part of the suppliers of equipment and machinery for coal mining and the uncertainties associated with the geo-mining conditions in individual projects continued to delay the commissioning of coal projects leading to substantial cost overruns. The number of coal projects sanctioned (each of more than Rs. 2 crores) since nationalisation of the coal industry and the number still under implementation as on 1-1-1992, as shown below, illustrates the overhang of the past commitments in this sector.

	Sanctioned since nationalisation			Under implementation as on 1-1-1992
	Number	Investment (Rs. Crores)	Capacity (MMTPA)	Number
Mining	441	13709	314.00	232
Non-Mining	202	2331	-	160
Total	643	16040	314.00	392

8.39.2 It is necessary that the projects on hand are completed at the earliest.

EIGHTH PLAN

8.40.1 The following are the priority areas of coal and lignite development in the Eighth Plan.

(i) To ensure that the supply and movement of coal are managed in a well balanced manner so that the pit-head stocks are reduced to a reasonable level and the requirements of the consumers are met to the maximum extent.

(ii) To take up specific measures for maximising the use of indigenous coking coal in steel production through quality improvement schemes including betterment of the existing washery plants.

(iii) To minimise time and cost overruns in the implementation of coal projects.

(iv) To take such measures that would minimise delays in the implementation of projects on account of delays in land acquisition and rehabilitation of displaced families and delays in the clearance of projects from the forest and environment angle.

(v) To prepare an effective environmental management plan including a comprehensive rehabilitation policy and to monitor and implement the same.

(vi) To evolve and implement a policy aimed at improving the availability of coal-based domestic fuels.

(vii) To arrest low production and productivity in underground mines and improve overall productivity of machinery and manpower.

(viii) To promote technologies such as fluidised bed combustion not only for facilitating the efficient use of low- grade coal but also for utilising coal rejects from coal washeries and beneficiation plants.

(ix) To implement a viable and reasonable coal stocking policy.

(x) To evolve an action plan for the control of coal quality.

(xi)Beneficiation of non-coking coal on a large scale for use in load-centre power stations.

(xii) To promote welfare and safety of mine workers.

(xiii) Scientific evaluation of coal resources and allied exploration.

(xiv) Adoption of new technologies especially those aimed at improvement in efficiency and conservation.

(xv) Development of lignite in locations situated far away from coal sources.

Demand

8.41.1 The power sector is so far the largest consumer of coal. The other major consumers are: steel, cement, railways, fertilisers and the household sector(soft coke). A large number of consumer groups such as jute, paper, cotton textiles, chemicals, brick kilns etc. which constitute an important segment of economic activity are clubbed together as "other industries". For the major sectors, the demand is related to the sectoral targets of production while for the "other industries" category, in the absence of reliable data, the demand forecast is based on trend analysis. The overall demand in 1996-97 has been projected at 311.0 million tonnes in

Table 13 Coal Demand

(in Million Tonnes)

Sl. No.	Sector	1989-90		1990-91	1991-92	1991-92	1996-97
		VII Plan Target	Actual	Actual	Target	Actual	(Projection)
1.	Steel & Coke Ovens	41.10	28.37	30.05	33.00	31.66*	42.00
2.	Steel (DR)	-	-	-	0.70	0.40	2.00
3.	Power (Utilities)	120.00	113.00	116.72	142.00	134.60	185.30
		(9.00)	(2.12)	(2.07)	(3.00)	(2.30)	(4.70)
4.	Railways	8.00	5.73	5.17	4.70	4.42	3.00
5.	Cement	12.60	8.74	9.74	13.10	9.97**	17.50
6.	Fertilisers	6.50	3.97	3.90	4.00	4.23	4.00
7.	LTC/Soft Coke	5.00	1.30	1.27	2.50	0.99	4.00
8.	Export	0.50	0.16	0.09	1.00	0.11	1.00
9.	Other industries						
	a. Captive Power	10.00	1	1	13.00	1	15.00
			34.55	39.12	(2.00)	38.50	(2.10)
	b. Brick Kilns & Others	29.00	1	1	27.00	1	33.20
							(0.20)
	Sub-Total(9):	39.00	34.55	39.12	40.00	38.50	48.20
					(2.00)		(2.30)
10.	Colliery Consumption	4.00	3.97	4.01	4.00	4.06	4.00
	Total:	236.70	199.79	210.07	245.00	228.94	311.00
		(9.00)	(2.12)	(2.07)	(5.00)	(2.30)	(7.00)

Note:- 1.* Including imported coal of 6.09 million tonnes.

2. Figures in bracket indicate washery middlings.

3.** Excludes supply to cement plants from open market at the rate of 1.5 lakh tonnes per month.

terms of raw coal. The sectoral break-up of coal demand is given in Table 13.

8.41.2 While consumption of raw coal increased annually at 7.34 per cent during the Seventh Plan, it is expected to grow at an annual rate of 6.32 per cent during the Eighth Plan. Out of the total estimated coal demand of 311.0 million tonnes of raw coal in the year 1996-97, the power sector accounts for 200.30 million tonnes of which the requirement of power utilities is 185.3 million tonnes and of captive power plants 15.0 million tonnes. This excludes a quantity of 6.80 million tonnes (utilities 4.7 million tonnes; captive plants 2.1 million tonnes) of middlings likely to be made available from coking coal washeries for use in power stations. To reduce the ash percentage in coking coal supply to the steel plants, 3.0 million tonnes of imported low-ash coking coal is expected to be blended with indigenous coal.

Production

8.42.1 The coal production that will be realised by 1996-97 will be 308 million tonnes against an anticipated demand of 311.0 million tonnes in that year. This implies that the average annual growth in production during the Eighth Plan will be 6.08 per cent against the actual growth of 6.4 per cent during the Seventh Plan. The Com-

Table 14 Companywise Production Plan of Coal

(in Million Tonnes)

Company	Production					1996-97 Target	Growth Rate	
	1984-85 (Actual)	1989-90 (Actual)	1990-91 (Actual)	1991-92 Target	1991-92 Actual		1989-90 1984-85	1996-97 1991-92
ECL	23.11	24.49	23.47	27.50	24.52	38.50	1.16	9.44
BCCL	21.85	26.61	26.70	29.50	27.00	32.00	4.02	3.46
CCL	39.00	28.61	30.05	32.00	31.21	45.50	-6.00	7.83
NCL	-	23.28	27.88	31.00	30.88	39.00	-	4.78
WCL	46.05	23.01	22.78	25.00	24.73	30.00	-12.95	3.94
SECL	-	51.78	58.08	60.00	64.86	45.50)	-	5.31
MCL*	-	-	-	-	-	38.50)	-	-
NECL	0.81	0.84	0.68	0.80	0.95	1.00	0.73	1.03
CIL	130.81	178.62	189.64	205.80	204.15	270.0	6.42	5.75
SCCL	12.33	17.80	17.71	23.40	20.58	33.00	7.62	9.92
TISCO/ OTHERS	4.27	4.47	4.38	4.80	4.56	5.00	0.92	1.86
ALL INDIA	147.41	200.89	211.73	234.00	229.29	308.00	6.38	6.08

* Mahanadi Coalfields Limited is a new subsidiary of CIL covering Orissa Coalfields of erstwhile SECL from 1.4.1992.

Table 15 Contribution to production from projects at

Company	Existing Mines and Completed Projects	Sanctioned Ongoing Projects	New Projects	Total
1.Coal India	121.03	121.13	27.84	270.00
2.Singareni	12.32	15.93	4.75	33.00
3.TISCO/IISCO/DVC	5.00	-	-	5.00
Total:	138.35	137.06	32.59	308.00

pany-wise details are shown in Table 14. The details of the contribution to the production programme in 1996-97 of projects at different stages of implementation are shown in Table 15.

8.42.2 The annual growth rate of coal production during the Eighth Plan will be somewhat high in the case of ECL, CCL, NCL and SCCL but it will be seen from Table 15 that a substantial part of the increase is expected to come from sanctioned and on-going projects. New projects are expected to yield an incremental production of only 32.59 million tonnes out of the target of 308.00 million tonnes. None the less, the task of producing 32.59 million tonnes from the new projects underscores the importance of timely completion of all projects, a task which assumes added importance in the present context of overall energy situation and severe foreign exchange constraints faced by the country.

8.42.3 In the past two Plan periods, surface mining operations were stepped up for augmenting coal production by using heavy earth moving machinery. Similarly, increased mechanisation of underground mines had also been taken up in the country by deploying longwall mining and other suitable mining approaches to improve productivity. However, such mechanisation in underground mines is yet to yield the

desired results. The present declining trend in underground mining is proposed to be contained and, if possible, reversed in the foreseable future in view of the following two constraints:

(i) Land requirement for opencast mines is very large compared to underground mines. It is becoming progressively more difficult to release land for coal mining from other important activities such as agriculture etc.

(ii) Out of the total geological reserve of 186 billion tonnes as on 1.1.90, about 20% is suitable for opencast mining with the available technology.

8.42.4 It is desirable to maintain in the long run a reasonable mix between opencast and underground mining so as to keep the average cost of production of coal at an optimum level in future. The Eighth Plan, therefore, places emphasis on improving the performance of underground projects, adoption of appropriate technologies and taking up development of new underground mines wherever possible. Shortfalls in achieving the production targets of ECL, BCCL and Singareni have resulted in shortages of both high quality coal as well as coal for consumers in the Southern region. Steps are therefore proposed to be taken to increase the pace of implementation of projects in these three companies.

8.42.5 Two aspects of project implementation and operation need special attention of the concerned authorities. First , some of the hitherto underground mines, with shallow overburden, have considerable quantities of unutilised reserves of coal which can only be recovered by "daylighting" operations, that is, by conversion of the underground mines into opencast mines. Many such "daylighting" operations are being carried out by acquiring of heavy earth moving equipment, although large labour force employed in these mines remains without any work. The use of manual labour for removing the overburden wherever feasible could help in containing the costs without any adverse implications and also in providing productive employment. Secondly, in the opencast mines, many items of equipment, like shovels, dozers and dumpers, are not being used fully even after taking into account the downtime for repair and maintenance. If the rate of utilisation of such equipment can be improved, a significant increase in output can be obtained even from the existing mines, the existing manpower and equipment. These are areas of priority in the Eighth Plan.

Integrated Development of Coal Mines and Associated Infrastructural Facilities.

8.43.1 In the past, development of new coal mines has largely been concentrated in the areas where there are adequate transport and other infrastructural facilities already in existence. This has resulted in the coal fields in other areas not being developed to the extent desirable. During the Eighth Plan, efforts will be made to integrate the development of coal mines and the associated infrastructural facilities to the maximum extent possible so that exploitation of coal is possible in new advantageous areas.

Demand Supply Management

8.43.2 The major steps required to be taken in this connection are as follows:

(i) To match the field-wise production plans with the requirements of the consuming sectors/ centres both qualitatively and quantitatively, with adequate evacuation facilities.

(ii) There has been a persistent shortfall in the availability of coal in the Southern region which cannot be readily met from Singareni. A carefully drawn up action plan has, therefore, to be implemented for coal supply to power stations in the Southern and Western regions. This will necessitate movement of large quantities of coal by coastal shipping from the Eastern region to the Southern and Western regions. This in turn, will call for the requisite loading and unloading facilities at the concerned ports. The economics of provision of alternate sources of energy (including the economics of import of non-coking coal) for meeting the requirements of coastal power stations in the West need to be evaluated.

(iii) The development of fields like Talcher and Ib-Valley (in Orissa), North Karanpura (in Bihar), Singrauli (in M.P.-U.P.), Singa

reni (in Andhra Pradesh) and Wardha Valley (in Maharashtra) is to be given priority for meeting the needs of the power sector . Talcher coalfield will have to supplement Singareni production to meet the coal demand in the South. While Talcher will soon develop into a major source of coal supply in the country during the next decade, Ib Valley will provide the alternate source for supplementing the coal needs of power generation in the Eastern and Southern regions.

(iv) Production from sanctioned projects and existing mines needs to be optimised for an appropriate return on investments and for improvement in productivity.

Implementation of Coal Projects

8.44.1 The reasons for delays in the implementation of coal projects have been identified. The constraints are both external and internal. The external problems are land acquisition, forest and environmental clearance, inadequate and irregular power supply, inadequate infrastructure facilties, law and order problems in certain areas and delay in the supply of major equipment. It is expected that during the Eighth Plan, the project implementation procedures would be further streamlined and delays reduced.

Land Acquisition

8.45.1 A number of effective steps have been taken to resolve the problems of land acquisition and expedite forest and environmental clearances. Measures have also been initiated for the satisfactory rehabilitation of oustees, many of whom belong to the tribal and other vulnerable backward communities. To a considerable extent, past delays could be attributed to delays in the finalisation of rehabilitation measures for land oustees in accordance with a set of well defined criteria. A suitable rehabilitation policy to be adopted at the national level has now been worked out and the policy as finalised would need to be clearly and unambiguously adopted for new projects in all the States uniformly in the Eighth Plan not only to mitigate the problems of the land oustees but also to reduce delays in the implementation of major mining projects. In the past, this process has caused unmerited hardship to the oustees. To the extent possible, the new policy should aim at providing an opportunity to the oustees to take advantage of the benefits associated with the projects. The steps to be taken include training of the affected persons and upgrading their skills so that they may be employed within the project or elsewhere. The national rehabilitation policy should also aim at minimising the hardship created to the oustee family.

Environmental Management

8.46.1 The Eighth Plan envisages a major thrust in environmental management in coal mining areas. Large areas of land are required for the development of mines. Such lands are mostly agricultural and forest lands. Considerable damage has already been caused to the environment where mining has been continuing for a long time e.g. West Bengal and Bihar. In order to restore the environment in such areas, precise modalities with regard to funding and institutional mechanisms need to be evolved. During the Eighth Plan, environment management will aim at the following:

(i) Concurrent restoration of land in ongoing and new projects.

(ii) Restoration of land and implementation of environmental safeguards in the old worked out areas.

8.46.2 New coal projects should be sanctioned in future keeping in view the vulnerability of the propsed location from the point of view of the environment. The coal industry needs to be strengthened with qualified environmental scientists and engineers to prepare, monitor and implement environment management plans.

8.46.3 An action plan will be drawn up for the old worked out areas for restoration and control of subsidence, particularly in Jharia and Raniganj Coalfields. The problem of mine fires in Jharia/Dhanbad which are not only endangering the habitation but also burning out scarce resources of prime coking coal, needs to be tackled immediately. The necessary technological inputs will be identified and provided during the Eighth Plan.

8.46.4 In the long run, it is desirable to have an independent agency to formulate and implement environment preservation schemes for the coal and associated sectors. A separate Plan allocation for Environmental Measures and Subsi-

dence Control will be provided in the Eighth Plan.

Domestic Fuel

8.47.1 All efforts to promote soft coke as a domestic fuel have failed in successive Plans, resulting in increased dependence on kerosene oil and firewood. The Central Fuel Research Institute has designed efficient chullahs and the CMPDI has developed a process for converting inferior grade coal into Special Smokeless Fuel (SSF), which is much less wasteful and pollution-free than the traditional method of making soft coke. To the extent SSF can be used, it will have the effect of saving Kerosene/LPG which involve foreign exchange outgo. Such new devices and processes will be promoted through an appropriate distribution and pricing policy.

Coal Stocking Policy

8.48.1 Despite the efforts made from time to time, the pit-head coal stocks in the country continued to increase year after year. On the other hand, the stocks at the end of the consumers continue to be at precariously low levels. The main factor contributing to the situation is the problem of movement of coal. Accumulation of pit-head stocks takes place usually in areas having inadequate railway evacuation facilities. Apart from this, the level of coal despatches is generally not uniform throughout the year and the railways have been finding it difficult to absorb the seasonal fluctuation in despatches. In order to ensure that the pit-head coal stocks are reduced to a reasonable level and the requirements of the consumers are met to the maximum extent, it is necessary to coordinate and monitor a number of activities connected with coal despatches. First, increases in coal production will have to be planned for the short-term in areas having adequate rail links. To the extent possible, a portion of the coal movement will have to be carried out by coastal/inland shipping to reduce dependence on the railways. In the case of pit-head power stations, the captive transport network (the MGR system) will have to be fully utilised. To facilitate maximum movement of coal by rail, the coal companies will have to ensure that the level of despatches remain uniform throughout the year. At the consumers' end, adequate facilities for unloading and stocking of coal need to be created at the earliest. Finally, there is a need to open as many coal stockyards as possible in different parts of the country so that adequate stocks could be built up at these locations for meeting the requirements of the consumers at steady levels. Supply and movement of coal will have to be monitored periodically to ensure that the strain on the transportation network may be minimised. In the long run, as already stated there is need to plan the development of coal fields and the infrastructure network in an integrated manner.

Coal Quality

8.49.1 The main problems relating to quality of coal are as follows:

(i) High ash content in the coking coal supplies to steel plants.

(ii) Oversized coal and presence of extraneous matter in supplies to power plants and variations in quality.

(iii) Inadequate availability of high grade coal for industries.

8.49.2 In the Eighth Plan, these problems are proposed to be resolved in the following manner:

(i) Average ash content of washed prime coking coal has been varying around 20 - 22% during the last several years against the stipulated 17% for use in steel plants. A Technical Group set up by the Department of Coal in 1986 has formulated a comprehensive programme to ensure supplies of washed prime coking coal of stipulated ash content to steel plants by modification of the existing washeries with the provision of deshaling plants, fine coal beneficiation, finer crushing of coal, setting up instrumentation/automation systems, ash monitors etc. These modifications will be introduced in all the washeries by 1994-95.

(ii) A Coal Preparation Engineering Institute has been set up under CMPDI, Ranchi. This Institute will look after the planning, design, construction and commissioning of all future washeries. The Institute will also deal with R&D activities to keep pace with technological developments taking place in the world.

(iii) All coal will pass through Coal Handling Plants, having crushing, screening and sizing facilities.

(iv) Electrical/mechanical weigh-bridges will be set up wherever necessary.

Beneficiation of non coking coal

8.50.1 Studies undertaken at the instance of the Planning Commission (1988) have clearly established cost savings by the use of beneficiated non-coking coal in power plants situated at long distances away from the coalfields. Accordingly, the Piparwar project with a raw coal capacity of 6.5 million tonnes per year in North Karanpura (CCL) has already been sanctioned by the Government for coal supply to Dadri and Yamuna Nagar Power Stations. Another project at Kalinga in Talcher with a raw coal capacity of 8 million tonnes per annum was sanctioned in March 1992 for the supply of beneficiated coal to the coastal power stations in the South by rail-cum-sea route. It is expected that for the supply of coal to all future power stations situated at distances exceeding 1000 km. from the coalfields, beneficiation facilities will be set up. The viability of these beneficiation plants can considerably improve if the coal rejects from the beneficiation process can be used in Fluidised Bed Combustion boilers for power generation.

Productivity

8.51.1 The poor performance of the coal industry has been attributed to low productivity levels of men and machinery. In spite of increasing mechanisation, the coal industry still employs more than 7 lakh people. Higher productivity levels can be realised through appropriate measures suitable for individual mines. Emphasis needs to be placed on underground mining which is going to play a major role in the long run, and wherein productivity has been especially low.

8.51.2 The productivity target in terms of OMS for underground mines of CIL has been fixed at 0.66 tonnes to be realised by 1996-97 against an achievement of 0.55 tonnes in 1989-90. Specific areas that will be given special attention in this connection are increased availability of coal by using coal cutting and augering machines, introduction of direct shovelling, rationalisation of underground transport, improved underground environment etc. The OMS target of opencast production from Coal India to be realised by 1996-97 has been fixed at 4.32 tonnes against the achievement of 3.08 tonnes in 1989-90. The areas that call for special attention in this regard are: introduction of rapid loading systems and modern communication facilities and conversion of manual and semi- mechanised operations to greater mechanisation wherever warranted. The overall OMS of Coal India to be achieved by the end of Eighth Plan is targetted at 1.65 tonnes against 1.21 tonnes achieved at the end of the Seventh Plan.

8.51.3 The continuing under-utilisation of the capital intensive equipment used in excavation and transport in coal mining is a matter of serious concern. The Eighth Plan will place emphasis on improving the utilisation of such equipment through systematic efforts.

8.51.4 Considering the proportion of opencast mining projects in the pipeline, the relative share of production from underground mines cannot be expected to show any significant increase by the end of the Eighth Plan compared to what was achieved at the end of the Seventh Plan. The share of opencast production was 63% at the end of the Seventh Plan.

Coal Exploration

8.52.1 The long-term exploration programme needs to be oriented towards meeting the demand for coal expected to materialise over a perspective of 15 years. This calls for intensification of regional exploration effort aimed at exploring new areas and promoting discoveries made in the recent years.

8.52.2 In the Seventh Plan, regional exploration effort led to the discovery of potential fields of coking coal in West Bokaro, East Bokaro and Sohagpur area of Madhya Pradesh. Considering the scarcity of coking coal in the country, especially prime coking coal, further promotional exploration will be intensified in these fields so that the scope for formulation of new coking coal projects outside the Jharia coalfield may be taken up for consideration. Exploration will also be intensified in Assam, where coal is reported to have coking propensities and may be suitable for use as blends for use in blast furnaces. Recent regional exploration by the GSI has also indicated several virgin blocks of superior grade coal in a few fields in Madhya Pradesh (Mand-Rai-

garh, Sendurgarh etc.). Considering the fact that the limited reserve of superior grade non-coking coals are today mostly confined to the Raniganj fields, these areas would also be taken up for further regional/promotional exploration and for the delineation of the potential areas for exploitation. Regional exploration will also be intensified in virgin areas which mostly fall in the command areas of South Eastern coalfields (mainly Talcher and Ib Valley in Orissa). Orissa Coalfields have the potential to supply coal to Southern and Western regions at comparatively cheaper cost of mining if properly developed.

8.52.3 A detailed drilling programme of 20.465 lakh metres (CIL 15.065; SCCL 5.40) is being targetted for the Eighth Plan. This takes into account the regional and sectoral demand for coal as well as its quality aspects. Modern exploration techniques such as geophysical methods, hydrogeological investigations, geotechnical studies, chemical analysis, coal petrographical laboratory studies will be extensively used for this purpose.

Technology Upgradation in Production and Use of Coal

8.53.1 The various activities relating to conservation will be taken up broadly in the following areas:

(i) Mining Technology - Improvement in the recovery of coal in the process of mining by appropriate choice of mining technologies and stowing by inert material, reorganisation and reconstruction of mines to minimise losses of coal in barriers, recovery of coal standing in pillars as well as control of mine fires to release coal for exploitation.

(ii) Coal washing - Introduction of modern methods of beneficiation and fuller utilisation of the residuals (in terms of middlings) obtained from beneficiation, agglomeration of coal fines for metallurgical and non-metallurgical uses.

(iii) For different consumers of coal, introduction of appropriate modifications in the techniques and technologies currently used by the major consumers (like power, steel, cement as also domestic consumers).

(iv) Coal utilisation - To promote the use of coal in industry and household sectors so as to conserve oil, increasing the pace of R&D work on underground gasification which will help in exploiting the coal seams which are both difficult and costly to mine otherwise.

(v) Mine fire control - To control expeditiously and successfully fires which are currently raging in underground coal mining areas. Mine fires in Jharia coalfield are depleting scarce prime coking coal. This is a problem that needs to be tackled urgently.

(vi) Sand stowing - Sand is required for stowing for the extraction of coal from underground workings where the exploitation of pillars can become possible only in conjunction with sand stowing.

(vii) Other measures - Reconstruction of Jharia Coalfield, diversion of Damodar river etc., are some of the measures needed to ensure additional release of coking coal.

Financial Performance of the Coal Industry

8.54.1 The Eighth Plan will place emphasis on making the coal industry financially viable and capable of supporting itself.

8.54.2 During the major part of the Seventh Plan, Coal India Limited(CIL) had incurred huge losses. It could earn a marginal profit only during 1989-90. Neyveli Lignite Corporation(NLC), on the other hand, continued to earn profits throughout the Plan period. SCCL, however, continued to incur losses for reasons that were largely beyond its control.

8.54.3 While the coal industry should have some freedom to adjust the price structure from time to time in line with the increases in the input costs, the major contribution to the financial viability of the industry should come from improvements in efficiency and productivity.

Employment

8.55.1 The industry's main problem is its surplus manpower with low productivity. In the Eighth Plan, the emphasis will be on upgradation of skills of workers through training to improve their productivity levels.

Mining Electronics

8.56.1 The Seventh Plan duly recognised the need for greater emphasis on electronics in coal mining, mainly from the safety and productivity angles. Some works were initiated during the Seventh Plan and a total electronic system was installed at Gevra opencast mine in South Eastern Coalfield which is one of the largest opencast mines in the country. Greater emphasis needs to be placed on introduction of mining electronics for communications, operational controls etc. in both opencast and underground mines with special emphasis on the safety aspects in the case of underground mines.

Research and Development

8.57.1 The following important R&D schemes will be taken up during the Eighth Plan.

A.Production, Productivity and Safety

(i) Development of new mining methods in underground mining.

(ii) Development of techniques/systems for prvention and control of mine fires.

(iii) Pilot study on in situ coal gasification.

(iv) Slope stabilisation studies in opencast mining.

(v) Development of mining machinery suitable for local conditions.

(vi) Coal slurry preparation technique.

B. Coal Beneficiation

(i) Simple beneficiation of coal .

(ii) Efficient beneficiation of small sized coal.

C. Coal Utilisation

(i) Use of low volatile medium coking coal for metallurgical purposes.

(ii) Utilisation of washery rejects.

D. Environment and Ecology

(i) Development of appropriate land reclamation systems for areas degraded by opencast mining.

(ii) Development of techniques for monitoring of environmental data.

Safety and Welfare

8.58.1 Safety and welfare of mine workers have always received the utmost attention of the Government during successive Plans as a result of which the average number of fatal accidents per million tonne of production has come down from 9.12 in 1951 to 0.74 in 1990. The non-fatal accident rate has also dropped from 57.4 to 3.08 during the same period. The coal industry should strive to enhance the levels of safety in coal mining operations to the maximum extent possible. This will call for concerted action on a number of fronts. These include safe mining technologies with a proper layout of mines and haul roads, lighting and degasification of mines, telemonitoring system in gassy mines, training of workers, provision of audio visual alarms and installation of mobile equipment. Computer aided total mine management system will be introduced in selected large sized mines to improve both safety and productivity of mine workers.

8.58.2 Efforts will be made during the Eighth Plan to enhance the basic amenities like housing, water supply, medicare, cooperatives, banking and recreational facilities for workers for which the programme indicated in Table 16 has been drawn up.

Lignite

Review of the Seventh Plan Programme

8.59.1 The performance of Neyveli Lignite Corporation (NLC) remained satisfactory throughout the Seventh Plan. The second mine with a capacity of 4.7 million tonnes was commissioned and a project has been taken up for expanding its capacity further to 10.5 million tonnes. With the available capacity of 6.5 million tonnes in the first mine, it was expected that the total capacity would be raised to 17 million tonnes by the end of the Seventh Plan. There has been a marginal slippage in commissioning the expansion stage (4.7 million tonnes to 10.5 million tonnes) and the same is now expected to be completed at the beginning of the Eighth Plan. A production level of 11.24 million tonnes was achieved in 1989-90 against a combined capacity of 11.2 million tonnes in the first and second mines. In 1991-92, NLC produced 12.54 mil-

Table 16 Social Amenities for Coalmine workers

	VI Plan 1.4.85	VII Plan 1.4.90	VIII Plan 1.4.97
1.	2.	3.	4.
A.Coal India			
1.(i)Number of Houses	210913	276978	345751
(ii)Housing satisfaction (estimated percentage)	32.37	42.00	49.00
2.(i)No. of Hospitals	73	72	87
(ii)No. of Beds	4106	4546	6935
(iii)No. of Dispensaries	344	378	418
3.Water Supply - Total population covered	1625573	1986469	2438824
B.SINGARENI			
1.(i)No. of Houses	24133	35535	60576
(ii)Housing satisfaction (estimated percentage)	28.02	30.4	50
2.(i)No.of Hospitals	5	6	10
(ii)No. of Beds	800	900	1260
(iii)No. of Dispensaries	26	30	41
3.Water Supply - Total population covered	517000	7470000	934500

lion tonnes against a target of 12.32 million tonnes. In addition, 3.27 million tonnes of lignite was produced in 1991-92 in Gujarat in the State sector.

8.59.2 The Seventh Plan assigned a high priority to exploration for lignite especially in the States of Tamil Nadu, Pondicherry and Rajasthan. In Rajasthan, an integrated mine-cum-power project consisting of a mine of 1.7 million tonnes and a power plant of 2x120 MW was sanctioned by Government in April 1991 at Barsingsar in Bikaner District. This project is now being implemented. Regional and promotional exploration have recently revealed encouraging lignite finds in the State of Tamil Nadu outside Neyveli's leasehold areas.

Eighth Plan Programme for Lignite

8.60.1 Development of lignite in locations far away from the major coal fields in the country will be given a high priority during the Eighth Plan.

Neyveli (Tamilnadu)

8.60.2 Neyveli Lignite Corporation has persevered for a long time to stabilise with the only mine-Mine I with a capacity of 6.5 million tonnes. Mine II, with a capacity of 4.7 million tonnes, was commissioned in the Seventh Plan. The programme of expansion of capacity of Mine II to 10.5 million tonnes was taken up during the Seventh Plan and is expected to be completed in 1991-92. The capacity of the Neyveli lignite mines will thus go up to 17 million tonnes. In addition, Government has sanctioned a Float Machine (1400 litre Bucket Wheel Excavator) for use in Mine I and Mine II to relieve the high capacity machines for major overhaul and to enable the overburden system to work at maximum capacity in a sustained manner. The additional lignite thus available will be utilised for power generation in a new 210 MW unit (zero unit). The downstream power generation units for the expansion of Mine I from 6.5 million tonnes to 10.5 million tonnes stage have been sanctioned and the work is to be taken up in the Eighth Plan. The production from Neyveli is targetted at 18.00 million tonnes in 1996-97, including a contribution of 1.0 million tonnes from float machine. Extensive exploration in Tamil Nadu and neighbourhood areas have delineated potential blocks in Jayakond - racholapuram in Trichy district and Bahur in Pondicherry. Investigations will be further intensified in these and other areas of Tamil Nadu and adjacent Pondicherry.

Rajasthan

8.60.3 Based on the exploration carried out during the Seventh Plan, it was considered feasible to start with an integrated mine-cum-power plant project at Barsingsar in Bikaner district. An integrated project comprising of a mine of 1.7 million tonnes capacity and a power plant of 2 units of 120 MW each capacity was sanctioned in April,1991 under the aegis of Neyveli Lignite Corporation. The project is expected to be commissioned by the end of Eighth Plan. Lignite production in 1996-97 is targetted at 1.5 million tonnes.

Gujarat

8.60.4 With the setting up of a mechanised mine of 1.5 million tonnes at Panandhro, lignite will now be available for power generation and for industrial use. The production in Gujarat is expected to reach a level of 3.5 million tonnes by the end of the Eighth Plan. Exploration for lignite will be intensified by both Central and State Government agencies in the State.

Jammu & Kashmir

8.60.5 Under the aegis of the Department of Coal and the NLC, detailed reassessment of Nichahom lignite has been taken up. Although of low grade, the combustion of these lignite deposits in fluidized bed boilers or otherwise has been considered feasible. Feasibility of mining lignite and power generation will be considered in the Eighth Plan.

Institutional Changes Required in Meeting the Future Challenges

8.61.1 As already stated, coal and lignite constitute the primary energy resource of the country. As part of the long-term energy strategy, the production of coal and lignite needs to be stepped up on a large scale so that their share in the total commercial energy supplies may increase significantly in the country from Ninth Plan onwards. This will indeed be a challenging task for which it will be necessary to review the existing legislative and institutional arrangements and introduce important changes during the Eighth Plan.

Plan Outlay

8.62.1 Keeping in view the increase in demand for coal and lignite and anticipated production requirements during the Eighth Plan, an outlay of Rs.10507 crores is provided for this sector This excludes the outlay for the power component of Neyveli Lignite Corporation. The detailed breakup of the outlay is given below:

	Rs. Crores
1.Coal India Limited	8520
2.Singareni collieriesCo. Ltd.	1000
3.Neyveli Lignite Corp.(Mining)	800
4.Science & Technology	87
5.Regional Exploration	25
6.Environmental Measures and Subsidence Control	75
Total(Coal & Lignite)	10507

The outlay for Singareni Colleries Co. Ltd. excludes Andhra Pradesh State Govt. 's share of equity.

POWER

8.63.1 Reliable and adequate supply of electricity will be of critical importance for effective implementation of the various development programmes in agriculture, industry and other sectors of the economy. With increasing economic activity and development of both rural and urban loads throughout the country, the demand for electricity will continue to rise rapidly during the next decade and thereafter. The major task during the Eighth Plan will, therefore, be to ensure that the anticipated demands are met adequately and in a reliable and cost-effective manner. The Eighth Plan will also have to provide for advance action on a number of new hydel projects so that the declining trend in the share of hydel generation in the total generation capacity in the country may be reversed and a reasonable hydel share ensured at least by the end of the Ninth Plan.

Review of the Seventh Plan Programme and the Annual Plans for 1990-91 and 1991-92

8.64.1 The total installed generation capacity at the beginning of the Seventh Plan was 42,585 MW. This comprised 14,460 MW of hydro, 26,311 MW of thermal, 1,095 MW of nuclear and 719 MW of gas-based generation. The details of the capacity added during the Seventh Plan are shown below(Table 17).

8.64.2 The actual capacity addition of 21,401 MW during the Seventh Plan is about 50% more than the capacity added during the Sixth Plan.

Table 17 Additions to installed capacity during Seventh Plan

(In MW)

Type	Target			Achievement		
	Central ector	State Sector	Total	Central Sector	State Sector	Total
Hydro	665	4876	5541	485	3342	3827
Thermal	7950	8049	15999	8573	8520	17093
Nuclear	705	-	705	470	-	470
Windmill	-	-	-	-	11	11
Total	9320	12925	22245	9528	11873	21401

Despite slippages in the case of a few hydel projects in the State sector, the overall achievement was as high as 96% of the capacity addition originally planned for. A few short-gestation gas-based projects totalling upto 1,218 MW which were taken up during the Seventh Plan, largely helped in making up for slippages in the implementation of hydel projects. During the Seventh Plan, the average annual rate of capacity addition was thus of the order of 4,280 MW.

8.64.3 The total capacity addition during 1990-91 and 1991-92 has been 5803 MW, comprising 4702 MW thermal, 881 MW hydel and 220 MW nuclear capacity. This represents a much lower annual rate of capacity addition than in to the Seventh Plan.

8.64.4 Delays in forest and environment clearance of projects, time-consuming procedure of acquisition and transfer of land to the project authorities, delays in the supply of equipment by the suppliers and inadequate financing of projects, especially those in the State sector, are some of the factors that have contributed to time overruns in project implementation.

Reduction in Hydel Share

8.64.5 The share of hydel generation in the total generating capacity of the country declined from 34% at the end of the Sixth Plan to 29% at the end of the Seventh Plan and further to 27.8% at the end of 1991-92. This is likely to decline even further during the next decade or so 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 in the country adversely affected the performance of the thermal power plants during the Seventh Plan.

Increase in the Share of Central Generation

8.64.6 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 supplementing the efforts of the State electricity undertakings in adding new generation capacity in different parts of the country. The Central share in the total installed generation capacity increased from 16% at the end of the Sixth Plan to 25.3% at the end of the Seventh Plan and further to 26.1% at the end of 1991-92. The major contribution to this had come from the NTPC.

Increase in the Share of Pit-head Generation

8.64.7 The concept of setting up large pit-head power stations initiated during the Fifth Plan continued to gain ground during the Sixth and the Seventh Plans. The share of pit-head capacity in the total installed thermal generation capacity progressively increased from 10% at the end of the Sixth Plan to 25% at the end of the Seventh Plan. While large pit-head power stations have no doubt helped reduce congestion of the railway transportation system, they have also given rise to environmental problems, such as

large scale land degradation, changes in land-use pattern, displacement of people, extensive pollution of land, water and air etc. These problems need to be resolved effectively before any further large scale expansion of power generation capacity near the coal fields is taken up.

Performance of Thermal Power Plants

8.64.8 The performance of the thermal power plants registered an overall improvement during the Seventh Plan. The all-India average Plant Load Factor (PLF) increased from 50% at the end of the Sixth Plan to 56.5% at the end of the Seventh Plan. This is largely attributable to the concerted efforts put in by Department of Power, the Central Electricity Authority, the State Governments and the utilities. The Renovation and Modernisation (R&M) programme 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 during the Seventh Plan covered 32 thermal power stations comprising 162 units with total a capacity of 13585 MW. The R&M programme specifically aimed at increasing the average PLF of these units by about 6 to 7 percent. Apart from this, progressive introduction of larger sized units in the power system has also, to an extent, contributed to the overall improvement in the performance of the thermal power stations. While this is the position at the national level, the thermal plants in certain regions and States continued to function at unsatisfactory levels. The best thermal plant performance during the Seventh Plan was observed in the Western region, followed closely by the Southern and the Northern regions. The plant performance in the Eastern and North Eastern regions continued to remain unsatisfactory.

Transmission and Distribution (T&D) Facilities

8.64.9 The major portion of the 400 KV network envisaged to be set up during the Seventh Plan was in the Central sector and most of these lines could be commissioned on schedule. However, there were delays in the actual commissioning of 220 KV lines, a major portion of which is accounted for by the State sector. The details of the targets and achievements during the Seventh Plan in respect of major transmission line projects are as shown in Table 18.

T&D Losses

8.64.10 The T&D losses in the power systems throughout the country continued to remain high during the Seventh Plan. The all-India average T&D losses increased from about 22% at the beginning of the Seventh Plan to 22.88% by the end of the Plan. However, in the absence of satisfactory metering arrangements in the case of 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. The continuing high T&D losses could be largely attributed to the low investments made on T&D facilities in different States and the extensive lower-voltage distribution network in rural and urban areas. These factors have also contributed to the poor quality of electricity supplies in many areas.

Table 18 Targets and Achievements during Seventh Plan in respect of major (220 KV and 400 KV) transmission lines.

Sector	400 KV (ckt.km)		220 KV (ckt.km)	
	Target based on annual programmes	Achievement	Target based on annual programmes	Actual Achievement
Central	9600	11237	2495	2650
State	3406	2558	12735	10946
Total	13006	13795	15230	13626

Eighth Plan Programme - Priorities

8.65.1 The Eighth Plan will lay emphasis on improvements in the operation of the existing thermal generation units and other plant and equipment, reduction in the technical losses of the power system, improvement in the financial performance of the Central and State electricity undertakings and expeditious project implementation to mimimise time and cost overruns. The Eighth Plan will place considerable emphasis on improving the reliability of power supplies to consumers in different parts of the country and promote access to the benefits of electricity in rural areas, especially for agricultural consumers. During the Eighth Plan, advance action will be initiated on a sufficient number of new hydel projects to ensure that the share of hydel generation in the total installed generation capacity reaches a level of around 40% by the end of the Ninth Plan.

Table 19 Demand for power in 1996-97 as per 14th EPS

Region	Energy Requirement (Mkwh)	Peak Load (MW)
Northern	129587	24234
Western	121159	19587
Southern	103191	18150
Eastern	56011	10254
North-Eastern	6169	1388
Andaman & Nicobar Isl.	140	39
Lakshadweep	17	4
All India	416274	73656

Capacity additions required during the Eighth Plan

8.65.2 According to the 14th Electric Power Survey, the electricity requirement at busbar (utilities only) in 1996-97 will be as shown in Table 19. The sectoral demand estimates of the Planning Commission indicate a consumption requirement of 308,840 Mkwh from the utilities in 1996-97, after suitable adjustment for energy conservation measures during the Plan period. This implies a gross generation requirement of 433,610 Mkwh after taking into account the the system and auxiliary losses of the order of 23 per cent and 7.5 per cent respectively as obtained during 1991-92.

8.65.3 The rate of capacity utilisation, for the total installed generation capacity in position, realised in 1991- 92 was 4160 kWh/kW. If this rate of utilisation of capacity is maintained during the Eighth Plan, the installed capacity requirement in 1996-97 works out to nearly 1,04,235 MW. This requires a capacity addition of about 35,153 MW during the Eighth Plan period.

8.65.4 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 30,538 MW would be feasible during the Plan period as per the details indicated in Table 20.

Table 20 Benefits From Sanctioned CEA Cleared and New Schemes During Eighth Plan

(MW)

Source	Ongoing/ sanctioned schemes	CEA Cleared/New Schemes	Total
Hydro	9131	151	9282
Thermal	15395	4761	20156
Nuclear	1100	-	1100
Total	25626	4912	30538

8.65.5 The capacity additions indicated above will, however, be contingent upon fuel linkages being firmed up and early start of work being taken up on new projects. Based on this, the cumulative generation capacity by the end of 1996-97 will be as shown in Table 21.

8.65.6 Out of the total addition of 30538 MW during the Plan period, 12,858 MW will be added in the Central Sector bringing the share of the Central sector to nearly 32% in the total installed capacity by 1996-97. In the State sector, capacity addition during the Eighth Plan is envisaged to be 17,680 MW. This includes a

Table 21 Generating Capacity Anticipated at the end of the Eighth Plan (MW)

	Hydro	Thermal	Nuclear	Total
Capacity as on 31.3.1992	19189	48108	1785	69082
Additions during Eighth Plan.	9282	20156	1100	30538
Total Capacity on 31.3.1997.	28471	68264	2885	99620

capacity of 2,810 MW in the private sector for which no public sector outlay is provided.

8.65.7 Table 21 shows that the share of hydel capacity in the total capacity in the country will marginally increase from 27.8% at the beginning of Eighth Plan to 28.6% at the end of the Eighth Plan. This implies a reversal in the trend observed till now of a declining hydel share. It will be necessary to ensure that the targetted hydel capacity is fully achieved by making special efforts during the Eighth Plan. These efforts should be supplemented by accelerating the development of hydel capacity additions in order to achieve the goal of increasing the share of hydel capacity to 40% by the end of the Ninth Plan as envisaged in the Directional Paper for the Eighth Plan.

8.65.8 It may be seen that there is a gap of 4,615 MW between the installed generating capacity requirement of 1,04,235 MW and the feasible cumulative capacity of 99,620 MW likely to be available by the end of the Plan. The gaps should be bridged largely through efficiency improvements and demand management. The average thermal Plant Load Factor (PLF) in the country has already shown an improvement. With the increasing share of more modern and larger size generation units in the power system and continuing emphasis on R&M works, it should be feasible to enhance the level of utilisation of the generation capacity by about 5% during the Eighth Plan. Similarly, with emphasis on system improvement schemes being taken up in rural and urban areas and an overall improvement in the load density in different parts of the country, a reduction of 2-3% in the average T&D losses at the national level should also be feasible. These improvements, taken together, will have the effect of saving about 3000 MW equivalent of new capacity additions during the Plan period, thereby reducing the gap to about 1615 MW. The endeavour should be to bridge this gap to the extent feasible, through appropriate measures of energy conservaton and demand management and balance through additional capacity to be set up in the private sector, as presently envisaged by the Government.

Private Sector Participation

8.65.9 The public sector alone will find it difficult to raise sufficient resources to invest on new power generation projects for meeting the rapidly increasing demand for electricity in the coming years. The Eighth Plan, therefore, places considerable emphasis on attracting private investments for power development. The major changes in policy announced recently by the Government are expected to promote private sector participation in power development in the coming years. As already stated, the feasible addition of 30,538 MW during the Eighth Plan includes 2,810 MW of private sector projects. It is expected that about 3,000 MW of additional capacity will materialise over and above what has already been envisaged as indicated above in the private sector during the Plan period. This will supplement the capacity additions in the public sector.

Renovation and Modernisation Programme

8.65.10 The R&M programme for rehabilitating the ageing thermal and hydel units initiated in the Seventh Plan will be enlarged in its scope to cover T&D systems and will be pursued further during the Eighth Plan. This programme is expected to be implemented within the first 2-3 years of the Plan period for yielding early benefits. While the CEA and the Department of Power will provide the necessary technical and administrative support, the Power Finance Corporation(PFC) is expected to play an important role in financing the programme.

8.65.11 Within the existing 120 hydro power stations under operation in the country with a total installed capacity of 15,200 MW, 49 power stations of a capacity of 8,834 MW have been identified for coverage under R&M to yield an

additional peaking capacity of 500 MW and energy generation of 300 Mkwh annually.

Integrated operation of the regional power systems

8.65.12 The country is at present facing a peaking shortage of the order of 20% which is likely to persist till such time that adequate capacity can be added for meeting the rapid growth in demand for electricity. In a regime of shortages, proper grid management becomes vital. There is urgent need for agreement among the constituent members of each region for observing grid discipline while managing the load in their respective systems to facilitate integrated operation of the regional power systems. This can be achieved through financial incentives including a two-part time-of-day tariff system. Appropriate price policy can also play an important role in levelling off peak demand.

Reduction in T&D losses

8.65.13 The distribution systems in the country are overloaded and are quite inadequate to handle the increasing load demands. The quality of power supply to the consumers has been far from satisfactory and the T&D losses have been on the increase. The T&D losses comprise of two components:

a) Technical losses;

b) Losses due to theft and other factors unaccounted for.

8.65.14 The technical losses are due to energy dissipation in the transmission and distribution lines, transformers and other equipment used in the system. The other losses are caused by meter-reading errors, defective meters, unmetered supplies and pilferage of energy.

8.65.15 Various steps were initiated during the Seventh Plan to reduce T&D losses. Theft of energy was made a cognizable offence under the Indian Electricity Act, 1910 which provided for stringent punishment of all offenders. The Department of Power had introduced in 1989 an incentive scheme for the reduction of T&D losses. Upgradation and revamping of urban distribution systems and system improvement schemes in the rural areas had been undertaken for major urban centres with financial support of Power Finance Corporation and Rural Electrification Corporation. The Eighth Plan programme will comprise specific schemes taken up in this direction on a much larger scale. The average T&D losses at the national level remained at 22-23% during the Seventh Plan. Appropriate measures will be initiated during the Eighth Plan to reduce the losses progressively to 15% by the end of the Ninth Plan.

Financial Performance of Electricity Utilities

8.65.16 The financial health of electricity utilities is crucial for the successful implementation of the power development programme during the Eighth Plan.

8.65.17 Under the provisions of the Electricity (Supply) Act, 1948, the State Electricity Boards are required to earn a minimum rate of return of not less than 3% on their fixed assets after fully meeting the fixed and operating costs and interest and tax liabilities. However, most of the SEBs have not been able to comply with this statutory requirement. Many of them have large operating deficits. Apart from operational deficiencies, the tariff structure of many SEBs continues to be irrational involving heavy subsidies which promote inefficient use of electricity. In the case of some State Electricity Boards, despite their good operational performance, their financial performance has deteriorated in recent years as a result of the irrational tariff structure adopted by them.

8.65.18 It is imperative that the utilities generate adequate resources internally to be able to fully cover the fixed and operating costs including interest and other liabilities and have adequate surplus for funding their future expansion programmes.

8.65.19 Apart from the rate of return and profitability, many electricity undertakings are facing liquidity problems as a result of their inability to recover dues from consumers. In many SEBs, the level of outstandings has already reached alarming proportions. In turn, these undertakings have also been defaulting on payments to be made to Central undertakings like CIL, NTPC, NHPC, BHEL etc, from whom they purchase coal, electricity and power equipment.

8.65.20 It is important that an efficiency-oriented tariff structure is evolved for the bulk sale of electricity from the Central undertakings like NTPC and NHPC to the State Electricity Boards to ensure optimum utilisation of the generation facilties in the Central and the State sectors and promote the financial health of both the Central and the State undertakings. A precondition to this is a rational tariff structure to be adopted by the State undertakings in respect of their own consumers.

8.65.21 Special mention needs to be made in this connection regarding the tariff applicable to agricultural consumers. In many States, there is a tendency to provide very heavy subsidies to such consumers. The importance of the agricultural sector is well recognised and all possible support including adequate and assured electricity supply should be extended to this sector. However, the low tariff of electricity used in agriculture has led to inefficiency in the use of not only electricity but other resources such as water and fertilisers. The prevailing subsidised price structure has acted as a strong disincentive for conservation of electricity. The Conference of State Power Ministers held in September, 1991 resolved that the SEBs should adopt an all-India minimum agricultural tariff and earn a 3% rate of return on their fixed assets. This resolution should be translated into action at the earliest so that the electricity undertakings in the country may function on viable lines. Further details are given in the section on Rural Electrification.

Project Implementation

8.65.22 Even though there was a significant improvement in the rate of capacity addition during the Seventh Plan, there had been appreciable delays in project implementation and consequent cost overruns in both the Central and the State sectors. This is a matter of concern especially in view of the large capacity additions contemplated in the future and the need to optimise the use of scarce resources.

8.65.23 In the case of externally aided projects, the adverse economic implications of project delays are much more serious. The factors responsible for these delays are many and have already been discussed earlier. Some of these factors are outside the control of the utilities themselves. During the Eighth Plan, utmost priority should be given to the streamlining of the project clearance and approval procedures at both the Central and the State levels. A system of delegation of administrative and financial powers should be evolved at various levels to rationalise and streamline the procedures. It is also necessary to ensure that all ongoing projects are fully funded and provided timely financing by the concerned authorities. The extent to which the utilities can improve their internal resource generation will contribute to easing of the problem of timely funding of projects. This is a vital requirement for speedy project implementation during the Eighth Plan.

8.65.24 For timely completion of projects, the most critical factor is an appropriate organisational and management structure. The Department of Power, the State Governments and others concerned should review this aspect critically and take corrective measures.

Small Hydels

8.65.25 Though attention has been focussed on small hydro units from the mid-sixties in the context of electrification of the isolated hill areas especially in the Himalayan region, the progress has been tardy . The potential of small hydels is reported to be about 5,000 MW, against which the installed capacity was only about 220 MW at the end of Seventh plan. The projects likely to yield benefits during the Eighth Plan would contribute about 150 MW of capacity. Several schemes are under investigation and assistance needs to be provided to the States to expedite investigation work so that work on as many small hydel units as possible can be initiated at the earliest. However, these projects are taking a longer time than expected resulting in cost over-runs. The reasons for this need to be analysed and corrective steps taken.

Central Sector

8.65.26 Even though the share of the Central Sector in total installed capacity has gone upto about 25.5% by the end of the Seventh Plan, the operation of the Central sector generating units has not been as smooth as one would have desired. The Central generating units had to back down at times as a result of the States' preference to operate their own units during the off-peak hours. This was partly on account of the deficiencies in the bulk power tariff structure. There were also problems of surplus power

from the Central units flowing smoothly to the deficit States due to inadequacies in the transmission systems. Some of these factors have also adversely affected the viability of the Central undertakings. These problems need to be analysed carefully and resolved at the earliest.

Nuclear Power

8.65.27 Self reliance continues to be the thrust area in nuclear power development. Development work on 500 MWe units and the on-going work on Fast Breeder technology will have to be continued with vigour during the Eighth plan. However, a major area of concern in this sector has been the inordinate delays in project implementation and the consequent cost over-runs. It is also necessary to set up adequate support facilities in terms of fuel fabrication and reprocessing.

Captive Power Generation

8.65.28 During the Seventh plan, the captive power generation capacity increased from 5,120 MW to about 6,487 MW. The generation actually increased from 12.35 Bkwh to 20.80 Bkwh during the Seventh Plan representing an increase of 68.42 percent. By the end of 1990-91, electricity generation from captive units reached a level of 24.1 Bkwh.

Organisational Structure

8.65.29 In terms of both coverage and size , the operations of the electricity undertakings in the Central and the State sectors have grown phenomenally over the years leading to over-centralisation and inefficiencies. There is a need to review the organisational and managerial structure of the industry and take appropriate steps to enable it to accomplish the tasks set out for the future.

Technology

8.65.30 Considering the large additions envisaged in respect of the generation and transmisson capacity of the power system, there is need for upgrading relevant technologies. The Department of Power has already initiated the necessary technical work in this regard. The work on finalisation of parameters of transmission line equipment and materials needs to be expedited. The on-going HVDC transmission works involve imported technical know-how. It is necessary to develop a strong indigenous technological base in this area. The first phase of Lower Sileru-Barsoor HVDC line as part of the National HVDC Project has since been commissioned . It is necessary to bring it to full load commerical operation quickly and expedite the work of the second phase so that the process of indigenisation of this technology may be quickened.

Manpower development

8.65.31 Many of the electricity utilities have surplus manpower. There is also considerable scope for upgradation of the skills of the personnel in this sector. During the Eighth Plan, therefore, it is essential that the manpower needs for implementing and operating the incremental generation and T&D facilities are assessed carefully and the available manpower deployed optimally. There is need to strengthen the available training facilities so that a comprehensive programme of manpower development is taken up in a systematic manner. This is essential in view of the rate at which technological upgradation is taking place in this sector. It is also necessary that the electricity utilities in the Central and the State sectors are provided inputs from disciplines other than engineering such as electricity economics, commercial relations, environmental sciences etc for enabling them to discharge their functions more effectively.

Environmental Management

8.65.32 In recent years, issues relevant to the adverse environmental impact of power projects have assumed considerable importance and have been a subject of public debate. The Eighth Plan will address itself to these issues directly and provide necessary safeguards so that environmental safety and stability may be ensured in implementing power projects in the future. A comprehensive policy is being evolved for the rehabilitation of families displaced by power projects. The Eighth Plan will place considerable emphasis on implementing such a policy. Special importance will be accorded to programmes aimed at catchment area treatment in the case of all major hydroelectric projects so as to contain the process of environmental degradation that has already taken a severe toll in many parts of the country. In the case of thermal power projects, in addition to installing facilities to restrict pollution to reasonable levels, special steps will be taken to reduce ash pollution by setting up facilities to convert fly ash into fly

Table 22 Outlays for Power Sector

(Rs. crores)

	States	UTs	Centre	Total
Generation	24732.78	354.24	24337.13	49424.15
Transmission & Distribution	16782.41	1061.53	4436.81	22280.75
Rural Electrification	4000.00	-	-	4000.00
Renovation & Modernisation	1225.74	13.40	537.30	1776.44
Miscellaneous	220.93	16.71	1870.34	2107.98
Total	46961.86	1445.88	31181.58	79589.32

ash bricks to replace conventional clay based building material. Steps will also be taken to promote other uses of fly ash so as to convert this waste into a useful product, and at the same time, reduce the environmental degradation near the generating units. High priority will also be given to enforcing rigorous safety standards in the case of all nuclear power projects.

Research and Development

8.65.33 The R&D activities currently are confined to applied research in selected areas. R&D support is required for working out progressive and sophisticated technologies which would enhance efficiency in the power sector and reduce costs. R&D work is required for maximising electricity generation, enhancing energy efficiency, oil substitution and maintenance of environment balance.

8.65.34 Presently, research activities are organised by Central Power Research Institute and Central Board of Irrigation and Power in cooperation with academic institutions, manufacturing industries and the utilities. A Scientific Advisory Committee has been constituted by the Department of Power for advising the Government on the various R&D programmes to be undertaken in this sector. The areas of priority for R&D during the Eighth Plan will be as follows:-

(i) Materials & Equipment

(ii) Systems & Controls

(iii) Electronics & Communications

Plan outlay

8.66.1 Keeping in view the priorities for the Eighth Plan as indicated above, the outlays for the power sector for the Eighth Plan are given in Table 22.

The Central sector outlay of Rs.31,181.58 crores includes outlays for the power programme of Neyveli Lignite Corporation and Nuclear Power Corporation. The outlay for rural electrification is included in the States/UTs outlay. The State-wise outlays are shown in Annexure 8.4.

8.66.2 The financial outlays provided now for the Plan programme for the power sector fully cover the requirements of all ongoing schemes which will yield benefits of 24,316 MW capacity (8,969 MW of hydro, 14,247 MW of thermal and 1,100 MW of nuclear) during the Eighth Plan. In addition, these outlays are expected to take care of a major portion of requirements of new generation schemes which are expected to yield additional capacity benefits of 3,412 MW (151 MW of hydro, and 2,261 MW of thermal). In order to achieve the targetted hydel share of 40% in the total installed generation capacity by the end of the Ninth Plan, it is recognised that advance action needs to be initiated during the Eighth Plan itself on a number of new hydel projects with a total capacity of at least 15,000 MW. The additional funds required for these projects will have to be found as and when these projects are ready for implementation. Such

requirements of resources will have to be met from the internal generation of surplus within the power sector itself through technical improvements and rationalisation of tariff structure.

8.66.3 While the need for a progressive step-up in the share of hydel capacity in the total generation capacity in the country is well recognised, the consideration of environmental and other related problems associated with large storage reservoirs would require careful examination of choice of options for peaking support. The comparative economics of hydel plants and open cycle units based on liquid and gaseous hydrocarbons for meeting the peak and the intermediate load demand and the indigenous availability of both natural gas and oil will have to be given due consideration in actual policy formulation or project level decision.

RURAL ELECTRIFICATION

8.67.1 Rural electrification (RE) as a plan programme was introduced in the First plan. It was initially envisaged to provide electricity as a social amenity to rural areas and was confined only to a few States. Subsequently, it was extended to cover all the States.

8.67.2 The importance of this programme was especially recognised during the drought in the mid-sixties, when lift irrigation had to be resorted to on a large scale to save subsistence crops. The rural electrification programme gained special importance for providing electricity for operating agricultural pumpsets to utilise available groundwater potential.

8.67.3 This programme was subsequently integrated with the Minimum Needs Programme (MNP). The programme was further strengthened by the formation of Rural Electrification Corporation (REC) in 1969 which now provides over 90 per cent of the funds for rural electrification as concessional loans to the State Electricity Boards.

Review of the Seventh Plan

8.68.1 The total number of villages electrified at the beginning of the Seventh Plan was 3,70,322 which accounted for about 76.9% of the rural population. The number of energised pumps was 57.08 lakhs. A target of electrifying an additional 1,18,101 villages and energising 24 lakhs pumps was set for the Seventh Plan. Nearly 100,000 villages and 25 lakh pumpsets were electrified during the Seventh Plan. The cumulative number of villages thus electrified cover 81% of the total number of villages. The total number of pumpsets energised has reached 83.46 lakhs by the end of the Seventh Plan.

8.68.2 Electrification of tribal villages and Harijan bastis continued to receive special attention. Out of 1.11 lakh tribal villages, about 70,000 have been electrified. The number of villages in which street lighting facilities have been extended to Harijan bastis was around 2.5 lakhs. However, so far only about 27% of rural households have been electrified, as electrification of a village as per current definition implies that only one or more households in the village have this facility.

8.68.3 Apart from pumpset energisation, emphasis was laid on the promotion of industrial loads in villages by extending electricity connections for setting up low tension (L.T) industries.

Assessment of the Rural Electrification Programme

8.69.1 A review of the Rural Electrification Programme during the Seventh Plan and earlier, has brought out the following issues, which have to be addressed to, during the Eighth Plan.

(i) The low tariff charged on the sale of electricity to agriculture sector has not only resulted in heavy financial losses to State Electricity Boards but also led to the wasteful use of electricity and also of water. There is also no incentive for energy conservation. Annexure-8.5 gives the losses due to rural electrification in the States.

(ii) The RE programme resulted in an increase in T&D losses in the power system due to extension of the LT supply network in a sub-optimal manner. The T&D losses on an all India level are of the order of 22-23 per cent. Of this total loss, about half is attributable to the rural electrification distribution net work.

(iii) The connected load in agriculture sector is presently estimated at 30,000 MW. This

is a substantial load on the existing weak electricity distribution network resulting in low voltage and low power which adversely affects the quality of electricity supplied to the rural consumers.

(iv) In spite of large scale energisation of irrigation pumps, the number of diesel based pumps continue to increase. At present, there are over 5.5 million diesel pumps with a demand potential of 4.7 million tonnes of diesel oil annually (Annexure-8.6)

(v) Despite the emphasis on supply of LT power to rural industries, such industries are yet to come up on a large scale. The poor availability of power in rural areas is a major reason for their slow development.

(vi) The financing of rural electrification programmes, especially pumpset energisation, is becoming increasingly difficult because of the scarcity of concessional funds available for this purpose from financial institutions including NABARD and commercial banks and the higher interest rate for market borrowings.

(vii) Rural electrification needs to be treated as an integral part of rural energy supply, which is an essential component of rural development. There is, therefore, an urgent need for coordination in the supply of different forms of energy to the rural areas, as part of integrated rural energy programmes.

8.69.2 Apart from increasing the availability of electricity in rural areas for promoting rural development, it is essential that electrical energy thus made available is utilised efficiently. While providing the necessary resources and facilities to enlarge the coverage of rural electrification in the Eighth Plan, funds should be earmarked for specific programmes aimed at technological upgradation, strengthening of the power supply systems, demand management and energy conservation.

Rural Electrification in the Eighth Plan

8.70.1 Taking note of the above assessment and keeping in view the progress of implementation of the programme in the Seventh Plan, 1990-91 and 1991-92, the rural electrification programme in the Eighth Plan would consist of the following elements:-

(1) Provision of electricity for lighting as a minimum need not only to reduce the use of kerosene oil but also to enhance the quality of life in the rural areas.

(2) Improvement in the system of power distribution in the electrified villages to ensure quality and reliability of supply.

(3) Load development activities in electrified villages to promote the use of electricity for productive purposes other than irrigation, so as to provide wider opportunities for the rural communities for gainful employment and to improve their incomes. In this context, rural and agro-based industries will be specifically promoted in coordination with the rural electrification programme. Presently growth of rural industries average around one small industry per village in backward areas and about two per village in advanced areas with power capacity ranging from 5 H.P. to 25 H.P. Each industry employs around 1.45 persons on an average. These norms will be revised upwards, based on the specific condition in each State, for setting targets for rural industries.

(4) Electrification of the villages to the extent feasible, increasing the tempo of energisation of agricultural pumpsets to reduce dependence on diesel pumps and bring about saving in diesel oil and thus of foreign exchange.

(5) Reduction of T&D losses in power supplied to rural areas through optimisation of supply networks and conservation of energy through rectification of pumpsets.

(6) Development of decentralised generating sources like mini/micro hydel, gas based generation projects etc. in places where these sources are available to feed rural loads.

(7) Development of co-operatives, preferably operated by the panchayats and other local bodies for distribution of electricity in the rural areas so that there is an improvement in collection of dues, reduction in thefts of electricity and T&D losses.

(8) A rational tariff structure will be developed for the agriculture sector which would provide guidelines to States and SEBs for subsidies to this sector. A national policy for electricity tariff is being prepared for the Eighth Plan which would specifically provide for a minimum floor rate, for the supply of electricity to the agriculture sector.

(9) Policy guidelines would be developed for flow of concessional funds for rural electrification programme through market borrowings and from financial institutions including NABARD and commercial banks and implemented keeping in view the problems faced on this account in the past few years.

Programme Contents of the Eighth Plan

8.70.2 During the Eighth Plan it is proposed to electrify around 50,000 villages. These include about 10,000 villages in the remote areas, which have to be mostly electrified through non-conventional energy sources. It is also proposed to energise upto 25 lakhs pumpsets during this Plan.

8.70.3 Besides these two on-going programmes, the integrated system improvement programmes for improving the rural electricity distribution network, thereby ensuring quality and reliability of electricity supply in the rural areas and reducing distribution losses will be taken up as a thrust programme in the Eighth Plan.

8.70.4 Utilisation of electricity for productive purposes will be another major thrust for the rural electrification programme in the Eighth Plan. Under this programme, rural electrification will be closely coordinated with the rural industries programme including agro-based industries programme. A new scheme for linking rural electrification with the rural industrialisation programme, which would include electrification of small, village and cottage industry units in selected growth centres in each State would be taken up in the Eighth Plan. Annexure 8.4 gives the Statewise break-up.

8.70.5 An outlay of Rs. 4000 crores has been provided for Rural Electrification under the State Plan outlays for the Power Sector.

NEW AND RENEWABLE SOURCES OF ENERGY

8.71.1 The programmes for new and renewable sources of energy (NRSE) are important for various reasons. First, the overall scarcity of fossil fuels in our country has given rise to the urgent need for developing and exploiting alternative energy sources. Second considering the vast distances and the costs of transportation of energy to the rural areas in particular, locally available renewable and decentralised energy sources become especially attractive and need to be increasingly utilized for meeting growing rural needs.

Review of Seventh Plan

8.72.1 The Seventh Plan programmes for NRSE provided for intensive R&D for indigenous technologies, setting up of a large number of demonstration projects, testing of devices under field conditions, and creation of demand through Government support. Governmental measures included appropriate financial incentives and development of institutional infrastructure for large scale education, extension and training programmes on such energy resources.

8.72.2 The major programmes for new and renewable sources of energy which were developed and enlarged during the Seventh Plan and Annual Plans 1990-91 & 1991-92 included the National Project on Biogas Development, National Programme on improved chullhas, solar thermal energy utilisation, solar photovoltaics (SPV), wind energy and conversion of biomass into energy, energy plantation and biomass gasifiers. Significant progress was achieved in the generation of electric power from solar photovoltaics for lighting and pumping systems, micro hydel schemes, gasifiers based on wood and agricultural waste and wind generation, including wind farms and "stand alone" wind turbines. A new financing agency the Indian Renewable Energy Development Agency

(IREDA) was set up for providing financial support to indigenous technology development efforts and dissemination of non-conventional energy technologies. Another significant achievement in the Seventh Plan was the setting up of State level energy development agencies in most of the States in the country to provide the focal point for development and promotion of renewable energy technologies and their large scale dissemination in all parts of the respective States. A National Solar Energy Centre has been set up for the absorption of technology, pilot experiments, prototype development and testing in solar thermal in general and photovoltaic energy in particular. A large scale programme for R&D was mounted with the involvement of national, regional and State level institutions on different aspects of renewable energy technologies. Training programmes were organised especially for improved chullahas and biogas. Renewable energy has now been included in the curriculum in many technical institutions and engineering colleges of the country.

8.72.3 A summary of the achievements of major NRSE programmes so far is given in the table below:

S.No. & Programme	Unit	Seventh Plan 1985-90 Achievement	Annual Plan 1990-91 Achievement	Annual Plan 1991-92 Targets
1. Biogas plants	lakhs	8.94	1.65	1.47
2. Improved chullahas	lakhs	75.77	19.88	19.27
3. Solar water heating system(Industrial)	'000 Sq.M.	131.5	33.21	45.00
4. Solar cookers	'000 Nos.	15	40	45
5. Wind farms	MW	31.40	6.10	6.00

The programme-wise assessment is given below:

Biogas

8.72.4 The family-size biogas programme has now picked up in several States, including Tamil Nadu, Maharashtra and Andhra Pradesh. New models of biogas plants have been developed like the "Deen Bandhu" and the small size two cubic metre plants. Lack of proper maintenance and servicing facilities for such plants in rural areas continues to be a major problem. About 14 lakhs plants have been set up so far in the country.

8.72.5 Limited progress has been made in the promotion of community/institutional biogas plants. The majority of plants set up in this group are institutional plants. Community biogas plants have not been successful mainly because of lack of people's participation in the collection and utilisation of dung for these plants.

8.72.6 Research and development in biogas programme has been aimed mainly at diversification of feedstock and development of alternative and low cost construction material for biogas plants. The R&D efforts, however, have limited impact in the overall reduction of cost and improvement of efficiency of the biogas plants.

Improved Chullahs

8.72.7 The National Programme on improved chullhas was started in 1983-84. This programme, also included in the Minimum Needs Programme for domestic cooking energy, was expanded significantly in the Seventh Plan. The programme has been well received by the rural people and has, therefore, been extended to all states and UTs with about 12 million improved chullahas installed so far. As many as 58 models of such chullahas including 40 fixed type and 18 portable type have been developed to cater to the needs of different areas and regions. Voluntary organisations have been actively involved, besides various Government and semi-Government agencies in the promotion of this programme. Follow-up maintenance of improved chullhas has been a problem in some States in view of the large scale expansion of this programme.

Solar Thermal Energy

8.72.8 During the Seventh Plan, the manufacturing base for solar thermal devices has been

substantially developed, specially for solar cookers and solar heating systems which are now being produced and marketed. However, the demand has predominantly been for heating systems in the urban areas and for cookers in urban and semi urban areas. Measures for quality control were intensified, including the introduction of ISI standards for solar thermal devices. Research and development efforts for solar coating materials and improved designs of solar thermal systems have been stepped up. Solar passive architecture programme was taken up. Preparatory plan work for a solar thermal power plant is under consideration for a selected site in Rajasthan. The National Solar Energy Centre has now become operational in Haryana.

Solar Photovoltaics

8.72.9 The high initial capital cost of SPV cells continues to be a major constraint in the expansion of this programme. Significant progress has been made in the setting up of a pilot plant for the manufacture of amorphous silicon in the Seventh Plan period. Single crystalline SPV cells are already being manufactured in the country by Central Electronics Ltd. and BHEL. Some progress has been achieved in the development of cost-effective systems and modules with the involvement of private sector firms. Solar PV cells are being utilised under the rural electrification programme in remote villages where extension of the central grid is not economically viable.

Wind Energy

8.72.10 A major demonstration programme on wind energy generation was taken up in the Seventh Plan and about 32 MW capacity wind farms have been set up in Gujarat, Tamil Nadu, Orissa and Maharashtra. Wind machines of 55 KW unit size capacity have been developed by BHEL, which are being tested along with imported machines of higher capacity. The BHEL is now ready with 200 KW machines. Besides BHEL, three other private sector companies are taking up the manufacture of wind turbines with foreign colaboration, on the basis of their experience in the pilot plants already established. Necessary groundwork has also been completed for the phased indigenisation of wind energy generating equipment.

8.72.11 The wind programme received a set back in the Seventh Plan because of problems in the operation and maintenance of existing wind pumps. Against a target of 5100 wind pumps, only 2,540 wind pumps were installed during the Plan period. However, steps have been taken through the organisation of an all-India R&D project for improvement of design and performance of wind pumps and commercialisation of more cost effective models.

Assessment of NRSE Programmes

8.72.12 Most of the States have set up State Energy Development Agencies for the promotion and development of NRSE programmes. But, these agencies, except for a select few, have been functioning mostly as intermediaries between manufacturers and users in the marketing of NRSE devices, instead of playing their envisaged role as technology development and technical assistance agencies. Their scientific and technological orientation needs to be strengthened.

8.72.13 Moreover, linkages between R&D, which were carried out in academic and other research institutions and their commercialisation remained tenuous and weak both at the Centre and State levels. Manufacturing units still do not have adequate production capacity for NRSE technologies and adoption of adequate quality control measures by them have been not very satisfactory. However, steps were taken in the latter part of the Seventh Plan to standardise solar thermal equipment to ISI standards.

8.72.14 The contribution of renewable energy in meeting the total energy needs of the country has been marginal during the Seventh Plan period. A beginning has been made in the production of power from decentralised energy sources, particularly wind energy and solar photovoltaics, although their overall contribution in the total power supply is minimal. The wind energy programme is still dependent on imported technology. A large scale operational programme on wind energy cannot be taken up unless indigenous wind turbines are available and, therefore, efforts have to be intensified to develop indigenous capabilities in this area. Despite enormous potential and obvious advantages in remote hilly areas, little progress has been made in the area of micro hydel power supply. This source can supply cheap energy to rural

areas, even in the plains, by making use of canal droppings in particular.

8.72.15 Concerted efforts have to be made in the Eighth plan to overcome the above mentioned problems in the NRSE programme, particulary in the area of technology development, intensification of R&D and the commercial exploitation and promotion of the viable technologies.

Eighth Plan

8.73.1 In keeping with the above background, the major thrust of the programme for New & Renewable Sources of Energy in the Eighth Plan would be in the following two areas:-

1. Operational programmes of biogas, improved chullahas, 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.

2. 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.

8.73.2 In the first set of programmes dealing with cooking and heating energy namely biogas, improved chullahas and solar thermal, the main task would be to promote standardisation, provide technical support, including limited subsidy and developing strong linkages of manufacturers with R&D institutions.

8.73.3 While central financial and technical support would continue in the Eighth plan, it is proposed that as these programmes pick up in the States, they are eventually transferred to the State sector, after ensuring that the institutional set-up at the State and decentralised level has been well developed for the effective promotion, installation, maintenance and up-keep of these NRSE devices.

8.73.4 All out efforts would be made to promote large scale commercialisation of NRSE devices, especially of low grade solar thermal devices including solar water heaters, solar cookers and solar driers. Standardisation and commecialisation would also be promoted for portable wood stoves and small (1 to 2 cubic mts.) fabricated biogas plants especially for use by small farm households with one or two cattle.

8.73.5 For the second set of programmes which deal with power production especially based on wind energy and micro hydels, the thrust would be on developing and commercialising indigenous technologies in the Eighth Plan. The State Governments would be provided support to organise wind generation programmes in areas which have the requisite wind potential, by involving the private sector in these programmes in the decentralised production and wheeling of power and purchase of power at "avoided cost".

8.73.6 A major programme would be initiated for the production of power from micro hydels especially in the hill areas of the North Eastern Region and other Hill States besides feasible locations of canal falls all over the country. In this programme too, the focus would be on the standardisation of turbines and their indigenous commercial production.

8.73.7 Co-generation schemes would be promoted especially in process industries using biomass and agricultural residues, for example, sugar mills and food processing industries etc.

8.73.8 Solar photovoltaics systems would be utilised in far-flung areas where grid electricity is prohibitively expensive and other options are not available. However, in view of the high cost of existing SPV systems, the programme would be limited to selected applications till a breakthrough is obtained in the amorphous silicon technology. IREDA would be utilised to provide financial support in the development of cost effective technologies and power production projects.

8.74.1 A brief write up on the NRSE programme contents for the Eighth Plan is given below.

Biogas

8.74.2 Atleast 7.5 lakhs bio-gas plants will be set-up under the National Project on Biogas

Development. R&D efforts would be intensified for the development of low cost designs and improvement in operational efficiency of the plants. R&D programmes for utilising waste of animals other than bovines and increasing the proportion of vegetable waste of all kinds in the slurry feed will be undertaken. Community size biogas plants which could serve cooking and industrial needs of the rural areas would be actively promoted. Repair and maintenance of biogas plants is a major area of concern, for which voluntary agencies, youth and semi-skilled workers will be trained. The use of human excreta in biogas plants has been found to be a viable proposition which would be promoted through civic authorities and local bodies. Village communities, and rural groups would be actively involved to promote use of biogas especially through community facilities such as "sulabha shauchalaya" and other similar initiatives where disposal of night soil and garbage would be combined with biogas generation.

National Programme on Improved Chullahas

8.74.3 The National Programme on Improved Chullahas would be expanded to cover upto 10% of total rural households in the country during the Eighth Plan. R&D efforts would be intensified to improve efficiency of wood stoves and to diversify the feedstock such as non-woody biomass and crop residues in place of firewood. Local production of portable stoves based on standard designs will be encouraged to promote employment. Repair and maintenance of improved chullhas and wood stoves will be taken up as a major activity which can be more readily organised if production is decentralised. Semi-skilled youth from the rural areas would be especially involved on a large scale in such activities. The use of wood stoves or chullhas as well, so as improved kerosene stoves would be promoted among the urban poor as well as to reduce their dependence on firewood and cowdung. A target of 10 million improved chullahas has been set for the Eighth Plan. This programme will be transferred to the State in a phased manner during the Eighth Plan.

Solar Thermal Programmes

8.74.4 Solar thermal energy programme consists of extension programmes, field demonstration and testing for refrigeration, solar passive building design etc. Low grade solar thermal devices such as domestic/industrial solar water heaters, solar cookers, solar driers, solar timber kilns, solar desalination system would be commercialised on expanded scale during the Eighth Plan. Solar Thermal Power Plant would be taken up under the R&D programme for the development of indigenous technology in this field. Operational programmes for low grade solar thermal systems and solar cookers will be transferred to the States as the infrastructure for the successful implementation of this programme develops in the States.

Solar Photovoltaics

8.74.5 In the area of solar photovoltaics, development of thin film amorphous silicon cell would be the thrust area. However, the extension programme with existing technology based on single and poly crystalline cells would continue to be promoted especially for lighting and pumping needs for irrigation and drinking water in rural applications. The use of solar photovoltaic for electrification of remote villages and power generation system of 10-100 KW capacity would be taken up wherever feasible and necessary. R&D efforts would continue to focus on the development and utilisation of amorphous silicon facility, polycrystalline cells and improvement of system efficiency. A National testing facility would be created for testing and caliberation of solar photovoltaic components and devices.

Wind Energy

8.74.6 Wind power generation programme would be taken up on an operational scale, with a time-bound phased manufacturing programme for the indigenous manufacture of wind turbines. Wind power production will be taken up as a thrust area during Eighth Plan. A target of atleast 100 MW (including private sector contribution) is envisaged by utilising mainly indigenous machines. The operational programme of wind pumps for drinking water and irrigation would be modified and expanded in the Eighth Plan. R&D for deep well and low velocity wind pumps would be intensified.

Micro Hydels

8.74.7 The work of setting up micro hydel projects upto 3 MW capacity was transferred to the Department of Non-Conventional Energy Sources in the last year of the Seventh Plan. The total small hydro potential in the country is

estimated at around 5,000 MW. A canal cluster approach would be adopted for bringing about reduction in cost and time in the implementation of these projects during the Eighth Plan period. The programme would be designed both for the utilisation of electrical energy as well as direct coupling of loads with water turbines wherever applicable. Standardisation of micro hydel units will be taken up and new designs developed and promoted. Emphasis will also be given on repairs and modification of existing micro hydel projects.

Biomass

8.74.8 The programme would focus on R&D and demonstration on fast growing species for energy plantation, and on the development of agricultural wastes and non-woody based gasifiers for power production. Close coordination and linkages of the biomass research with the National Wasteland Development Board programme in social forestry would be ensured.

Urban Waste

8.74.9 The programme would focus on research and development and commersialisation of incineration and other waste disposal technologies. Energy recovery and sewage system plant for gas production would be taken up in major cities and towns based upon waste recycling concepts in collaboration with State governments and local municipal bodies.

Battery Powered Vehicle

8.74.10 Better design of chopper control, fast battery chargers and development of AC drive system would be undertaken before expanding battery powered vehicles programme on an operational scale. R&D would focus on improving efficiency and reducing cost, for improving techno-economic viability of battery powered vehicles.

Miscellaneous Programmes

8.74.11 These include development of alternate fuels, geo-thermal energy, ocean energy, chemical sources of energy, hydrogen energy and magneto hydro dynamic. These technologies are still in the development stage but have considerable potential in the long term. During the Seventh Plan, a broad based R&D programme in various institutions was organised for these technologies. It is proposed to intensify these R&D efforts in the Eighth Plan with the involvement of the academic institutions, CSIR system and other public and private R&D institutions.

Indian Renewable Energy Development Agency (IREDA)

8.74.12 The IREDA would act as a principal partner in collaboration with other financial institutions in extending financial assistance for NRSE projects. Financial viability of this agency would have to be improved by upward adjustment of interest rates in line with market forces. IREDA would also specially focus on financing development of new technologies for harnessing renewable sources of energy and for supporting projects for improving design, efficiency and cost effectiveness of existing commercially viable NRSE technologies.

8.74.13 An outlay of Rs. 857 crores has been provided in the Central Sector for the Department of Non-Conventional Energy Sources. Programmewise break up is given in the Annexure 8.7. In addition, a provision of Rs.305.11 crores for New and Renewable Sources of Energy is made under the State Sector against the Seventh Plan outlay of Rs. 412.35 crores.

ENERGY CONSERVATION

National Energy Efficiency Programme

8.75.1 Energy conservation is a major thrust area in the Eighth Plan in view of all round shortages of commercial energy, continuing problems of oil availability and the present wasteful use of energy in the different sectors of the economy. While a number of energy conservation activities have been taken up in the past few years, the impact of these efforts has been limited mainly because of their sporadic and ad-hoc nature and the present uncoordinated approach. It is therefore proposed to launch a comprehensive National Energy Efficiency Programme (NEEP) in the Eighth Plan, which would coordinate and organise existing and new efforts and activities on energy conservation in the different sectors of the economy for achieving targetted energy savings of about 5000 MW in the electricity sector and 6 million tonnes in the petroleum sector during the Plan period. The design and implementation of the National Energy Efficiency Programme will take into account the experience so far which is given below.

(Rs in Crores)

	1988-89	1989-90	1990-91	1991-92
Approved Outlay	10.00	10.00	10.00	10.00
Actual Expenditure	7.65	4.69	6.29	N.A.

Review of Energy Conservation Activities during the Seventh Plan

8.76.1 Energy Conservation activities assumed importance after the first oil crisis in 1973-74, However, no separate budget allocation was made for them initially in the Seventh Plan. The Petroleum Conservation Research Association [PCRA] was among the first Government agencies to take up energy conservation schemes funded by the Oil Industry Development Board [OIDB] from 1976 onwards. A separate cell for energy conservation was created in the Department of Power [DOP] in 1986-87. The Energy Management Centre was established in the Department of Power for promoting energy demand management and energy conservation in 1989-90. The approved outlay and expenditure incurred on Energy Conservation activities by DOP is as follows :

8.76.2 In the Seventh Plan, various Government, public as well as private bodies have taken up different energy conservation schemes, for example, plant modernisation and revamping, partially subsidised energy audits and studies, pumpset rectification schemes etc. Studies in six major energy intensive industries taken up by the Bureau of Industrial Costs and Prices (BICP) have revealed considerable potential for saving energy. A special credit scheme was introduced through the Industrial Development Bank of India (IDBI) for financing energy conservation schemes in the industrial undertakings. A number of policy initiatives, such as relaxation procedures for import of instrumentation required for energy efficient equipment and fiscal incentives schemes were also taken up by the Government for promoting energy conservation.

8.76.3 As noted above, although general awareness about energy conservation has increased in the country, there exists considerable untapped potential for curbing wasteful use of energy in the various sectors, estimated to be of the order of 20-30% of the total consumption of commercial energy. In order to achieve this potential, norms and targets need to be fixed for each sector and subsector. However, these efforts would be successful at the micro level only if these are cost-effective to the actual users. This in turn would be possible only if commercially viable energy efficient technologies are financed at concessional rates and made attractive through fiscal and pricing incentives and selective legislation. Moreover, an overall policy framework would be necessary to provide guidelines for preparing energy efficiency norms and targets for the different sectors of the economy as part of the overall national energy efficiency plan.

Eighth Plan Programme

8.77.1 Taking into account the above background and experience and assessment of energy conservation efforts during the Seventh Plan, as well as the potential and thrust areas identified in the energy consuming and production sectors, the National Energy Efficiency Programme during the Eighth Plan would include components of policy package, financial arrangements including creation of a revolving fund, technical assistance, technology development, selective legislation and developing institutional capabilities. A brief write up on each of these components is given below:

Policy Package

8.77.2 The policy package would include guidelines, inter alia on energy pricing and fiscal incentives/disincentives which would form the basis for the energy efficiency plans to be drawn up by main energy users and agencies in each sector and sub-sector of the economy.

Financial Arrangements

8.77.3 A major constraint to the success of energy conservation efforts so far has been the lack of adequate resources available with users to invest in energy efficient equipment. Although IDBI has an ongoing scheme to provide loans for energy efficient technologies, the scheme has met with limited success because of the unattractive terms of repayment and interest and other conditionalities among other reasons. A revolving fund is proposed to be created to

finance energy efficient equipment to be disbursed through financial institutions like IDBI/ICICI and the banking system. Besides the revolving fund, budgetary support would be provided to the major energy consuming and user departments for strengthening their energy conservation programmes.

Technical assistance

8.77.4 Capabilities for providing technical assistance and training would be developed and strengthened in the energy supply and user departments. Technical assistance capabilities would also be developed at the State level through the setting up of energy conservation cells in State Electricity Boards (SEBs) and State Energy Development Agencies.

Technology Development

8.77.5 Indigenous capabilities for design and manufacture of energy efficient equipment would be promoted under the National Energy Efficiency Programme. R&D organisations including the CSIR system, public and private academic institutions which are already carrying out R&D activities on energy conservation would be coordinated and strengthened. Barriers for the commercialisation of energy efficient technology would be studied and a broad based programme for R&D and demonstration of energy efficient technologies would be taken up. R&D facilities in academic institutions, especially engineering colleges and universities would also be developed.

Energy Legislation

8.77.6 A draft legislation spelling out the consumption standards, and requirements for trained personnel ensuring, mandatory energy audits and including a proposal for institutional set up for its enforcement was prepared by the Advisory Board on Energy (ABE) and was subsequently modified by the Department of Power (DOP). This draft legislation would be further modified in the light of recent experiences in energy conservation efforts in the country and abroad and a new package of selective legislation would be prepared for the Eighth Plan.

Institutional Set-up

8.77.7 The major functions of policy, planning, implementation and monitoring of the National Energy Efficiency Programme in the Eighth Plan would require suitable institutional support. The institutional setup for this programme will be formed by strengthening existing agencies at the National, State, district and grass roots levels, involved with energy conservation activities which will be entrusted with specific responsibilities. Instead of proliferating administrative agencies, responsibilities would be fixed on the different existing agencies in the energy supply and user departments in the matter of energy conservation. The specific institutional setup and coordination arrangements at the Central and State level for the National Energy Efficiency Programme would be developed in consultation with the State and the Central government departments and agencies as well as various Non-Government, private and public sector organisations.

8.77.8 The strategy and broad programme contents in the energy intensive sectors, as part of the National Energy Efficiency Programme would be as follows:

Industry

8.77.9 The Industrial Sector consumes about 50% of the total commercial energy in the country and has very high specific energy consumption levels in India as compared to other developing and developed countries. An estimated conservation potential of 25-30% exists in this sector. Significant energy savings can be achieved through better housekeeping, improved capacity utilisation, development of cogeneration facilities, industrial waste heat management and arrangements for improving the quality of electricity supply. The first step would be to build a data base in order to develop realistic energy consumption norms for different industries. Suitable policies for each industrial subsector for promoting energy conservation in the form of fiscal incentives, legislative changes and financial arrangements would be developed and the necessary infrastructural support will be organised.

Agriculture

8.77.10 Agricultural sector accounts for about 10% to 15% of the total energy consumption in the country. An estimated energy saving potential of 30% exists in this sector. At the end of the Seventh Plan, the number of agricultural pumpsets in the country has registered a phenomenal rise to 8.35 million. The operational efficiency of these pumpsets has been found to be only 20-30% and can be enhanced by rectifi-

cation of footvalves, suction and delivery pipes and by matching of pumpset capacity with the local water table. These efforts would lead to about 20% saving of the energy consumed. Wasteful use of energy in this sector has also become chronic due to concessional and flat rate tariff on electrical power for agricultural purpose. As part of the National Energy Efficiency Programme, rectification of pumpsets and improvement in farm machinery would be taken up as a major scheme during the Eighth Plan, along with fiscal incentives and suitable funding arrangements for energy efficient equipment.

Transport Sector

8.77.11 Transport sector constitutes about 25% of the total energy consumption in the country. An estimated energy conservation potential of about 20% exists in this sector. High Speed Diesel oil(HSD) is the main petroleum product consumed in road and rail transport. The consumption of HSD per tonne of freight carried or per passenger kilometre is higher in case of road transport as compared to rail transport. Therefore, the volume of rail traffic would need to be increased through various measures of capacity augmentation like improving speed of goods trains, using improved locomotives, strengthening the tracks, promotion of containerisation etc., so that the imbalance created by the gradual shift of traffic from railways to road may be offset. The road transport sector includes State Transport Undertakings (STUs), and private sector operators. The performance of the road vehicles can be improved by using better aerodynamically designed vehicle bodies, fuel efficient engines, inculcation of better driving habits, better vehicle maintenance procedures, synchronisation of traffic signals in cities, abolition of octroi posts etc. Research and Development projects aimed at finding the possibility of using ethanol in proportions ranging from 10-20% with HSD/petrol, recycling of lubes, development of synthetic high performance lubes, the feasibility of interfuel substitution of HSD and Naphtha with Compressed Natural Gas (CNG), cost effective and long life batteries for battery operated vehicles would also be undertaken. The National *Energy Efficiency Programme in the Eighth Plan would provide for infrastructural support for these R&D activities. The potential of transport through inland water ways and coastal shipping would also be tapped to the maximum extent possible for promoting energy efficiency in this sector during the Eighth Plan.

Domestic and Commercial Sectors

8.77.12 Non-commercial energy is the major source of energy consumed in this sector. The efficiency of firewood fuelled chullahas and stoves, kerosene stoves and LPG stoves would be enhanced. Development and enforcement of similar energy efficiency standards for other domestic appliances would also be taken up. Energy labelling and ISI certification of all energy using devices would be made mandatory. These mandatory requirements and other related measures would be appropriately incorporated in the National Energy Efficiency Programme during the Eighth Plan.

Other Sectors

8.77.13 Besides the energy consuming sectors, energy conservation efforts will also be taken up in the various energy producing sectors as outlined below.

Oil and Gas

8.77.14 The product yield pattern in all refineries would be optimised through modernisation including utilisation of digital process control systems. Reduction of refineries boiler losses would be a thrust area. Inter-fuel substitution and promotion and use of natural gas in place of petroleum products wherever feasible would be provided.

Coal

8.77.15 In the case of the coal sector, the various activities relating to conservation such as introduction of mining technology with higher recovery, higher coal washing utilisation, mine fire control and sand stowing etc. would be taken up during the Eighth Plan.

Electricity

8.77.16 Transmission and distribution losses, the heat rate of thermal power plants and secondary fuel consumption in the form of furnace oil are all very high in the power sector. Efforts will be made, as part of the National Energy Efficiency Programme, to reduce values of these parameters to the optimum level by the introduction of system improvement works, direct ignition of pulverised coal, higher unit size of power plants and other methods.

Buildings and Construction Industry

8.77.17 The use of solar passive architecture, alternative energy efficient materials and energy saving labour practices will be promoted in this sector as part of National Energy Efficiency Programme during the Eighth Plan.

Science and Technology

8.77.18 An energy efficiency cell would be set up in CSIR/DSIR for coordination and promotion in the development of new technologies, new materials for energy efficiency and data base. Similar cells and groups will also be setup in other undertakings and in the States, under their respective S&T Departments and S&T Councils. A comprehensive R&D programme in academic and scientific institutions would be taken up as part of this National Energy Efficiency Programme in the Eighth Plan.

8.77.19 The sector-wise break up of the targetted energy saving of 5000 MW capacity in the power sector and 6 million tonnes in petroleum products in the National Energy Efficiency Programme during the Eighth Plan would be prepared, in keeping with the above guidelines.

8.77.20 An outlay of Rs.1000 crores has been provided for energy conservation during the Eighth Plan which includes activities on energy conservation being carried out in different energy departments.

Annexure 8.1

Physical Programme of Crude Oil Production During Eighth Plan

(Million Tonnes)

	1992-93	1993-94	1994-95	1995-96	1996-97	Total
ONGC						
ONLAND	10.48	11.49	12.48	13.19	14.13	61.77
OFFSHORE	15.07	17.02	28.47	29.15	29.25	118.96
TOTAL	25.54	28.50	40.95	42.35	43.38	180.73
OIL	2.92	3.12	3.40	3.45	3.70	16.59
TOTAL	28.46	31.62	44.35	45.80	47.08	197.32

NOTE:

1. NGL Production Is Included In Total Crude Oil Production

2. Excludes Production Of 1.5-2.0 Million Tonnes From Work-over Wells And 0.75 Million Tonne In Private Sector In 1996-97.

Annexure 8.2

Physical Programme of Gas Production During Eighth Plan

(Million Cubic Meters)

	1992-93	1993-94	1994-95	1995-96	1996-97	TOTAL
ONGC						
ONLAND	4376.39	5149.00	5664.78	6654.77	6801.69	28646.63
OFFSHORE	13317.95	13526.95	18188.20	21162.70	21140.80	87336.60
TOTAL	17694.34	18675.95	23852.98	27817.47	27942.49	115983.23
OIL	1591.40	1693.60	1887.05	2029.40	2237.45	9438.90
TOTAL	19285.74	20369.55	25740.03	29846.87	30179.94	125422.13

Annexure 8.3

List Of Projects Yielding Benefits In Eighth Plan (1992-97)

Sl. No.	Name Of The project (capacity In MW)	Type Of The project	Name Of The State	Benefits During 1992-97
	Central Sector			
	A. Approved / Ongoing			
I.	**Thermal Stations**			
	1 NCTPP Dadri (4x210) U2-4	TH-COAL	NTPC/UP	630.0
	2 GT Dadri (4x131.3+2x146)	TH-GAS	NTPC/UP	555.0
	3 Barsingsar lignite(2x120)	TH-LIG	NLC/RAJ	240.0
	4 Kawas CC GT (4x106+2x110)	TH-GAS	NTPC/GUJ	538.0
	5 Neyveli-II Extn(4x210)U3&4	TH-LIG	NLC/TN	420.0
	6 Neyveli Zero unit (1x210)	TH-LIG	NLC/TN	210.0
	7 Bokaro 'B'(2x210)	TH-COAL	DVC/BIH	210.0
	8 Mejia (3x210)	TH-COAL	DVC/WB	630.0
	9 Kahalgoan (4x210)	TH-COAL	NTPC/BIH	630.0
	10 Talcher I (2x500)	TH-COAL	NTPC/ORS	1000.0
	11 Farrakka II(2x500)	TH-COAL	NTPC/WB	1000.0
	12 Kathalguri GT (6x30+3x30)	TH-GAS	NEEPCO/ASM	270.0
	Total Of Thermal Stations			6333.0
II.	**Nuclear Stations**			
	12 Kakrapar(2x220)	UCLEAR	NPC/GUJ	440.0
	13 RAPP EXT.(2X220)U-1	NUCLEAR	NPC/RAJ	220.0
	14 Kaiga (2X220)	NUCLEAR	NPC/KAR	440.0
	Total Of Nuclear Stations			1100.0
III.	**Hydro Stations**			
	15 Chamera I (3x180)	HYDEL	NHPC/HP	540.0
	16 Dulhasti(3x130)	HYDEL	NHPC/J&K	390.0
	17 Salal-II (3x115)	HYDEL	NHPC/J&K	345.0
	18 Tehri ST.I(4X250)	HYDEL	THDC/UP	1000.0
	19 Uri(4X120)	HYDEL	NHPC/J&K	480.0
	20 Rangit (3X20)	HYDEL	NHPC/SIK	60.0
	21 Doyang(3x25)	HYDEL	NEC/NAG	75.0
	22 Ranganadi (3x135)U1&2	HYDEL	NEC/ARUN	270.0
	Total Of Hydro Stations			3160.0
	Total approved/ongoing			**10593.0**
	State sector			
	A.aproved/ongoing			
	Northern Region			
	1 Dadupur (4x1.5)	HYDEL	HAR	6.0
	2 Thirot(3x1.5)	HYDEL	H.P	4.5
	3 Baner(3x4	HYDEL	H.P	12.0
	4 Gaj(3x3.5)	HYDEL	H.P	10.5

Annexure 8.3(contd.)

List Of Projects Yielding Benefits In Eighth Plan (1992-97)

Sl. No.	Name Of The project (capacity In MW)	Type Of The project	Name Of The State	Benefits During 1992-97
	5 Kargil (3x1.25)	HYDEL	J&K	3.8
	6 Upper Sindh (2x35)	HYDEL	J&K	70.0
	7 Upper Sindh II U-3 (1x35)	HYDEL	J&K	35.0
	8 Pahalgham (2x1.5)	HYDEL	J&K	3.0
	9 Thien Dam (4x150)	HYDEL	PUN	300.0
	10 Sobla(2x3)	HYDEL	U.P	6.0
	11 Maneri II (4x76)	HYDEL	U.P	304.0
	12 Srinagar (6x55)U 1-3	HYDEL	U.P	165.0
	13 Rajghat (3x15)-50% share	HYDEL	U.P	22.5
	Sub Total-Hydro			942.3
	14 PamporeGT II (4x25)	TH-GAS	J&K	100.0
	15 Ramgarh G.T.(1x3)	TH-GAS	RAJ	3.0
	16 Kota U 5 (1x210)	TH-COAL	RAJ	210.0
	17 Anpara "B" (2x500)	TH-COAL	U.P	1000.0
	18 Tanda U-4(1x110)	TH-COAL	U.P	110.0
	19 Panipat U-6 (1x210)	TH-COAL	HAR	210.0
	20 Ropar III (2x210)U-2	TH-COAL	PUN	210.0
	21 DESU WH (3x34)	TH-GAS	DEL	102.0
	Sub Total-Thermal			1945.0
	Total northern region			2887.3
	Western Region			
	1 Kadana U-3&4 (2x60)	HYDEL	GUJ	120.0
	2 Manikdoh (1x6)	HYDEL	MAH	6.0
	3 Ujjani - (1x12)	HYDEL	MAH	12.0
	4 Warna (2x8)	HYDEL	MAH	16.0
	5 Surya (1x6)	HYDEL	MAH	6.0
	6 Bhandardara II (1x34)	HYDEL	MAH	34.0
	7 Dudhganga(2x12)	HYDEL	MAH	24.0
	8 Dimbhe(1x5)	HYDEL	MAH	5.0
	9 Bhira PSS (1x150)	HYDEL	MAH	150.0
	10 Koyna St.IV (4x250) U1-2	HYDEL	MAH	500.0
	11 Tawa LBC (4x3)	HYDEL	M.P	12.0
	12 Hasdeo Bango (3x40)	HYDEL	M.P	120.0
	13 Bansagar(Tons)(2x15+3x20)	HYDEL	M.P	90.0
	14 Rajghat (3x15)-50% share	HYDEL	M.P	22.5
	15 Sardar Sarovar (6x200+5x50)	HYDEL	JOINT SECTOR	1450.0
	Sub Total-Hydro			2567.5
	16 Kutch Lignite U3(1x70)	TH-LIG	GUJ	70.0
	17 Sikka U-2 (1x120)	TH-COAL	GUJ	120.0

Annexure 8.3(contd.)

List Of Projects Yielding Benefits In Eighth Plan (1992-97)

Sl. No.	Name Of The project (capacity In MW)	Type Of The project	Name Of The State	Benefits During 1992-97
	18 Utran Gas Based TPS(1x33+1x45)	TH-GAS	GUJ	78.0
	19 Chanderpur U-7 (1x500)	TH-COAL	MAH	500.0
	20 Uran WHP (3x120)	TH-GAS	MAH	360.0
	21 Khaperkheda Ext. (2x210)	TH-COAL	MAH	420.0
	22 Trombay CCGT (3x60)	TH-GAS	MAH	180.0
	23 Sanjay Gandhi U 1&2 (2x210)	TH-COAL	M.P	420.0
	24 Sanjay Gandhi U 3&4 (2x210)	TH-COAL	M.P	420.0
	25 Pench (2x210)	TH-COAL	M.P	420.0
	Sub Total-Thermal			2988.0
	Total western Region			5555.5
	Southern Region			
	1 Penna Ahobilam(2x10)	HYDEL	A.P	20.0
	2 Upper Sileru (2x60)	HYDEL	A.P	120.0
	3 Guntur Canal (2x2+2x2.3)	HYDEL	A.P	8.6
	4 Srisailam LBPH (6X150)U1-2	HYDEL	A.P	300.0
	5 Varahi (Mani Dam)(2x4.5)	HYDEL	KAR	9.0
	6 Ghatprabha (2x16)	HYDEL	KAR	16.0
	7 Mallarpur (2x4.5)	HYDEL	KAR	9.0
	8 Sharavati Tailrace (4x60)	HYDEL	KAR	240.0
	9 Kalinadi-II (3x40+3x50)	HYDEL	KAR	270.0
	10 Brindawan (2x6)	HYDEL	KAR	12.0
	11 Bhadra (1x6)	HYDEL	KAR	6.0
	12 Shivpuri (2x9)	HYDEL	KAR	18.0
	13 Kallada (2x7.5)	HYDEL	KER	15.0
	14 Muvattypuzha (1x7)	YDEL	KER	7.0
	15 Lower Periyar (3x60)	HYDEL	KER	180.0
	16 Kakkad (2x25)	HYDEL	KER	50.0
	17 Peppara (3x1)	HYDEL	KER	3.0
	18 Poringalkuthu U-4 (1x16)	HYDEL	KER	16.0
	19 Lower Bhawani RBC (2x4)	HYDEL	T.N	8.0
	20 Sathnur Dam (1x7.5)	HYDEL	T.N	7.5
	Sub Total-Hydro			1315.1
	20 Muddanur (2x210)	TH-COAL	A.P	420.0
	21 Vijayawada-III (2x210)	TH-COAL	A.P	420.0
	22 Raichur U-4 (1x210)	TH-COAL	KAR	210.0
	23 Diesel Sets (78)	TH-OIL	KAR	78.0
	24 D.G. Sets Bangalore (6x21.3)	TH-OIL	KAR	128.0
	25 North Madras (3x210)	TH-COAL	T.N	630.0
	26 Basin Bridge G.T. (4x30)	TH-GAS	T.N	120.0

Annexure 8.3(contd.)

List Of Projects Yielding Benefits In Eighth Plan (1992-97)

Sl. No.	Name Of The project (capacity In MW)	Type Of The project	Name Of The State	Benefits During 1992-97
	27 Karaikal GT (3x5+1x7.5)	TH-GAS	PND	22.5
	Sub Total-Thermal			2028.5
	Total Southern Region			3343.6
	Eastern region			
	1 Eastern Gandak Canal (3x5)	HYDEL	BIH	15.0
	2 Sone WLC (4x1.65)	HYDEL	BIH	6.6
	3 Sone ELC (2x1.65)	HYDEL	BIH	3.3
	4 North Koel (2x12)	HYDEL	BIH	24.0
	5 Chandil (2x4)	HYDEL	BIH	8.0
	6 Rengali Extn. U-5 (3x50)	HYDEL	ORS	50.0
	7 Upper Indirawati (4x150)	HYDEL	ORS	600.0
	8 Upper Kolab U-4 (1x80)	HYDEL	ORS	80.0
	9 Potteru (2x3)	HYDEL	ORS	6.0
	10 Mayangchu (4x1)	HYDEL	SIK	4.0
	11 Upper Ronginchu (4x2)	HYDEL	SIK	8.0
	12 Rammam St II (4x12.5)	HYDEL	W.B	50.0
	13 Teesta Canal (3x3x7.5)	HYDEL	W.B	67.5
	Sub Total-Hydro			922.4
	14 Tenughat U-1&2 (2x210)	TH-COAL	BIH	420.0
	15 Ib.TPS (4x210)	TH-COAL	ORS	840.0
	16 Kolaghat Unit-4 & 6(2x210)	TH-COAL	W.B	420.0
	Sub Total-Thermal			1680.0
	Total Eastern Region			2602.4
	North Eastern Region			
	1 Dhansiri (15x1.33)	HYDEL	ASM	20.0
	2 Karbi Langpi (2x50)	HYDEL	ASM	100.0
	3 Dailamna (4)	HYDEL	ASM	6.0
	4 Small Hydels (4.30)	HYDEL	ARP	4.3
	5 Nuranang (3x2)	HYDEL	ARP	6.0
	6 Umaim-Umtru (2x30)	HYDEL	MEG	60.0
	7 Small Hydels (3.6)	HYDEL	MIZ	3.6
	8 Likimro (3x8)	HYDEL	NAG	24.0
	Sub Total-Hydro			223.9
	9 Lakwa GT Phase II(3X20)	TH-GAS	ASM	60.0
	10 Amguri CCGT (12X30)	TH-GAS	ASM	360.0
	Sub Total-Thermal			420.0
	Total North Eastern Region			643.9
	Total (states)	ONGOING/APPROVED		15032.7
	Total (states+central)	- (ONGOING/APPROVED)		25625.7

Annexure 8.3(contd.)

List Of Projects Yielding Benefits In Eighth Plan (1992-97)

Sl. No.	Name Of The project (capacity In MW)	Type Of The project		Benefits During 1992-97
	Central Sector			
	B. PIB/CEA Cleared Projects			
	I. Thermal Stations			
	1 Yamuna Nagar (4x210)U-1	TH-COAL	NTPC/HAR	210.0
	2 Faridabad CCGT (800)	TH-GAS	NTPC/HAR	546.0
	3 Gandhar CCGT (615)	TH-GAS	NTPC/GUJ	615.0
	4 Rihand Ext. (2x500)U-1	TH-COAL	NTPC/UP	500.0
	5 Unchahar Ext.(2X210)U-1	TH-COAL	NTPC/UP	210.0
	6 Agartala G.T. (4x21)	TH-GAS	NEC/TRI	84.0
	Total Of Thermal Stations			2165.0
	II.Hydro Stations			
	7 Kopili Ext.	HYDEL	NEEPCO/ASM	100.0
	Total Central-sector			2265.0
	State Sector			
	Northern Region			
	1.WYC St. II (2x8)	HYDEL	HAR	16.0
	Sub Total Hydro			16.0
	2 Bawana CCGT(800)	TH-GAS	DEL	660.0
	3 Bhatinda (2x210)	TH-COAL	PUN	420.0
	Sub Total Thermal			1080.0
	Total Of Northern Region			1096.0
	Western Region			
	4 Bansagar Tons-IV(2X10)	HYDEL	M.P.	20.0
	Sub Total Hydro			20.0
	5 BSES (2X250)	TH-COAL	MAH	500.0
	Sub Total Thermal			500.0
	Total Of Western Region			520.0
	Southern Region			
	6 Singur (2X7.5)	HYDEL	A.P.	15.0
	Sub Total Hydro			15.0
	Total Of Southern Region			15.0
	Eastern Region			
	7 Budge-Budge (2x250)	TH-COAL	WB	500.0
	8 Chandil (2X250)	TH-COAL	BIH	500.0
	Sub Total Thermal			1000.0
	Total Of Eastern Region			1000.0
	North-eastern Region			
	9 Rokhia G.T.Ext. (2x8)	TH-GAS	TRI	16.0

Annexure 8.3(contd.)

List Of Projects Yielding Benefits In Eighth Plan (1992-97)

Sl. No.	Name Of The project (capacity In MW)	Type Of The project	Name Of The State	Benefits During 1992-97
	Sub Total Thermal			16.0
	Total Of North-eastern Region			16.0
	Total State-sector			2647.0
	Total Generation Projects (state-sector)			17679.7
	Total Generation Projects (central-sector)			12858.0
	Total Generation Projects (all-india)			30537.7

Summary Statement Of 8th Plan Capacity Additions--by Types

	CENTRE	STATE	ALL-INDIA
A. HYDRO			
ONGOING/APPROVED	3160.0	5971.2	9131.2
NEW STARTS-CEA CLEARED	100.0	51.0	151.0
NEW STARTS-YET TO BE APPROVED	0.0	0.0	0.0
TOTAL (A)	3260.0	6022.2	9282.2
B. GAS			
ONGOING/APPROVED	1363.0	1591.5	2954.5
NEW STARTS-CEA CLEARED	1245.0	676.0	1921.0
NEW STARTS-YET TO BE APPROVED	0.0	0.0	0.0
TOTAL (B)	2608.0	2267.5	4875.5
C. THERMAL			
ONGOING/APPROVED	4970.0	7470.0	12440.0
NEW STARTS-CEA CLEARED	920.0	1920.0	2840.0
NEW STARTS-YET TO BE APPROVED	0.0	0.0	0.0
TOTAL (C)	5890.0	9390.0	15280.0
D. NUCLEAR			
ONGOING/APPROVED	1100.0	0.0	1100.0
E . (HYDRO+THERMAL+GAS+ NUCLEAR)			
ONGOING/APPROVED	10593.0	15032.7	25625.7
NEW STARTS-CEA CLEARED	2265.0	2647.0	4912.0
NEW STARTS-YETTO BE APPROVED	0.0	0.0	0.0
TOTAL (E)	12858.0	17679.7	30537.7

Annexure-8.4

Eighth Plan Outlay - Power Sector

(Rs.Crores)

Sl. No.	STATES / UTs	Outlays
I.	**States**	
1.	Andhra Pradesh	3040.62
2.	Arunachal Prdsh.	148.28
3.	Assam	1192.46
4.	Bihar	2120.83
5.	Goa	52.50
6.	Gujarat	2635.00
7.	Haryana	1701.99
8.	Himachal Pradesh	500.00
9.	Jammu & Kashmir	1175.18
10.	Karnataka	3024.86
11.	Kerala	1226.20
12.	Madhya Pradesh	3563.36
13.	Maharashtra	4572.64
14.	Manipur	185.35
15.	Meghalaya	166.48
16.	Mizoram	101.05
17.	Nagaland	59.00
18.	Orissa	2638.30
19.	Punjab	2417.50
20.	Rajasthan	3200.00
21.	Sikkim	133.00
22.	Tamil Nadu	3000.00
23.	Tripura	116.50
24.	Uttar Pradesh	6974.76
25.	West Bengal	3016.00
	Sub-Total (STATES)	46961.86

Annexure-8.4(contd.)

Eighth Plan Outlay - Power Sector

(Rs.Crores)

Sl. No.	States / UTs	Outlays
	II. **Union Territories**	
1.	A & N Islands	57.97
2.	Chandigarh	55.00
3.	D & Nagar Haveli	5.11
4.	Daman & Diu	7.37
5.	Delhi	1212.00
6.	Lakshadweep	6.21
7.	Pondicherry	102.22
	Sub-Total (U.Ts)	1445.88
	Total States & UTs	48407.7
III.	**Centre**	
1.	Department of Power including D.V.C	25920.58
2.	Nuclear Power Corporation	4261.00
3.	Neyveli Lignite Corporation	1000.00
	Sub-Total (Central)	31181.58
	Total : All India	79589.32

* Exclusive of the outlays for NEC.

Annexure-8.5

Estimate Of Losses Of SEBs On Account Of Supply Of Electricity to The Agricultural/irrigation Sector

S.No. / Board	Sales to Agri./ Sector (MKWH)	Overall Average Cost (Paise/KWH)	Aver. rate for Agri./Irrign. (Paise/KWH)	Diff (4-5)	Estimate Loss (Rs.Crore)
1990-91					
1. Andhra Pradesh	5200	72.1	4.5	67.6	352
2. Bihar	1544	140.3	9.4	130.9	202
3. Gujarat	5069	105.0	21.5	83.5	423
4. Haryana	2749	105.2	30.0	75.2	207
5. Karnataka	3241	80.9	9.7	71.2	231
6. Maharashtra	5874	99.6	9.0	90.6	532
7. Punjab	5616	108.1	7.5	100.6	565
8. Rajasthan	2784	113.7	29.5	84.2	234
9. Tamil Nadu	3850	112.0	8.9	103.1	397
10. Uttar Pradesh	7267	111.9	21.3	90.6	658
T O T A L					3801

Annexure-8.6

DIESEL PUMPSETS IN OPERATION (As On 31.3.1988)

Sl.No.	States	
1.	Andhra Pradesh	2,55,108
2.	Arunachal Pradesh	--
3.	Assam	2,365
4.	Bihar	2,10,665
5.	Goa	--
6.	Gujarat	7,79,196
7.	Haryana	1,25,731
8.	Himachal Pradesh	906
9.	Jammu and Kashmir	647
10.	Karnataka	71,375
11.	Kerala	37,600
12.	Madhya Pradesh	1,59,545
13.	Maharashtra	3,13,956
14.	Manipur	--
15.	Meghalaya	470
16.	Nagaland	--
17.	Mizoram	--
18.	Orissa	1,99,327
19.	Punjab	3,96,270
20.	Rajasthan	1,42,725
21.	Tamil Nadu	2,13,376
22.	Tripura	820
23.	Uttar Pradesh	15,29,573
24.	West Bengal	1,90,395
25.	Sikkim	--
	Total (States)	45,40,050
	Total (UTs)	13,600
	Total (All India)	45,53,650

Source: Minor Irrigation Deptt. of Govt. of India, New Delhi.

Annexure 8.7

Eighth Five Year Plan [1992-97] - Outlays
Deptt. of Non-conventional Energy Sources

(Rs. Crores)

Sl.No.	Programme	Outlays
1.	NPBD [including R&D and CBP/IBP]	320.00
2.	Improved Chulha	80.00
3.	Solar Energy	
	(i) Solar Thermal	80.00
	(ii) Solar P.V.	90.00
	(iii) Solar Energy Centre	15.00
4.	Micro/Hydel	100.00
5.	Wind Energy	90.00
6.	Urban/Agricultural Wastes including Cogeneration	20.00
7.	Biomass	15.00
8.	Human and Animal Energy Programme	1.00
9.	Alternate Fuels	10.00
10.	M.H.D.	
11.	Geothermal Energy	
12.	Chemical Energy	10.00
13.	Ocean Energy	
14.	Hydrogen Energy	
15.	IREDA	10.00
16.	Regional Offices etc.	
17.	Information & Publicity	
18.	Seminars/Conferences	10.00
19.	International Cooperation	
20.	Data Bank/TIFAC	
21.	Urjagram [Surveys]	1.00
22.	Special Area Programmes and Demonstration Activities	5.00
	TOTAL	857.00

CHAPTER 9

TRANSPORT

The Scenario

9.1.1 Transport sector bears a close and complex relationship with all other sectors of the economy. While it tends to act as the prime mover of the development process, it must also respond to the development process, if the latter has to be smooth. Socio-economic planning engenders structural shifts in the economy, widely influencing the pattern of movement of people and goods and therefore, the nature and the quantum of demand for transportation. Transport planning has, thus, to be integrated with overall development plans.

9.1.2 Creation of transport infrastructure requires time. It is necessary to anticipate the demand on the transport system ahead of socio-economic changes. In view of the long gestation involved , transport planning has to be seen in perspective longer than the Five Year Plan periods. Often, the capacities created during one Plan period are the results of the investments made in earlier Plans. Two issues, therefore, stand out: first, the need to preferably complete all the ongoing works to derive the maximum benefits from the earlier investments and secondly, to make investments keeping in view the longer time-frame perspective.

9.1.3 Transport infrastructure has expanded considerably in terms of network and services over the last four decades as indicated in Table 9.1.

9.1.4 Railways have extended their route length from 53,596 kms in 1950-51 to 62,597 kms in 1989-90. Freight, in tonne kms, carried by the Railways has increased five-fold over the last 40 years. Passengers originating have grown by three times during the same period. The aggregate length of roads has increased from 0.4 million kms in 1950-51 to 2.10 million kms in 1989-90. Forty-six per cent of the villages in the country are now connected by all-weather roads. Traffic handled by the major ports has increased nearly seven-fold in the last four decades. The number of passenger buses has gone up by nearly eleven fold and goods vehicle fleet by 20 fold. Domestic air traffic has increased ten-fold in the last 30 years.

9.1.5 It would be seen from Annexure 9.1 that the percentage share of investment in the transport sector to the total plan outlay grew rapidly in the first three Plans, followed by relative stagnation and even decline up to Sixth Plan. Paucity of resources resulted in inadequate investments which, in turn, resulted in the inability of the transport sector not to keep pace with the requirements of the economy. Substantial gaps developed between demand and supply. Practically every other sector of the economy, particularly those dependent on infrastructure suffered. Inadequate investment manifested itself in the form of non-replacement of overaged stock, slowing down of modernisation and inadequate attention to maintenance in practically every sub- sector of the transport sector.

9.1.6 Inter-modal investments also showed considerable disparities over the Plan periods. The two principal means of transport, namely rail and roads, particularly suffered from the falling share of investments from the Third Plan onwards. The Seventh Plan attempted to reverse this situation by enhanced outlays. There has been some improvement in investment in the railway sub sector. This enabled the Railways in the replacement of rolling stock, electrification, modernisation and technological upgradation.

9.1.7 Productivity levels have improved in almost all the sub-sectors during the Seventh Plan as seen from Table 9.2.

9.1.8 Railways witnessed substantial technological upgradation in the form of induction of new generation diesel locomotives with the latest traction technology. A multi-modal system in the form of container transport has emerged as an important feature of the transport scenario. Six of our major ports are equipped to handle container traffic. To conserve energy, the Railways have accelerated the programme for phasing out steam locomotives on the one hand and stepping up electrification of the

Table - 9.1 Transport Infrastructure and Output

Sl. No.	Item	Units	1950-51	1960-61	1970-71	1980-81	1984-85	1989-90	1990-91	1991-92(P)
1.	RAILWAYS									
1.1	Route length	Kms.	53596	56247	59790	61240	61850	62597	62367	62571
1.2	Electrified Route length	Kms.	388	748	3706	5345	6325	9648	10083	10809
1.3	Throughput									
1.3.1	Orig. Freight Traffic	M.Tonnes	93.0	156.2	196.5	220	264.8	334.3	341.4	362.8
1.3.2	Net Tonne (Kms.)	Bn. T kms	44.12	87.68	127.36	158.47	182.16	236.3	242.2	254.3
1.3.3	Passengers Originating	Millions	1284	1594	2431	3613	3380	3653	3880	4073
2.	ROADS									
2.1	Total length	000 Kms.	399.9	524.5	917.9	1491.3	1686.9	2103.2^{P}	2197.9^{P}	2296.8
2.2	Percentage of Villages connected with all weather roads	Per cent	N.A.	N.A.	N.A.	29	35	45.5^{P}	45.8^{P}	46.2
3.	ROAD TRANSPORT									
3.1	Number of Goods Vehicles	No.in 000	82	168	343	590	808	1289^{P}	1460^{P}	1605
3.2	Number of passenger Buses	No.in 000	34	57	94	154	211	312^{P}	340^{P}	370
4	MAJOR PORTS									
4.1	Traffic handled	M. Tonnes	19.2	39.9	55.7	80.41	107.04	147.27	152.55	155
5	Minor Ports									
5.1	Traffic handled	M. Tonnes	N.A.	N.A.	6.76	6.73	9.63	10.43	11.00	11.00
6	CIVIL AVIATION									
6.1	Domestic Airlines									
	(a) Indian Airlines *									
	(i) Available Tonne Kms	Million	-	113	208	663	959.6	1134.0	926.7	1134.0
	(ii) Revenue Tonne Kms.	Million	-	83	161	420	663.6	826.0	699.2	794.0

P : Provisionally estimated

* Includes international traffic also

routes, on the other. State Road Transport Undertakings have recorded improvements in terms of fuel efficiency and productivity.

9.1.9 Improvements in the performance of the transport sector, though substantial, give no room for complacency. Railway capacity has reached a plateau and substantial additional traffic output is feasible only through creation of additional capacity. The road infrastructure suffers from poor maintenance. There is an urgent need to accelerate road connections to villages, improve inter city and intra city transport and take steps to reduce serious regional imbalances in accessibility.

9.1.10 The process of technological upgradation has been very uneven. While the automotive sector in India has undergone a major transformation through induction of fuel efficient, environmentally clean vehicles, this has, however, been by and large limited to the personalised modes of transport. Its impact is yet to be felt in the public transport system, especially in the road transport industry where the state of the art technology has not been applied to improve the bus body or the chassis.

Table - 9.2 Selected Productivity Parameters of the Transport System

Sector	1984-85	1989-90	1990-91
Railways			
NTKMs per wagon day(BG)	1150	1420	1410
Wagon turn round time(BG)(days)	12.8	11.3	11.5
Ports			
Average turn round of Ships(days)	11.9	8.9	8.1
Road Transport (State Road Transport Undertakings)			
Fleet Utilisation(%)	84	89	89
Vehicle Productivity per bus day(Kms.)	218	257	259

9.1.11 There is considerable scope for further improvement of productivity levels in almost all modes of transport, essentially, on the basis of modernisation and upgradation and improvement in the output levels of manpower and equipment.

9.1.12 The transport system carries excessive manpower in relation to requirements. In several areas like ports, road transport, shipping etc. the present manning scales are dis-proportionately high. While pursuing the process of upgradation of technology, it will also be necessary to take complementary steps to redeploy all the manpower available after fresh training.

9.1.13 Rapid urbanisation, especially, around larger cities has brought to the fore acute problems of urban transport. We are yet to make worthwhile efforts to evolve a financially viable entity for constructing and operating a Mass Rapid Transport (MRT) system. The enormous increase in the number of personalised vehicles has substantially increased pressure on the already fragile network of roads and resulted in congestion in most of the cities. The deterioriation in public transport has compounded the problems. While provision of a MRT system would be ultimately required for all the metropolitan cities, it is imperative to look for low-cost options like better engineering, expansion of public transport system etc. It is also time that effective action is initiated to find acceptable answers to the problems of funding the construction of an integrated MRT system in metropolitan cities.

Transport and Energy

9.2.1 Transport is not only a major user of energy, but different modes of transport use different forms of energy with varying degree of efficiency and intensity. Energy use planning is a critical aspect of the transport sector. A three-pronged strategy is visualised. First, due weightage has to be given to energy consumption while considering the choice amongst available alternatives. This would, inter-alia, mean preferring rail transport for long haul bulk movements, with road transport handling intra-region short haul movements. Adequate stress needs to be laid on coastal shipping and inland water transport, which have the lowest fuel consumption. Public transport system needs to be strengthened to obviate the use of highly energy intensive and costly personalised transport. Secondly, energy efficient transpor. modes must be promoted by phasing out the old, obsolete units, induction of fuel efficient state of the art systems, achievement of higher operational efficiency and expansion of electric traction etc. Thirdly, well considered attempts must be made to reduce transport intensity. Rationalisation of the movement of certain bulk commodities, and transportation of power to end use areas instead of movement of large quantities of coal to thermal plants over long distances can greatly help demand management of transport needs. Location of industries, power plants, refineries, etc. must take into account the transport costs to the economy. Often, the transport

demands are influenced by factors, not necessarily conforming to patterns suggested by comparative cost considerations. Timeliness in the movement of goods, theft or pilferage enroute, door-to-door service dictate consumer preference as between roads and railways. An appropriate transport pricing policy, taxation and subsidisation structure could be instruments in channelising the consumer demand in desired directions.

Transport & Environment

9.3.1 Transport systems consume scarce resources of land and energy, and can have wide ranging impact on environment. The problem is to strike a harmonious balance between competing demands. Two distinct ways of guarding against environmental pollution, while building the transport network, will have to be kept in view. One is to design standards to which transport equipment in operation must conform in order to prevent pollution and the other is to devise means to prevent pollution while constructing the transport network.

Strategy and Thrust in Eighth Plan

9.4.1 The Eighth Plan must continue the process of consolidation and further intensify the measures for achieving higher levels of productivity through technological upgradation. A major thrust will have to be accorded to better maintenance of assets and rational use of capacities created in the different sub-sectors. As part of the overall perspective for the transport sector playing a critical role, augmentation of capacities wherever required will have to be initiated. Some of the major areas are discussed in the following paragraphs.

Productivity

9.4.2 Productivity is influenced by a number of factors such as induction of new technology, mechanisation, modernisation, upgradation of manpower skills etc. Hence, productivity levels have to be measured as a function of these parameters and not just as a linear extension of past performance levels which may at best provide only a comparative picture as between two different time frames. It will be necessary to periodically update the targets of productivity to be achieved, taking into account the assets upgradation for evaluating performance. Also in order to realise the full potential of the upgraded assets, manpower training and deployment must go hand in hand with such upgradation.

Rural and Intermediate Transport

9.4.3 A state of dualism prevails in the transport system of the country. Traditional forms such as bullock- carts, animal and even manually handled carts exist in large numbers alongside a growing modern transport system. These traditional forms of transport perform a useful role and would continue to be on the scene for the foreseeable future. Improved design of animal driven carts and provision of optimal means of transportation within a limited radius would reduce the strain on animals and augment the carrying capacity of the vehicles. Reduction in drudgery and the load on the animals should receive as much priority as introduction of modern modes of transport. Innovative forms of intermediate transport have also come up in rural areas such as modified threewheeler units, mini buses and a large number of tractor units. These forms of travel need to be encouraged to improve mobility and transport efficiency in the rural areas.

Investment Pattern and Tariff Structure

9.4.4 Inter modal transport investment priorities too need a review. Transport units should progressively be encouraged to become self-financing and viable. It will be appropriate, to the extent feasible, to reframe the pricing and tariff structure to achieve this objective. It is a well known fact that at present the tariff structure of most undertakings do not reflect the true cost of operations. In order to remedy this, the principles of Long Run Marginal Cost (LRMC) pricing for public enterprises is recommended. The main benefit of this pricing principle is that it reflects the current social cost of delivering the services using the most efficient plant available. It also links investment planning to costs and enables the enterprise to become financially viable. It must, however, be recognised that transport undertakings also have to serve socio-economic objectives and hence an element of subsidisation is inevitable. Cross subsidisation, too, is advisable to a limited extent, so that it does not become burdensome. In general, subsidies should be retained only on specific social or societal considerations and need to be explicit.

Induction of Private Investment

9.4.5 In view of the severe constraint of budgetary funds, innovative steps will have to be taken to induce the private sector to participate in road construction and upgradation, especially the express ways and selected highways where a fair rate of return can be ensured to the investor, by way of tolls etc.

9.4.6 State participation in the transport sector will continue to be predominant, as it is necessary to provide affordable public utilities to the community and also to ensure transport facilities in inaccessible areas. However, the continuously increasing transport network and high cost entailed in its construction and maintenance calls for active cooperation and coordination between the public and the private sector, wherever feasible and desirable. Supplementary private carriers to augment passenger road transport, operation of air taxi services, construction and operation of toll roads, participation in selected port and shipping activities are a few emerging examples.

Rationalised Use of Capacities Created in Railways, Roads and Inland Water and Coastal Water Transport

9.4.7 In the years to come, road and rail transport will continue to remain the dominant modes of transport. The railways will have to overcome their capacity problems and increasingly concentrate on long and medium distance bulk movement, leaving traffic over comparatively shorter distances to the road transport. The projected increase in rail traffic in the Eighth Plan period would be on a few identified corridors which are likely to reach saturation levels. Action to create requisite capacity has to be initiated. Alternative routes are preferable where they help in reducing the overall distance/transport effort.

9.4.8 With the increasing diversification of the economy and accelerated efforts towards balanced regional development, the inter modal transport requirements of a region will be studied as an integral part of the development of the region. A beginning has already been made in the North Eastern Region and in the Andaman Nicobar Islands. In view of the prevailing high costs of energy, the utilisation of certain modes of transport like inland water transport, coastal shipping, pipelines and ropeways would be encouraged wherever economically feasible. Government policies will have to be reoriented to facilitiate the development of these modes on a sound commercial basis.

9.4.9 Energy, technological development and environment measures are three factors which will have a significant role in determining the shape of the transport system in the forseeable future. The emphasis will be on modernisation and on building an energy efficient transport system.

9.4.10 The road network will need to be expanded and upgraded and maintenance ensured to promote smoother running and saving on fuel. Railways will need to induct higher horse power energy efficient locomotives, improve rail track and extend electrification. Ports will witness a sea change in cargo handling techniques with the advent of containerisation. The average size of ships will need to conform to the modern port handling systems. Road transport will need to redesign its bus and truck chassis to ensure energy efficiency and comfortable ride. In aviation, the emphasis will be on acquisition of more energy efficient aircraft and improved navigation and communication systems, along with commensurate airport ground facilities.

9.4.11 In the preceding paragraphs, we have taken an overall view of the transport sector as a whole. The status in respect of each of the sub-sectors in the transport sector, in terms of performance profile, emerging issues and the strategies visualised for their development in the next five years are detailed in the succeeding sections.

Railways

Introduction

9.5.1 Indian Railways occupy a unique position in the socio-economic map of the country. Energy efficient, economical in land use and with a high degree of operating efficiency, the railways are considered a vehicle of growth contributing to rapid industrial and infrastructural development of the country.

9.5.2 The Indian Railway system is the second largest system in the world under a single management. It is a multi-gauge system oper-

ating on three gauges - the Broad (BG), the Metre (MG) and the Narrow (NG). At the end of March, 1990, the route length of the rail network comprised 62597 route kms. including 14227 route kms. of either double or multiple tracks. About 56 per cent of the total route kilometres is on the broad gauge, accounting for 90.50 per cent of the freight tonne kms. and about 83.00 per cent of the total passenger kilometres. Metre gauge, covering about 38% of the total route kms. carries 9.43 per cent of freight tonne kms. and 16.42 per cent of the passenger kilometres. The narrow gauge comprising 6.54 per cent has an insignificant share in the total traffic. Electric traction at the end of Seventh Plan, constituted about 15% of the total route kms. and accounted for 42% of the total gross tonne kilometres of freight traffic on BG and about 35% of the total passenger kms. Railways have a fleet consisting of 8590 locomotives, 37,953 coaches and 3,49,560 wagons spread over 7076 railway stations. The rolling stock fleet is serviced and running repairs are undertaken in 225 loco sheds and 401 carriage and wagon sick lines and central repair depots situated all over the network. Periodical overhaul of rolling stock is undertaken in 49 workshops.

9.5.3 Due to the vast geographical spread, uneven distribution of natural resources and large population, the advantages of railways as an important and inexpensive mode of transport are obvious. Demand on the Railways for carrying freight and passenger traffic is increasing very fast and it is expected that by the turn of the century the growth of freight and passenger traffic would be almost double of the level attained in 1987-88. In a situation where demand is rising faster than capacity and when the present capacity is fully committed to carry core sector traffic like coal, foodgrains, petroleum, oil and lubricants (POL), fertilizers etc., the Railways are left with no margin for carrying general cargo or other types of industrial traffic even when offered. Increasing railways' capacity to handle higher quantum of freight and passenger traffic, thus, becomes extremely important and would need to be attended to during the Eighth Plan period.

9.5.4 A review of plan investments in the past would indicate that the outlay on railway sector as a percentage of total plan outlay ranged between 11.10% & 15.5% in the first three plan periods came down to as low as 6.9% to 5.9% in the next four plan periods upto the Seventh Plan. As a result, the investment planning for Railways in the recent years has been barely adequate to meet the minimum needs of the traffic growth; consequentially the network expansion has been low.

9.5.5 The growth of rail transport in India has been impressive. From 1284 million originating passengers in 1950-51 the figure had reached nearly 3653 million in 1989-90. Passenger kilometres have increased four fold from 66517 million to about 2,80,848 million. Similarly, originating revenue tonnage increased by more than four times from 73 million tonnes in 1950-51 to 310 million tonnes in 1989-90. Net tonne kms (revenue) have increased six-fold from 37565 million in 1950-51 to 2,29602 million in 1989-90.

9.5.6 The Indian Railways have assets worth nearly 19730.59 crores as on 31.3.1990 and employ 1.65 million people. As on 31.3.1990 Indian Railways had 3,336 steam locomotives, 3610 diesel locomotives, 1,644 electric locomotives, 27,992 coaches, 6861 other coaching vehicles, 3100 EMUs and 3,49,661 wagons. Over the last three decades the Railways have recorded an average growth rate of 5% per annum in both freight and passenger traffic.

9.5.7 The railway system operates through 7,076 railway stations. Four sides and two diagonals of the golden quadrilateral with its vertices at Delhi, Bombay, Calcutta and Madras carry more than 50% of passenger and 60% of freight traffic. It has been estimated that in order to keep pace with the demands of a vibrant economy, it will be necessary for the Indian railways to almost double the existing capacity by the year 2000 A.D. The Eighth and Ninth Plans are, therefore, crucial for the Railways. The thrust in the Eighth Plan has to be in the direction of capacity generation, rehabilitation and modernisation. Manpower planning, human resource development, energy conservation, greater safety, financial viability and above all customers' satisfaction through reliability and quality of service are other important objectives.

9.5.8 Due to technological changes, change of traction and operational improvements and innovations, staff redundancies occur. The major areas are steam locomotives, goods sheds, marshalling yards etc. Manpower planning, manpower reduction and human resources development have to be the main planks to ensure productivity in the future. Qualitative improvement in the employees' profile is needed now more than ever before. While staff productivity, as measured by the number of traffic units per employee, utilisatiion of assets in terms of net tonne kms. per wagon day, wagon turnround, loco utilisation etc., have improved over the years, there is scope for further improvement in these areas by resorting to technological upgradation and further improvement of operating pattern through innovative approaches. Similarly, there is need for placing greater emphasis on energy conservation, phasing out steam locomotives and measures to reduce the consumption of HSD and lubricating oil. Introduction of low idling features in diesel locomotives, use of rail and flange lubricators and energy audits of major railway installations are some of the areas which call for greater attention and action. Similarly, improvement is called for in track technology since the track constitutes the basic infrastructure of the Railway system.

9.5.9 The railways, operate under certain constraints. They have limited freedom to fix fares and freight rates to reflect the actual costs. The railways are a basic infrastructural necessity and act as a catalyst for economic growth. In the process, Railways tend to subsidise in a way and nourish the economy and incur social cost, much beyond the normal call of any transport system. The impact of the social burden on the railway finance has been growing over the years. In 1975-76, these losses stood at Rs.188 crores while in 1989-90 they were about Rs.2104 crores. The loss in passenger traffic, both suburban and non-suburban, loss in carrying certain essential commodities like foodgrains, salt, fodder and losses on account of uneconomic branch lines mostly account for the social burdens.

9.5.10 Indian Railways are wholly owned and operated by the Government of India. The budgetary support from the general exchequer for the railway plan, however, is declining over the years. It came down from 75% in the Fifth Plan to 58% in the Sixth Plan and to about 40% in the Seventh Plan. In 1990-91 and 1991-92, the budgetary support has been of the order of 33% and 32% respectively. While on the one hand there is need for investment to support and increase the transport capacity, on the other, due to resource constraints, the budgetary support for Railway plan is declining. The Railways, therefore, had to take recourse to market borrowings during the Seventh Plan by floating bonds through Indian Railways Finance Corporation. About Rs.2500 crores were borrowed during the Seventh Plan period. While the market borrowings, to some extent, bridged the gap between the requirement and availability of resources, it has been imposing a heavy drag on its working expenses. Compared to 6.5% dividend which the Railways had to pay on the capital provided by the general exchequer, it had to pay 14.5% as leasing charges for 10 years' railway bond (interest and amortisation cost). There is, therefore, a need to restrict the limit of market borrowings which otherwise may threaten the financial viability of the system.

9.5.11 The physical targets and achievements during the Seventh Plan are summarised in Annexure-9.2. The picture that emerges is as follows :-

(i) Additional freight traffic of 70 million tonnes was carried, in 1989-90 as compared to the year 1584-85. This, in itself, was a remarkable achievement compared to the performance in the past. However, a shortfall of about 11 million tonnes in the targetted traffic of 345 million tonnes was observed mainly on account of less than anticipated offer of coal, foodgrains and steel traffic for movement.

(ii) There was increase in the lead of freight traffic during the first three years of the Plan in relation to what was assumed at the time of the formulation of the Seventh Plan. Against a target of 680 kms. at the end of the Plan, the average lead reached a level of 726 kms. during 1987-88 Thereafter, the average lead started showing a downward trend during 1989-90 it is estimated to be around 708 kms. The efforts to rationalise bulk movement, in order to keep

down the lead of haul, will need to be continued.

(iii) The passenger traffic (non-Suburban) increased by 6.5 per cent per annum during the first three years. During the last two years, the increase slowed down. Overall, during the Seventh Five Year Plan, the increase is estimated to be of the order around 4.8 per cent per annum. It is pertinent to note that investment planning in the Railways has been done largely on the basis of regulated growth of passenger traffic, preference being given to freight movement in a situation of overall constraint of resources. Growth in passenger traffic in actual practice could not, however, be contained and has exceeded the targets. The result was the continued use of old and overaged coaches which in turn bring down the quality of service. Replacement of overaged coaching stock warrants special attention during the Eighth Plan.

(iv) Impressive gains have been recorded in productivity levels expressed in terms of freight loading and movement. The wagon utilisation index reached a level of 1453 Net Tonne Kms (NTKms) on Broad Gauge sections by the end of 1988-89 from 1150 NTKMs during 1984-85, dropped down to 1428 NTKMs in 1989-90. An increase of about 24% was witnessed during the plan. The increase in the index on Metre Gauge sections was about 43 percent. The need to augment the capacity of the railway system to meet the projected traffic as well as to provide a cushion to take care of seasonal peaks was highlighted during the Seventh Plan. Severe constraint of resources, however, came in the way of allocating the requisite funds to the Railways. Financing through open market borowings (a relatively costlier form of funding) had to be resorted to. The financial resources generated and made available were, however, still short of requirements. While the Railways have met the demand for freight services, especially in respect of bulk commodities to critical users, the same cannot be said about some other commodities and also general users. The share of the Railways in the movement of commodities like cement, fertilizers etc., needs to be substantially stepped up in the interest of reducing costly road movement. Railways would need to continue their efforts to further optimise the use of their fixed and rolling assets. It is clear that greater investment will have to be directed towards easing capacity constraints in selected segments of the trunk routes.

(v) In the above context, development of terminals is also an important requirement. Loading and unloading arrangements in respect of bulk commodities are the responsibilities of the major users of rail services like the collieries, the thermal power stations and other major industries. The major users have not made investments necessary for development of rapid handling terminals which can substantially reduce the detention of the rolling stock. The time has now come to seriously reconsider this arrangement and explore the possibility of the Railways sharing the required investment with the major users in the interest of better utilisation of the rolling stock.

(vi) The Railways had recorded an excellent performance during the the Seventh Plan in terms of additional transport effort, rehabilitation of the system, financial performance, better productivity, technological upgradation and modernisation and industrial relations. The incremental originating revenue earning freight traffic went up by 73.6 million tonnes from 236.4 MT to 310 MT which is equivalent to the increase in the previous two decades. On the financial side, the Railways declared a surplus of Rs.533 crores after meeting the dividend liability in full It is noteworthy this was achieved while making substantially stepped-up contributions to the Depreciation Reserve Fund (Rs.6735 crores) and Pensions Fund (Rs.2310 crores). But, there is continuing need to contain operating expenses and increase traffic receipts. The losses in the operation of passenger services are increasing at an alarming rate. There is a limit to the extent to which the losses can be offset by cross - subsidisation.

In fact, the tariff for freight traffic has now reached a level where further increases are likely to prove counter-productive. Adjusting the passenger fares to reduce losses appears inescapable. Action in this direction is essential to provide adequate resources for development.

(vii) An outlay of Rs.12,334 crores was provided to the railways for the Seventh Plan. Financing of the approved plan outlays during each year of the seventh plan 1990-91 and 1991-92 and the actual expenditure incurred is presented in Annexure 9.3 The investment during the Seventh Plan was financed as follows :

	(Rs. crores)
(i) Budgetary support	6942 (41.95%)
(ii) Bonds	2520 (15.22%)
(iii) Internal resources	7087 (42.82%)
Total	**16549**

The plan headwise details during the Seventh Plan, 1990-91 and 1991-92 has been indicated in Annexure 9.4

(viii) Normally, all new railway line projects are undertaken out of the loan capital by way of budgetry support. For the first time, a new experiment carried out for funding the construction of the Konkan Railway by raising of market borrowings and setting up of a Corporation where the equity contribution is to be shared between the Ministry of Railways and the beneficiary States, in the ratio of 51 : 49. The balance amount required would be raised from the open market in the form of tax-free bonds.

(ix) It has, however, to be recognised that all the investments made by the Railways do not directly go to augment the capacity of the system. A major portion of investment on made the replacement of overaged assets do not add to capacity except to the extent of upgraded equipment. Similarly, allocations under electrification may not necessarily result in capacity augmentation but only improve operational efficiency and lead to conservation of fossil fuels. Again, there are a large number of miscellaneous items of expenditure such as works undertaken for operational reasons as well as for staff welfare and passenger amenities. Similarly, investments made by Railways in public sector undertakings, metropolitan transport and inventories do not result in capacity augmentation. It is observed that almost half of the total allocations of the Railways go in for such other works, not directly linked with increasing capacity of the system.

(x) A major feature of the modernisation efforts made by on the Indian Railways is the progressive use of computers. Over the last decade, computerisation is being progressively extended to core accounting systems, inventory control, management information system in the production units and operational control rooms, passenger reservations and recently to freight operations. Computerised reservation facility will shortly cover 18 cities constituting almost 64% of the total reservation work load in the Railways. Many studies relating to the introduction of freight operation information system (FOIS) have been undertaken and completed with the assistance of a specialised organisation set-up for the purpose. As a first step, the freight operation information system is being installed on the Northern Railway to evaluate its projected efficacy before extending it to other zonal railways.

Areas of Concern and Major Issues

9.5.12 **Railways' Share in Total Traffic** - Though the Railways are energy efficient and eminently suited for movement of freight traffic over medium and long distance, a good share of this traffic is carried by road. To reverse this trend it is necessary to substantially improve, inter-alia, (a) the carrying capacity on selected section of the Railways (b) the operational efficiency and commercial practices of the Railways; (c) linkages with road transport at loading and unloading centres.

9.5.13 **Capacity Requirements** - There is hardly any slack in the railway. The capacity assessment of the system necessarily has to contend with certain inherent characteristics of the Railways as a mode of transport. Common physical assets are made use of to provide different types of transport services like freight and passenger movement and any change in the mix alters the output of the system. Again, a considerable portion of the assets is location-specific and cannot be adjusted to changes in the demand for services. Additional output henceforth would be possible only on the basis of adequate investments - both for creation of additional capacity and for replacement of assets. The important rail corridors connecting major centres of activity which handle massive volume of traffic have reached a saturation level. Development of alternate routes, rather than additional trackage on these routes, may subserve the purpose of both easing the traffic and opening new areas of development. Further, a systems approach needs to be adopted while building new railway lines so that aggregate capacity of Railways could be enhanced.

9.5.14 **Facilities/amenities to the passengers** - As against the target of 2% growth in passenger traffic, the actual increase is anticipated to be around 5% per annum and will continue to remain so. The increasing passenger traffic cannot be ignored any longer, particularly the long distance travel. Adequate investments have to be considered for meeting the realistic demand. On the other hand, efforts to shed short distance travel would need to be pursued vigorously. Appropriate policy measures are required to be taken in this regard.

9.5.15 **Energy Conservation** - The Railways are a major user of liquid fuels and must contribute to energy conservation. The gradual change of traction from steam to diesel and to electricity has undoubtedly increased the energy efficiency of the system. The Railways have initiated steps for introduction of new fuel and energy efficient diesel and electric locomotives. Appropriate R&D measures need to be taken to improve on the fuel efficiency of the existing locomotives, which would remain in operation for years to come.

9.5.16 **Renewal/Replacement** - A major effort was made to accelerate the renewal/replacement of overaged assets in order to progressively reduce the backlog in this regard. About 19000 Kms. of tracks were renewed during the Plan and all the old locos and most of the overaged wagons were replaced. A substantial backlog of track (11500 Kms. of track length) and bridges (2400) persists. A large number of coaching stock has yet to be replaced. There can, therefore, be no let up in emphasis in this direction.

9.5.17 **Electrification** - Electrification programme, taken up by the Railways during the Sixth and the Seventh Plans, will have to be continued. Apart from completing the electrification on the major trunk routes, it would be desirable to go in for electrification in other high density routes on a continuous network basis.

9.5.18 **On Line Performance** - The incidence of 'on-line failures' of fleet and equipment is fairly high. Such failures on the crowded traffic corridors, even if stray, tend to bring about a quasi-paralysis of the corridor which the system cannot take in its stride. The *sine-qua-non* of economic operations on the Indian Railways must be the absolute reliability of the equipment. The proportion of the fleet awaiting repairs has improved in relation to the targets/norms fixed by the Railways (Annexure-9.5). However, the maintenance infrastructure is still inadequate in relation to the rolling stock. The pace of modernisation and rationalisation of maintenance facilities requiring reduction in the number of workshops, conversion of multi-activity shops to uni-activity shops and creation of facilities for composite rakes is slow. Further, the Railways continue to engage themselves in production activities leading to sub-optimal utilisation of workshop capacities. They need to off-load some of their manufacturing activities and concentrate on their assigned role as transport operators. The modernisation and rationalisation programme must result in no "on-line failures".

9.5.19 **Technological Upgradation** - During the Seventh Plan, the Railways initiated action to release the system from a situation of technology freeze which had persisted for more than two decades. The massive scale of replacements provided an opportunity for the introduction of new technologies and the muchdesired modernisation of infrastructure. In fact, in several areas, upgradation could go hand in hand with

replacements. The Railways would need to explore the potential in new areas like higher axle loads, and improved track geometry.

9.5.20 **Manpower Planning** - The manpower costs in the working expenses of the Railways form a sustantial proportion. Higher level of mechanisation and technology upgradation are necessary intruments to handle growing volumes of traffic and to achieve economies of scale. In the process, rationalisation of deployment of manpower would become possible. In addition, pension liability for the staff is increasing substantially requiring considerably stepped-up annual contributions. From a level of 5.45 per cent of the gross traffic receipts during the Seventh Plan, the requirements are anticipated to increase to over 8 per cent during the Eighth Plan period.

9.5.21 **Containerisation** - While the world over, containerisation has been increasingly adopted, the process has been slow in India. Containerisation offers a number of advantages not only to the Railways in terms of improved wagon turn round and reduced multiple handling but also to the users, in term of safe transportation and quick delivery. In view of this, it would be appropriate to hasten the on-going programme during the Eighth Plan, by exploring the possibilities of involving the private initiative for expanding the inland depot network as also to provide containers.

Traffic Projections for the Eighth Plan

9.6.1 A freight traffic level of 443.4 million tonnes per annum is expected to be carried by the Railways by the end of the Eighth Plan. On the basis of an estimated average lead of around 715 KMs, the total transport output is estimated at 318.5 billion tonne KMs. (BTKMs). The commodity wise breakup of the total traffic is given in the Annexure-9.6. In respect of passenger traffic,.a target of annual growth of 5% is assumed.

Outlay for the Eighth Plan

9.6.2 For the Eighth Plan, the approved outlay of Rs. 27,202 crores. This includes a budgetary support of Rs. 5375 crores and the balance is to be set from inteinal and extra budgatary resources.

Strategy Visualised

9.7.1 Given the constraints and the expected role of the Railways, the strategy and the broad objectives for the Eighth Plan are given below :-

i) Complete the process of rehabilitation, replacement and renewal of overaged assets;

ii) Adopt improved methods of maintenance to increase the productivity and reliability of services and assets;

iii) Augment line, terminal and rolling stock capacities and convert metre gauge to broad gauge on a selective basis;

iv) Take steps to improve the overall efficiency of the Railways through technological upgradation, reduction of operation costs and increasing productivity of labour and capital assets.

v) Conserve energy through technological upgradation, with greater stress on electrification;

vi) Expand the network on a selective basis to increase the line capacity on saturated routes through alternative routes, connecting the missing links in the network and lines required for strategic, industrial and other developmental needs;and

vii) Continue the "system approach" to reduce costs of operation and strive for an optimal balance between capital and human endeavour inputs.

ROADS

General

9.8.1 Along with other modes like railways, waterways and air services, roads provide the basic infrastructure for transportation of goods and passengers. Roads cater to all types of traffic; the long distance traffic is served by national highways and State highways, inter-district and intra district traffic by major district roads, feeder traffic connecting rural centres of production to market outlets by other district

TABLE - 9.3 Expenditure on Roads & Bridges - Seventh Plan

(Rs. crores)

	Seventh Plan		1990-91		1991-92
	Outlay	Expenditure	Outlay	Expenditure	Outlay
I.Central Sector	1019.75	1640.91	460.00	410.23	490.00
of which					
National Highways	891.75	1481.68	413.50	390.07	446.00
II. . State Sector	4180.29	4693.88	1363.41	1303.05	1575.68

roads and local traffic by village roads and urban roads.

Investment on Roads

9.8.2 Total investment on roads and road bridges in Central and State Sectors since the beginning of planning, is given at Annexure - 9.1. The share of investment on roads has been declining over the Plan periods.

9.8.3 Expenditure incurred in the central and state sectors during the Seventh Plan, 1990-91 and 1991-92 is given in Table - 9.3 .

9.8.4 Substantial expenditure has been incurred on the construction of roads under certain other heads of development like special employment programmes and North East Council during Seventh Plan. Such expenditure was estimated to be of the order of Rs. 2175 crores during the Seventh Plan.

Review of Past Growth

9.9.1 There has been a steady growth in the road network in the last four decades, as shown in Table 9.4.

9.9.2 It will be seen from the above that the total length of national highways has increased only by about 70% between 1950-51 and 1989-90 while the increase in the case of all other roads is of the order of 544%

9.9.3 In 1950-51, only 39% of total road length was surfaced. This rose to 43.3% in 1970-71, and 46.7% in 1984-85. The latest avialable information does not indicate any significant increase in the proportion of surfaced roads

Table - 9.4 Length of Roads

(Thousand Kms.)

	1950-51	1960-61	1970-71	1980-81	1987-88	1989-90
1. National Highways	19.81	23.80	29.13	31.67	32.33	33.69
2. State Highways	42.56	61.69	89.22	94.36	112.50	
3. Other Roads (including district roads & village roads etc.)	337.57	438.99	799.53	1365.27	1698.59	2069.5[P]
Total :	399.94	524.48	917.88	1491.30	1843.42	2103.23[P]

Source: 1. 7th Plan Document.
2. Directorate of Transport Research, Min. of Surface Transport.
P : Provisionally Estimated

leaving over 50% of the road length in the country unsurfaced.

Road Connection to Villages

9.9.4 Accessibility of villages by allweather roads improved significantly duing the Seventh Plan. It has been estimated that by the end of the Seventh Plan, the total number of villages with a population of 1000 and above were about 102900 villages. During 1990-91 the corresponding achevement was 2000 villages and during 1991-92, 2300 villages are targetted to be connected.

Major Constraints

9.9.5 The national highways (NH) which constitute the primary network of the road system in the country has recorded a moderate expansion since 1951. The total length of the NH system at present is estimated to be 33,600 Kms. compared to a about 20,000 Kms. in 1950-51. Over the years, the NH system has come under severe strain due to high rate of growth in traffic volume. Selection and prioritisation of different segments of road network for improvement and upgradation are handicapped by the absence of reliable data. There are as yet no arrangements for systematic collection of data on road traffic in the absence of traffic recording and reporting procedures, multiplicity of transport agencies and preponderance of single vehicle operators. Attempts had been made in the past by different groups and committees to build up estimates of road traffic for goods and passengers by different methods and under different assumptions. These traffic estimates and projections show considerable variations. It is necessary to undertake periodic traffic surveys to update information at regular intervals.

9.9.6 Road traffic is likely to increase substantially in the next 10 years. The order of increase may be anywhere between 100% and 200%. The road system has to be strengthened and expanded to meet this expansion in traffic. The main problems facing the development of these roads are inadequate road pavement, breadth and thickness and presence of old, weak and narrow bridges and culverts.

9.9.7 In the case of rural roads, the main problem is that at present several organisations handle road construction and maintenance resulting in duplication of effort, lack of uniformity and imbalanced development of the network. There is, therefore, need to unify the organisational structure for rural road planning, construciton and maintenance so as to derive the maximum benefits from the outlays.

9.9.8 Maintenance of roads has not received adequate attention in the past primarily because of lack of funds. It was estimated that availability of funds for maintenance generally does not exceed 60% of normal requirements and in case of rural roads it is still less.

Thrust Areas and Strategy for the Eighth Plan

9.10.1 The existing deficiencies in national highways(NH) would require construction of missing links, four-laning and two laning of various sections, construction of bridges and by-passes etc. The first priority will be given to complete the ongoing works. For systematic development of the NH system, different strategies will need to be adopted for low, medium and high volume traffic density routes. Capacity augmentation of high density traffic corridors carrying more than 15,000 passenger car units traffic per day, through four - laning will need to be taken up during the Eighth Plan. For selected high density corridors, it may be necessary to consider expressway facility for rapid and safe movement of fast traffic. Levy of tolls may be considered for highway users.For national highways carrying medium traffic density, traffic upto 15000 PCUs, strengthening of pavement and widening to two-lanes including reconstruction of bridges, wherever necessary, need to be taken up. For low traffic density routes carrying traffic upto 5,000 PCUs, widening to two-lanes may be considered only on a selective basis, depending upon the resource availablility. However, weak and narrow bridges have to be replaced.

9.10.2 As regards additions to the National Highways system, it would be necessary to adopt a very selective approach in view of the resource constraints and the need to give priority to removal of deficiencies on the existing NH system.

9.10.3 Constraints of resources may not permit removal of all the existing deficiencies in the State highways during the Plan period and a selective approach based on economic cost benefit analysis may have to be adopted. Consolidat-

ing the existing network should receive high priority. It would be necessary to widen and strengthen the pavement structure to minimise vehicle operating costs and maintenance expenditure. A number of bridges would be required to be constructed/reconstructed. Special attention has to be given to those State Highways which would require to be upgraded to national Highway in the future on the basis of traffic densties and growth. It is essential that the State Governments make arrangements to prepare suitable road and bridge inventories covering the existing physical status and structural condition of the main network comprising the State highways and major district roads and then update them at regular periodic intervals. Regular traffic counts on these roads would be necessary in order to decide on the inter-se priority of development of various sections.

9.10.4 Rural roads are essential for achieving the objective of integrated rural development. The priority for rural road development in the Eighth Plan would be as under :-

a) Linking of all villages with a population of 1000 and above on the basis of 1981 census.

b) Special efforts to accelerate village connectivity in respect of backward regions and tribal areas.

9.10.5 It would be appropriate to integrate rural road construction and maintenance under Minimum Needs Programme (MNP) with local area development planning. State Governments may pool the resources made available under MNP and special employment programmes and undertake rural road construction under the respective local area development plan.

Productivity and Technological Upgradation

9.10.6 Construction, upgradation and improvements of roads involve heavy expenditure. Engineering measures to ensure a minimum 15 year design life, to improve road safety and reduce fuel consumption should be identified for implementation. It is necessary to improve the design of vehicles for both passenger and freight. Plying of multi- axle vehicles and truck-trailer combinations need to be encouraged to reduce their damaging effects on pavements and also to reduce the vehicle operating costs. Procurement of modern road building equipment needs to be encouraged. In the construction of roads meant for high traffic density, the emphasis should be on modern techniques involving a fairly high degree of mechanisation and rigid quality control. For rural roads, however, existing construction technology and labour intensive methods would suffice. Use of new concepts like geo-synthetics, reinforced earth construction, cable stayed bridges, segmental construction techniques, incremental launching methods in bridge construction etc. should be introduced which would not only lead to better productivity but also reduce cost of construction.

Maintenance

9.10.7 Maintenance of roads has not received adequate attention in the past primarily because of lack of funds. It would be necessary to provide sufficient funds for maintenance to avoid continuing deterioration of roads built with scarce Plan resources.

Augmentation of Resources

9.10.8 In view of the resource constraints, it would be desirable to look for non-Governmental sources of funds and private participation in road construction. Augmentation of Central Road Fund should help, to some extent, increase the resources available for road development. Another possible source for additional resources for the road sector could be toll-based highway projects. Private participation through Build, Operate and Transfer(BOT) projects, should be encouraged.

Research & Development

9.10.9 Research and development activities have an important role to play in meeting the challenges of modernising the road system, technology upgradation and finding cost-effective solutions to infrastructural problems in general. The emphasis during the Eighth Plan would be to reorient road research activities to achieve the objective of improvement and upgradation of the road network at the least possible cost. Problems relating to improvements, upgradation, construction and maintenance of various types of roads and road transport should be prioritised and projects to be implemented in a time-bound frame should be sanctioned accordingly. The focus of research should be not merely on technological aspects but also planning and manage-

ment. There is need to set up a road and traffic Data Bank at national and State levels which will greatly facilitate in the preparation of programmes and their execution. It may be necessary to strengthen and coordinate the research and development activities undertaken by the Central Road Research Institute, the road laboratories in different States and other organisations.

Eighth Plan Outlay

9.11.1 The need for higher outlays in the road sector is recognised. However, due to constraint of resources, an outlay of Rs.2,600 crores has been indicated for Central Sector Roads. The requirements would be reviewed during Annual Plan discussions and adjustments made at that stage.

9.11.2 In the State Sector, an outlay of Rs. 10610 crores is provided for roads and bridges including Rs. 3066.10 crores for rural roads under the minimum needs programme.

ROAD TRANSPORT

General

9.12.1 Road transport is of great importance both for movement of passengers and goods. It is ideally suited for short and medium distances because of its inherent advantages such as easy availability and 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 rural areas not served by Railways. Road transport provides one of the basic infrastructure facilities for economic development of backward areas besides being the feeder service to rail traffic, ports and harbours.

9.12.2 During the last four decades, road transport has rapidly gained importance in the overall transport system of the country. The total number of all types of mechanised motor vechicles increased from a mere 3 lakhs in 1950-51 to 192 lakhs in 1989-90. Categorywise No. of registered ve hicles is given in table 9.5.

Expenditure/Outlay in Road Transport Sector

9.12.3 Table 9.6 gives the outlay and expenditure during Seventh Plan, outlay and anticipated expenditure during 1990-91 and outlay for 1991-92.

Goods Transport

9.12.4 Road freight services are almost wholly owned and operated by the private sector. Steps have been taken in recent years to remove certain impediments to the growth of road transport industry. A major step has been to liberalise the issue of National and Zonal Permits. In January 1986, the Central Government removed the ceil-

Table 9.5 Registered Motor Vehicles

(In '000 Nos.)

	1951 March	1961 March	1971 March	1981 March	1990P March
1.Goods vehicles	82	168	343	590	1289
2. Buses	34	57	94	154	312
3. Cars, jeeps and taxis	159	310	682	1122	2733
4.Two wheelers	27	88	576	2530	12525
5. Other Vehicles	4	42	170	847	2314
(Tractors,, trailers, three wheelers and other misc. vehicles)					
Total	306	665	1865	5243	19173

Source : Ministry of Surface Transport - Transport Research Division.

P : Provisionally Estimated.

Table 9.6 Outlay and Expenditure

(Rs.crores)

Sl. No.	Scheme	7th Plan		1990-91		1991-92
		Outlay	Ependiture	Outlay	Expendiure	Outlay
	I. Central Sector					
1.	Delhi Transport Corporation	100.00	76.39	50.00	43.00	53.00
2.	Capital Contribution to SRTCs	65.00	180.52	27.00	20.00	15.00
3.	Other Schemes	39.92	1.00	4.00	0.70	2.00
	Total Central Sector	203.92	257.19	81.00	63.70	70.00
	State Sector	1786.18	1893.44	390.58	443.66	586.62
	Grand Total	1990.10	2151.35	471.58	507.36	656.62

ing on the number of National Permits for public carriers to be issued by the State Governments and Union Territories. As a result, permit holders were authorised to operate in any five States, subject to payment of multiple taxes. Though there is a general appreciation among the State Governments of the inhibitory nature of octroi, some States are still continuing to levy octroi. The Government will have to continue its efforts in pursuit of the abolition of octroi in States and Union Territories. The recently introduced scheme for truck parking complexes needs to be extended to cover all the States in the country. In order to provide loading and unloading facilities, parking areas, transport operators' office, services by banks and post offices etc. "Transport Nagars" may be set up on the out-skirts of the major cities. This step should provide the necessary infrastructure and incentives to the truck operators to increase the utilisation of vehicles and productivity.

Non-Mechanised Transport

9.12.5 The rural sector in the country is dependant on animal drawn carts for transport. It is estimated that there are well over 15 million bullock carts in the country today and carrying a significant volume in areas not even linked by all-weather roads. Therefore, there is need to improve the design and capabilities of bullock carts.

Passenger Transport

9.12.6 Road transport passenger services are provided both by the public and private sector in the country. While the total number of passenger buses is estimated to have increased from 1.54 lakhs in March 1981 to 3.12 lakhs in March 1990, the share of the public sector buses in the country as a whole has declined from 45% to around 33%. Details are given in Table 7.

9.12.7 In the organisationed setup of passenger bus services in the public sector, there is no uniform pattern. Several States have established Corporations under the Road Transport Corporation Act, 1950 while some States are operating either through companies registered under the Indian Companies Act, 1956 or departmental undertakings.

9.12.8 As on March 31, 1990, there were 68 State Road Transport Undertakings (SRTUs) having a fleet of 102,000 buses with a total investment of over Rs. 3700 crores and providing direct employment to 7.63 lakh workers. They carried about 60 million passengers per day.

9.12.9 There has been improvement in the productivity of the State Road Transport Undertakings during the Seventh Plan period. The over-all fleet utilisation has improved. Vehicle productivity has also increased from 218 Kms. per bus/day to 259 Kms. There has been simi-

lar improvement in staff productivity from 30.5 kms. per working day to 35.3 kms. in the corresponding period. Fuel efficiency during the period also increased from 4.21 kilometers per litre (KMPL) to 4.35 KMPL. There are, however, wide differences in the performance, efficiency and productivity of the individual SRTUs.

TABLE - 9.7 Growth of fleet in the private & public sectors

(in thousand numbers)

Year ending	Private Sector	Public Sector	Total	Share of public Sector(%)
1980-81	84	70	154	45.5
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	139	84	223	37.7
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

Source: Ministry of Surface Transport- Transport Research Division and Central Institute of Road Transport, Pune.

9.12.10 The physical performance during terminal years of Sixth and Seventh Plans and Annual Plans for 1990-91 and 1991-92 in respect 42 state road transport undertakings is given in Table 9.8.

9.12.11 Most of the State Road Transport Undertakings, face serious financial constraints. It has been noticed that the revision of fares has generally not kept pace with the increase in expenditure despite improvement in operational efficiency. Operation losses are also partly attributable to operations of uneconomic routes for social reasons. These undertakings, thus, need considerable financial support from Government for covering their current losses. The SRTUs suffered a total net loss of Rs.1245 crores during the Seventh Plan. Net losses for the year 1990-91 (R.E.) and Annual Plan 1991-92 would be Rs.470 crores and Rs.362 crores respectively.

Strategy visualised for the Eighth Plan

9.13.1 Productivity of SRTUs can and need to be further improved. Measures to be taken in this regard include continuance of the emphasis initiated in the seventh plan period on replacement of overaged fleet, creation of maintenance facilities and in-service training of staff for both operations and maintenance, and adoption of improved management and operational practices so as to improve manpower productivity. The

TABLE - 9.8 Performance of State Road Transport Undertakings

Performance Indicator	Sixth Plan ending 1984-85	Seventh plan ending 1989-90	Annual Plans 1990-91 (RE)	Annual Plans 1991-92(Est)
Fleet Utilisation (% of buses on road)	84	89	89	89
Vehicle Prodctivity (Km. per bus held per day)	218	257	259	267
Staff Productivity (Km. per worker per day)	30.5	35.3	36.0	37.5
Fuel Consumption	4.21	4.35	4.37	4.40

fare structure should be periodically reviewed and must reflect the cost structure.

9.13.2 Given the financial constraints, it is necessary to have integrated transport services by both the Public and the Private Sectors in a harmonious manner to meet the growing demands. It would be necessary to consider whether further augmentation of capacity should essentially be in the private Sector. State Governments should adopt a flexible approach in this regard and reorient their policies to permit operations of private services.

Urban Transport

9.13.3 Increasing urbanisation and the growth of personalised transport in the cities are resulting in acute congestion on city roads, besides causing environmantal pollution. The emphasis has to be on the growth of public transport, which also has to be improved substantially. In the metropolitan cities, an integrated Mass Rapid Transport system needs to be evolved.

9.13.4 Provison of transport facilities has to be integrated with land use planning which is particularly important for small and medium cities. It is also essential to prepare perspective transport plans for all cities so as to avoid fragmented, costly and often partial and ineffective solutions.

Modernisation of Road Transport

9.13.5 Technology upgradation has assumed high priority particularly in respect of design of vehicles suitable to the requirements of cities, rural areas and hilly terrain. For freight operations it is necessary to encourage the use of multi-axle and tractor-trailer combination in view of their inherent advantages of fuel efficiency, capability of higher pay-load and reduced damage to the road structure. However, considering the poor state of the roads in the country, a careful study of the various options needs to be undertaken and a rational fleet mix and axle load policy arrived at. Some signs of technology modernisation are already visible in the case of light commercial vehicles. The use of conventional two-axle-trucks whose design is out-dated would continue for quite some time. It is in the area of 10 tonnes or more pay-load category that modernistion is urgently called for. It is necessary to introduce a new state-of-the-art engine which is fuel efficient and causes less pollution. It is also necessary to introduce light-weight materials for replacing the present heavy wooden bodies. The buses are presently, being manufactured on truck chassis. Technology changes to bring about improvements in design of the chassis and bodies and of fuel efficient engines and also for the special needs of urban areas are overdue.

Road Safety

9.13.6 The road accidents in India are amongst the highest in the world, To reduce the incidence of accidents, a number of traffic safety measures adopted in the seventh plan continue to be pursued. Such measures would include establishment of driver training schools, use of improved road signs, use of equipment for checking over-speeding and facilities for stringent check of the mechanical condition of vechiles.

Eighth Plan Outlay

9.14.1 An outlay of Rs.264 crores is indicated for Road Transport in the Road Transport in the Central Sector. In the State Sector, including Union Territories, an outlay of Rs. 3585.53 crores is allocated for Eighth Plan.

SHIPPING

General

9.15.1 A national merchant marine fleet is vital for the country, given the geographical configuration of the Indian subcontinent and the need for the country to play a positive economic role in the international market. Almost 98 percent of the country's overseas trade, in terms of volume, is moved by sea. There is also a relatively smaller volume of domestic traffic carried by coastal shipping.

Indian Shipping and the Maritime Trade

9.15.2 The international maritime shipping industry had into a prolonged spell of recession in the last decade, interrupted by only short spells of relief. The shipping industry was able to emerge from this period of slump only in 1987.

9.15.3 During the Seventh Plan, the main thrust was to build a modern efficient fleet through replacement of over-aged and uneconomic fleet by modern vessels as well as diversification of fleet through acquisition of specialised and container carriers. Although the objective was to raise the tonnage from 6.36 million Gross Reg-

istered Tonnege (GRT) at the beginning of the seventh plan, to 7.5 million GRT at the end of the Seventh Plan, a marginal reduction took place in the net tonnage While there was a gross addition of 2.1 million, 2.5 million tonnes was scrapped. The main reason for lower acquisition levels was the weak freight market, which, in turn, led to ability on the part of Indian shipping companies to generate adequate funds for augmenting their tonnage. The net tonnage presently held by the Indian fleet is around 6 million GRT (9.7 million Dead Weight Tonnage (DWT).

Shipping Corporation of India (SCI)

9.15.4 The public sector Shipping Corporation of India accounted for 52.6% of the total Indian fleet strength of 6.36 million GRT at the beginning of the Seventh Plan, The SCI's fleet holding reduced to 48% or 2.89 Million GRT (4.86 million DWT) by March 1992. The reduction in SCI fleet, both in terms of absolute tonnage as also percentage share in the Indian fleet is due to various factors, the most prominent being, the lengthy procedure for approving acquisition of tonnage and foreign exchange crunch.

9.15.5 In spite of these constraints, the financial profile of SCI shows a welcome trend since 1987. The gross internal resources of the Corportion were Rs.198 crores in 1990-91. It is expected to rise to Rs.257 crores in 1991-92 The total internal resource generation of the Corporation during the Seventh Plan was Rs.706 crores. This is higher than the aggregrate internal resource generation of Rs.569 crores during the 24 years ending the Sixth Plan.

The Private Sector

9.15.6 The private sector has been able to regain some of its lost ground since 1986. A major contributory factor was the opening of a new financial institution, viz., Shipping Credit and Investment Company of India (SCICI) which was launched in 1987 in the place of the erstwhile Shipping Development Fund Committee (SDFC), for financing private sector ship acquisition. The SCICI did a commendable job in financially restructuring the entire private shipping industry as a result of which the private companies were able to reduce their debt liability and improve their viability.

9.15.7 Certain other steps were also taken during the later half of the 1980s to help this process. These were:

a) Speeding up of acquisition procedure,

b) Allowing acquisition of ships for cross trade,

c) Permitting acquisition of ships upto 25 per cent in excess of assessed requirements,

d) Allowing ship owners to place orders on Indian shipyards without reference to assessed requirements;

e) Rehabilitation of sick shipping companies through several relief measures such as conversion of debt into zero rate/interest free bonds to the extent of the difference between the market value of the fleet and debt against the fleet,

f) Allowing shipping companies to diversify into non-shipping activities and vice versa; and

g) Relaxation of pari-passu obligation.

9.15.8 The age profile of the shipping fleet shows a welcome trend towards younger ships. The over 20 years old has substantially declined, while the number vessels less than 5-9 years old has increased. However, the share of the middle aged vessels (10-19 years) too has increased from 48% in 1984-85 to 52% in 1989.

Indian Shipping Share in Trade

9.15.9 The traffic carried by Indian vessels is around 36% of the total Indian sea borne cargo. The share in POL is reasonably good, though it is not so in bulk carriers (26% as against target of 50%) and liner (21% as against 40% target). A large cargo base is available in the country itself which can provide an impetus to Indian Shipping industry.

Seventh Plan and Annual Plans 1990-91 and 1991-92 Investment Programme

9.15.10 The outlay and expenditure during the Seventh Plan and the Annual Plans 1990-91 and 1991-92 are given in Table 9.9. The scheme-wise break up of the outlay is given in Table 9.10.

Table - 9.9 Outlay and Expenditure and Pattern of Funding

(Rs.crores)

	Outlay	Expenditure	of which		
			Internal Resources	Extra Budgetary Resources	Budgetary Support
Seventh Plan (1985-90)	693.41	670.05*	-	-	670.05
Annual Plan (1990-91)	708.00	274.45	101.37	87.97	85.11
Annual Plan (1991-92)	611.00	966.46	153.72	780.49	32.25

*excludes internal resources and extra budgetary resources

Table - 9.10 Outlay and Expenditure- Shipping

(Rs.crores)

Sector	Seventh Plan		1990-91		1991-92	
	Outlay	Expdr.	Outlay	Expdr.	Outlay	Expdr.
ShippingCorporation of India	670.47	662.27*	705.30	273.63	604.00	964.50
Interest subsidy for Sailing Vessels	7.20	0.94	0.25	-	0.50	0.10
D.G. (Shipping)	15.74	6.84	2.45	0.82	6.50	1.86
Total	693.41	670.05	708.00	274.45	611.00	966.46

* Outlay in case of SCI relates to budgetary support only.

Eighth Plan Objectives and thrust areas

9.16.1 The Eighth Plan has as its main objective acquisition of a modern, diversified fleet capable of fulfilling the national objective of export promotion and improved balance of payments of the country. The other objectives are

i) Scrapping of obsolete vessesls and acquisition of modern fuel efficient vessels;

ii) Streamlining and providing flexibility in the regulation and licensing procedure for acquistion, purchase and sale of ships and gradual movement towards total delicensing and deregulation;

iii) Cargo support to Indian Shipping by canalising all cargo of Government Departments/agencies to Indian vessels, as far as possible. A policy of purchase on FOB and sale on CIF terms to be strictly adhered to;

iv) Financial and managerial restructuring of shipping companies;

v) A package of fiscal and monetary incentives linked to foreign exchange earnings of the sector;

vi) Revamping communication, data processing and control system;

vii) Development of manpower skills and training facilities; and

viii) Provision of adequate repair facilities.

Tonnage Acquisition Target

9.16.2 About 0.4 MGRT of the fleet will be overaged at the beginning of the Plan and over 1.5 MGRT will become overaged during the Plan. Thus, a total of 1.9 MGRT will need replacement.

9.16.3 In the context of resources constraint, it is proposed to phase out the replacement requirement. About 1.5 MGRT will be replaced during the Plan period. Besides, about 1 MGRT will be added to the tonnage increasing the total tonnage at the end of the Eighth Plan to 7.0 MGRT.

Financial Strategies Envisaged

9.16.4 The traditional sources of funding for ship acquisition have been (a) long-term credit from ship builders, (b) loans in the international market, (c) backup rupee loans granted by - SDFC and Government on concessional basis.

9.16.5 In the context of resource constraint and the fact that shipping is highly capital-intensive industry, the new and innovative instruments such as Cross Border Leasing will have to be explored. Another method of financing could be sale and lease back of ships.

9.16.6 This mechanism would generate foreign exchange through sale of ships The ships sold would still be available through the mechanism of leasing back, though not under the Indian flag. Besides, the shipyard credit would continue to play an important role in the acquisition of new ships. Efforts would also be made to tap multilateral lending institutions like the World Bank, Asian Development Bank etc. for augmenting shipping tonnage.

9.16.7 In order to augment the private sector shipping tonnage, it would be necessary to strengthen the resource base of SCICI which is responsible for financial assistance to private shipping companies. For this purpose, the SCICI would be allowed to raise market borrowings to meet its commitments.

Assistance to Sailing Vessels

9.16.8 A new scheme called the "Sailing Vessels Subsidised Loan Scheme" was initiated in 1988 under which loans could be granted by the State Financial Corporation or nationalised banks for construction of mechanised vessels. The institutions will be subsidised by the Government of India for the lower interest charged by them from the ship owner. There has been no expenditure under this scheme since the time it was formulated. The scheme will be assessed and efforts made to smoothen out any constraints to effective implementation of the scheme.

Manpower Planning and Development

9.16.9 The major ongoing scheme refers to the setting up of the shore based Academy at Bombay. Other new schemes include acquisition of simulators and setting up of a Rating Training Establishment Centre. Induction of private investment will be actively explored in setting up the new institutes.

9.16.10 There is also need to retrain the existing officers so as to upgrade their skills and integrate various training disciplines. This is because technically advanced ships demand polyvalent officers capable of handling both navigational and engineering functions.

9.16.11 In the case of crew, the demand for ratings is on the increase due to upsurge in shipping industry. The training facilities will need to be adequately augmented to meet the increasing demand for ratings and also retraining of existing crew as general purpose crew.

Coastal Shipping

9.16.12 Coastal shipping is ideally suited to carry long distance bulk cargo and passenger traffic especially for destinations on the water front. The coastal tonnage increased from 99 vessels of 0.345 million GRT in 1984-85 to 159 vessels of 0.518 million GRT in 1989-90. The increase in tonnage has been due to the acquisition of off-shore vessels which cater mainly to the requirements of ONGC.

9.16.13 Over the years, there has been a decline in the movement of general cargo and passengers by coastal vessels. This has been mainly due to presence of overaged coastal vessels, steep rise in cargo handling cost, competition from rail and road and the Indian Customs Act which equates coastal vessels with foreign going vessels as regards the procedural formalities. These constraints have to be removed.

9.16.14 It may be mentioned that coastal shipping can play an important role in selective stretches for transport of cargo and passengers. The possibilities of introducting roll on-roll off(Ro-Ro) and other fast moving passenger and ferry vessels need to be explored. Complementary investments in dredging and development of small ports will also be necessary, besides development of harbours.

9.16.15 In the Eighth Plan, coastal shipping will need to be adequately developed to cater to the increased coal movements from coal mines to thermal power stations.

Outlay for Eighth Plan

9.16.16 The outlay for Eighth Plan for the Shipping in the Central Sector is Rs.3400 crores and Rs. 268.91 crores in the State Sector.

Lighthouses

9.17.1 The outlay and expenditure on lighthouses are as follows :

(Rs.crores)

	Outlay	Expenditure
Seventh Plan	30.00	16.24
Annual Plan 1990-91	19.00	3.60
Annual Plan 1991-92	24.00	38.04
Eighth Plan	57.00	-

9.17.2 While the amount required for spillover schemes is Rs.22.55 crores, new schemes account for Rs.34.45 crores in the Eighth Plan.

9.17.3 The important spillover schemes include (a) replacement of Decca chains by Loran 'C' (Rs.2.84 crores),(b) and replacement of M.V. Sagardeep (Rs.17.32 crores). Among the new schemes the important ones are (a) construction and improvement of lighthouses; (b) construction of office building and (c) replacement of Salaya Decca chain.

Table- 9.11 Volume of Traffic at Major Ports

(Million tonnes)

Name of the port	1984-85	1989-90	1990-91	1991-92
Calcutta/Haldia	10.18	14.69	14.90	17.95
Bombay	25.20	27.46	29.28	28.32
Madras	15.00	23.94	24.51	23.35
Cochin	3.92	7.11	7.32	7.48
Vishakhapatnam	12.87	21.12	19.42	19.28
Kandla	15.75	18.93	19.68	20.30
Mormugao	14.51	14.16	14.90	14.64
Paradip	2.14	6.18	6.68	7.02
New Mangalore	3.38	7.66	8.03	8.51
Tuticorin	3.78	5.33	5.07	5.47
Nheva Sheva	-	0.70	2.02	2.68
Total	106.73	147.28	152.55	155.00

PORTS

Review of Past Performance

9.18.1 There are 11 major ports and 139 minor intermediate ports located along the 5560 kms. long coast line of India. The traffic handled at major ports was 147.28 million tonnes in 1989-90. In 1990-91 and 1991-92, the traffic increased to 152.55 million tonnes and 155.00 million tonnes respectively. Port-wise traffic growth is given in the Table 9.11.

9.18.2 The composition of traffic has undergone significant changes as shown in the Table 9.12.

9.18.3 The POL traffic has registered significant growth, while foodgrains traffic has dwindled as a consequence of increasing self-reliance. A recent phenomenon is the growing trend of container traffic, and coal traffic which is likely to increase substantially in the Eighth Plan.

Table- 9.12 Commodity-wise traffic at Major Ports

(Million tonnes)

Commodity	1984-85	1989-90	1990-91	1991-92
POL	49.73	62.00	65.78	63.60
Iron Ore	26.00	33.20	31.86	33.06
Coal	4.50	17.70	19.80	21.60
Fertilizers (including raw materials)	6.00	6.66	7.72	9.46
Foodgrains	1.10	*	*	*
Containers	3.23	6.00	7.92)	27.28
General Cargo	16.17	21.72	19.47)	
Total	106.73	147.28	152.55	155.00

* Included in General Cargo.

Table - 9.13 Commodity - wise Capacity at Major Ports

(Million tonnes)

Commodity	1984-85	1989-90	1990-91	1991-92
1	2	3	4	5
POL	55.25	72.15	72.15	76.65
Iron Ore	41.50	41.50	41.50	42.50
Coal	6.25	6.50	6.50	6.50
Fertilizers	3.90	6.60	6.60	6.60
Containers	3.48	5.82	5.82	6.58
General Cargo	22.35	28.35	28.35	28.75
Total	132.73	161.32	161.32	167.58

Capacity at Major Ports

9.18.4 The capacity at major ports increased from 132.73 million tonnes in 1984-85 to 161.32 million tonnes in 1989- 90, and 167.58 million tonnes in 1991-92. The commodity wise capacity are given in Table 9.13.

Productivity

9.18.5 The port productivity, in terms of ship turn-round time and average ship berth day output, registered an improvement over the Plan period. The average turn-round time of a ship declined from 11.9 days in 1984-85 to 8.9 days in 1989-90 and 8.1 days in 1990-91, while the average ship berth day output, increased from 2314 tonnes per day in 1984-85 to 3277 tonnes in 1989-90, and 3372 million tonnes in 1990-91.

9.18.6 However, labour and equipment productivity are still areas of concern. The output per gang shift is low despite the fact that the fact that the norms fixed in 1983 itself are at a low level. The manning scales evolved three decades ago have not changed, though modern cargo handling techniques have been introduced during this period. The ports continue to be afflicted by pockets of surplus labour. Therefore, there is an urgent need to revise the norms of output and the manning scales.

9.18.7 Equipment utilisation has been low for most categories of equipment. In the case of modernised handling system for iron ore, the actual performance is much lower than the rated capacity and in some ports lower than the norms. Low productivity is due mainly to operational constraints such as equipment breakdown, time spent on surveys and deballasting, power failures etc. Efforts need to be made to remove these constraints to improve productivity.

9.18.8 The present container handling rates are also low compared to international standards. For example, the number of Tonne Equivalent Units (TEUs) handled per crane hour ranges between 7 in Bombay to 15 in Madras compared to 26 in Colombo and 32 in Singapore. There is need to improve the container handling rates to make Indian ports internationally competitive.

Seventh Plan Outlay and Programme

9.19.1 The Seventh Plan provided an outlay of Rs.1104.79 crores for the Ports Sector. The expenditure totalled Rs.1341.53 crores, of which major ports accounted for Rs.1273.39 crores. Out of the total expenditure of Rs.1341.53 crores, Rs.701.00 crores or 52% came from the internal resources and inter-corporate loans of major ports. The budgetary support accounted for 48% of the expenditure. A large part of the budgetary support was on account of foreign aided projects (about Rs.360

crores) and hence, net budgetary support was only 21% of the expenditure.

9.19.2 There has been a shortfall in expenditure during 1990-91 and 1991-92 - Rs.220.28 crores in 1990-91, and Rs.347.72 crores in 1991-92. The main reason for this is the delay in sanction/ implementation of a number of projects such as laying of submarine pipelines at Bombay, oil jetty at Haldia, coal handling facilities at Paradip and Ennore, the dredging of Jiggerkhali Flat in the Hoogly Estuary, slow expansion of infrastructural facilities at JNPT etc.

9.19.3 During the Seventh Plan, Jawahar Lal Nehru Port (JNPT) was completed and commissioned in May, 1989. The port has three container berths,two bulk berths and can handle 5.9 million tonnes of traffic. Other schemes completed during the Seventh Plan/ Annual Plan 1990-91 and 1991-92 include the sixth general cargo berth at Kandla, one oil jetty at Madras, one multi- purpose berth at Mormugao, a general cargo berth at Mangalore, a general cargo berth and a fertlliser berth at Paradeep, an oil berth and cruse oil discharging system at Oouter harbour, Visakhapatnam, apart from container handling facilities at a number of ports.

Eighth Plan-Traffic and Capacity

9.20.1 The Eighth Plan traffic projections and the capacity build up required to serve this traffic are set out in Table 9.14.

9.20.2 The port-wise capacity and traffic projection at the end of the Eighth Plan is presented in Table 9.15

9.20.3 The major increase in capacity will take place at Paradip, Madras, Cochin, New Mangalore, Kandla and JNPT mainly to handle POL, Coal and container traffic. The Eighth Plan visualises actual physical capacity addition of about 88.91 million tonnes (MT). The details of the capacity addition are given below :

	M.T.	REMARKS
P.O.L.	29.50	Improved throughput at Bombay, New berths at Haldia, Kandla and Mangalore.
Coal	35.50	Coal traffic for coastal thermal plants will require port handling facilities at loading portof of Paradip and receiving ports of Madras, Cochin, Tuticorin, New Mangalore.

Table - 9.14 Commodity-wise Port capacities and Traffic Projections

(in million tonnes)

Commodity	Capacity as on 31.3.92 Plan (1992-97)	Projected Traffic for 8th 8th Plan by Ports	Capacity addition during by user agency	Capcity addition at ports as on 31.3.1997	Total capacity
POL	76.65	87.81	24.00	5.50	106.15
Iron Ore	42.50	36.00	-	-	42.50
Fertilizers (including raw material)	6.60	15.67*	-	-	6.60
Coal	6.50	36.00*	30.50	5.00	42.00
Other break bulk	28.75	37.43	9.81	0.35	38.91
Container	6.58	15.73*	10.75	-	17.33
Total	167.58	228.64	75.06	10.85	253.49

Table - 9.15 Port Capacity and Traffic

(In million tonnes)

Port	As on 31.3.1992		As on 31.3.1997	
	Traffic	Capacity	Traffic	Capacity
Calcutta/Haldia	17.95	18.85	22.73	27.35
Paradip	7.02	6.80	20.22	31.60
Vizag	19.28	18.80	26.38	21.75
Madras	23.35	25.92	34.70	34.92
Tuticorin	5.47	5.50	9.34	8.70
Cochin	7.48	9.76	13.61	15.36
New Mangalore	8.51	10.00	15.51	18.10
Mormugao	14.64	17.10	17.75	17.01
Bombay	28.32	27.25	29.52	30.25
Kandla	20.30	21.70	27.70	37.60
JNPT	2.68	5.90	11.18	10.85
Total	155.00	167.58	228.64	253.49

Container	10.75	Improved container handling facilites at Madras JNPT, Cochin, Bombay, Calcutta, Haldia, Kandla.
General Cargo	10.16	Additional general cargo capacity at Haldia, Kandla, Tuticorin, Mormugao.

Eighth Plan Thrust areas

9.21.1 The following are the thrust areas:

(a) Modernisation of port facilities and use of up-dated technology so as to improve the efficiency of operations and reduce the handling cost;

(b) Intensive utilisation of existing infrastructure through operational and managerial measures so as to optimise installed capacity utilisation;

(c) Expansion of facilities to handle at least 50 per cent of general cargo in container form;

(d) Deepening of drafts at selected major ports to receive larger vessels;

(e) Improvement in productivity of labour and equipment to improve the efficiency of port operations;

(f) Improvement in financial viability of ports;

(g) Alternative sources of funding port development;and

(h) Encouragement of private sector participation in selected port activities.

Strategies Visualised

9.21.2 In the Eighth Plan, modernisation of ports and cargo handling facilities, especially to handle container traffic will continue to receive priority. The development of containerisation will also necessitate rationalisation of container handling charges and tariff structure in major ports.

9.21.3 The Plan will provide for establishment of container freight stations as well as new Inland Container Depots. The concept of Multi-Modal-Transport System will be encouraged. The inter modal linkages between various modes of transport will be strengthened in order to allow smooth flow of traffic to and from the ports.

9.21.4 Since many ports will continue to handle traditional break-bulk cargo along with container cargo, the concept of multi-purpose terminals will be adopted to combine modern handling techniques with conventional operations.

9.21.5 A major constraint in the effective utilisation of modern container terminals at Madras, Jawahar Lal Nehru and Cochin Ports is the cabotage law which restricts coastal traffic movement to Indian vessels only. This prevents large foreign container vessels especially of the fourth generation category from using these ports as a base for transhipment of containers. This has resulted not only in under- utilisation of infrastructure at these ports but also in the diversion of traffic to nearby ports of Singapore and Colombo, depriving the country of foreign

exchange earned through container handling. At present the Indian shipping fleet has hardly any container or cellular vessels, leave alone fourth generation vessels. In view of this, it would be desirable to suitably amend the cabotage law to allow foreign lines to operate on selected stretches of coastal waters so as to allow optimal utilisation of container facilities set up at our ports.

9.21.6 The existing levels of output in terms of cargo transferred or handled are relatively low and port productivity is a matter of concern. In the Eighth Plan, efforts will be made to improve the availability and utilisation of equipment to achieve higher productivity levels. Labour productivity at ports, too, is very low. There is need to optimise this through extensive manpower training to enhance skills and managerial capabilities. Manning scales need to be reviewed and new techniques for cargo handling operations adopted.

9.21.7 Due to acute budgetary constraint, alternative sources of funding will need to be explored. One such concept is user investment. Construction and maintenance of such facilities by users is likely to result in more thorough utilisation and higher throughput. Another area of funding is inter-corporate loans introduced during the Seventh Plan This should be continued.

9.21.8 The private sector investment will also be encouraged in select port activities ranging from leasing of equipment to private management of terminals. In India, a beginning has already been made for the involvement of private sector in ports. For example, private sector in many ports employ their own equipment for their cargo handling operations. Stevedoring is another private sector operation in many ports.

9.21.9 The dredging capacity would be increased by replacing the overaged dredgers with modern and larger capacity dredgers to meet the increasing dredging demand. Apart from port and harbour dredging, there is considerable demand for different categories of dredging activities as riverine dredging, dredging of inland canals, irrigation channels and reservoirs. In view of this potential, it is desirable that the Dredging Corporation of India (DCI) acquire small portable dredgers suitable for such activities.

9.21.10 There is need to conduct hydrographic surveys and to prepare modern charts to improve port development activities and open unexplored areas to deep draft ships.

9.21.11 There is near absence of effective research and development units in ports. Planning and research cells will be set up in all the ports to improve the quality of planning techniques and expedite plan formulation.

9.21.12 There are at present two major institutions for training of personnel at the management levels. These are National Institute of Port Management (NIPM) and Indian Institute of Port Management(IIPM). Apart from this, there are Labour Training Institutes in several ports like Bombay, Madras, Calcutta and Vizag to train various categories of staff. The facilities at these institutes need to be upgraded to cater to the requirements of neighbouring ports.

Andaman and Lakshadweep Harbour works

9.21.13 In the Eighth Plan, the main schemes relate to the construction of breakwaters at a number of places, construction of Haddo Wharf and procurement of dredging equipment.

Intermediate and Minor Ports

9.21.14 At present, there are 139 minor or intermediate ports. The primary responsibility for their development and management rests with concerned State Governments.

9.21.15 The total traffic handled at minor ports has not registered significant increase over the years. Minor ports face various technical difficulties and shortcomings such as slow response to technological change in shipping and cargo handling, fall in iron-ore export and reduction in fertilizer traffic. Hence, the total traffic handled by these ports is growing at a much lower rate than that of the major ports.

9.21.16 Therefore, there is an urgent need for the concerned States to provide adequate funds for the development of minor ports so that they can meet the requirements of the hinterland and effectively cater to coastal and sailing vessels,

thereby, reducing the pressure on major ports to some extent.

9.21.17 During the Seventh Plan, an outlay of Rs.20 crores was provided in the Central Sector to render financial assistance to the States to develop selected minor ports. However, no expenditure was incurred on account of lack of formulation of schemes in time.

Dredging Corporation of India(DCI)

9.21.18 At present the Dredging Corporation of India has a fleet of 7 dredgers, out of which 2 are cutter suction dredgers and 5 are trailer suction dredgers. The capacity of DCI at the end of the Seventh Plan was 224.74 lakh cu.m. In the Eighth Plan, it is anticipated that capital dredging requirements will be about 1314 lakh cu.m. and maintenance dredging 685.70 lakh cu.m.

9.21.19 During the Eighth Plan, it is proposed to decommission four dredgers of DCI and five dredgers of Ports and replace them with larger and more efficient dredgers.

Eighth Plan Investment Programme

9.21.20 The expenditure in the Ports Sector during the Seventh Plan and Annual Plans 1990-91 and 1991-92 is given in Annexure 9.7.

9.21.21 An outlay of Rs.3216 crores is included in the Eighth Plan for Port Sector in the Central Plan. The outlay provided in the State Plans for ports and lighthouses in Rs. 319.28 crores

Inland Water Transport

General

9.22.1 Inland Water Transport (IWT) forms a very small part of the total transport network of the country. Out of a total freight traffic of about 550 million tonnes by all modes of surface transport, IWT carries about 16.6 million tonnes. In terms of tonne kilometres, the share of IWT is less than 1 percent. This IWT traffic is mainly on account of movement of Iron Ore on Goa waterways, which forms about 96% of the total IWT traffic. Other waterways account for only about 1.5to 2.0 million tonnes of traffic.

9.22.2 The main reason for the small share of IWT traffic is its spatial limitation. Compared to the countrywide network of rail and road transport, waterways are restricted to only certain areas like Ganga in the Eastern region, Brahmaputra in the North Eastern region, Goa waterways and canals and backwaters of Kerala, Karnataka, Andhra Pradesh and Maharashtra. Total navigable waterways comprising of a variety of rivers, canals, backwaters etc., extend to 14,500 Kms., of which only about 5,200 Kms of major rivers and 485 Kms of canals are suitable for operation of mechanised crafts.

9.22.3 Secondly, even where waterways are available, the potential has not been fully exploited on account of various constraints. Most of the waterways suffer from navigational hazards like shallow water and narrow width during dry weather, siltation and bank erosion and inadequate vertical and horizontal clearances resulting in considerable detention en-route. Navigational aids are inadequate and infrastructural facilities like terminals unsatisfactory. The crafts used for mechanical operations are overaged. 9.22.4 Thirdly, IWT traffic suffers from overall cost disadvantage compared to rail and road transport. It is suitable for low value, high volume, non perishable bulk cargo. It is cost effective only where origin and destination are located on river banks, as in the case of Iron-ore movement in Goa waterways. It loses much of its cost effectiveness in case of transhipment involving multi-modal transport on account of additional cost of cargo handling involved.

Review

9.23.1 Development of IWT has received low priority till the advent of the Sixth Plan which marked a watershed in the sense that some important policy decisions were taken and major schemes of national importance were started. A policy to declare important waterways as National Waterways was initiated and Ganga-Bhagirathi-Hooghly stretch between Allahabad and Haldia was declared National Waterway. An Interest Subsidy Scheme was started to provide loans to the IWT entrepreneurs at a subsidised rate of interest for acquisition of mechanised craft. Against a total expenditure of Rs.28.20 Crores till the Fifth Plan and two Annual Plans 1978-79 and 1979-80, actual expenditure for the Sixth Plan amounted to Rs.39.05 Crores.

Table 9.16 Outlay and Expenditure - Inland Water Transport

(Rs. Crores)

Sl.No.	Programme	Seventh Plan		1990-91		1991-92
		Outlay	Expenditure	Outlay	Expenditure	Outlay
1.	CIWTC Scheme	97.47	92.76	93.25	8.25	35.00
2.	Central/IWAI Schemes	43.20	36.14	18.00	5.60	12.30
3.	R & D Schemes	1.00	0.02	0.60	-	0.18
4.	Centrally Spionsored Schemes	13.33	2.93	3.15	0.58	2.52
	TOTAL	155.00	131.85	57.00	14,43	50.00

9.23.2 Inland Water Transport was given a high priority during the Seventh Plan. The Table 9.16 gives the outlay and expenditure during the seventh plan; and the annual plans 1990-91 and 1991-92 for the central sector. Stress in the Plans was laid on development of waterway and modernisation of vessels. Inland Waterways Authority of India (IWAI) was set up to coordinate and implement various central schemes for development of waterways. Brahmaputra between Sadiya and Dhubri was declared National Waterway. Development work on Ganga-Bhagirathi-Hooghly National Waterway continued. The waterway is being developed in three stretches viz., Allahabad-Patna, Patna-Farakka and Farakka-Haldia. Floating terminals were set up at various places between Patna and Haldia. Navigational facilities are being strengthened on the waterways. For development of Brahmaputra, a Master Plan has been prepared and preliminary works for channel development are being undertaken. A number of hydrographic surveys and techno-economic studies have been undertaken on a number of other waterways.

9.23.3 A programme was undertaken to replace overaged fleet of Central Inland Water Transport Corporation (CIWTC). Forty two new vessels were acquired under Sixth Plan Scheme and 63 new vessels will join the fleet as part of Seventh Plan Scheme by 1992-93.

Eighth Plan Thrust and Strategy:

9.24.1 Keeping in view the constraints facing IWT and recognising its potential for growth, the thrust will be on:

i) Development of IWT in the regions where it enjoys natural advantages;

ii) Improvement in productivity of assets, through modernisation and upgradation of technology; and

iii) Building up of trained and skilled manpower for IWT operation.

9.24.2 The measures to achieve these objectives will be:

i) Two national waterways, Ganga and Brahamputra have to be fully developed. Essential works include dredging and conservancy works to attain and maintain adequate depth and width of the channels, providing adequate navigational aids to enable navigation throughout the year and 24 hour navigation on selected stretches and setting up intergrated terminals. Other important waterways would be developed on the stretches where traffic already exists;

ii) Modernisation of IWT vessels and replacement of overaged ones. Development of specific vessels to meet the requirement of different types of cargo and suit different waterways including those with shallow draft;

iii) In CIWTC, attempt will be made to fully utilise the capacity generated so far before considering new proposals for acquisition of further vessels.

iv) Private entrepreneurs will continue to be given interest subsidy for acquisition of better designed vessels and improved country crafts. A scheme is proposed to be launched to provide financial assistance to entrepreneurs. Private participation would also be encouraged in setting up of terminals.

Programme Visualised :

9.24.3 On Ganga-Bhagirathi-Hooghly stretch, the existing floating terminals between Patna and Haldia will be replaced and more terminals provided at important points; navigational aids would be strengthened and conservancy works continued on the waterway. On the Brahmaputra, development of terminals and navigational aids would be undertaken according to the master plan. An outlay of Rs. 240 crores has been approved for the Eighth Plan in the Central sector, and Rs 107.63 crores in the State sector.

CIVIL AVIATION

General

9.25.1 The civil aviation sector is structured into two distinct functional entities - operational and infrastructural. Indian Airlines (IA) and Vayudoot provide domestic air services and Air India (AI) provides international air services. Indian Airlines also cover some neighbouring countries. The infrastructural facilities are provided by National Airports Authority (NAA) and International Airports Authority of India (IAAI). The IAAI now runs five major metropolitan airports namely, Bombay, Delhi, Calcutta, Madras and Trivandrum. The NAA manages 88 airports and civilian enclaves at 28 defence airports.

9.25.2 Significant developments took place during the Seventh Plan period in the field of civil aviation, with the setting up of NAA and Pawan Hans Ltd. The NAA started functioning with effect from 1st June, 1986. The main functions of this Authority are to manage the aerodromes, all civil enclaves and aeronautical communication systems efficiently. After the NAA came into being, the Directorate General of Civil Aviation has been left with regulatory functions only.

9.25.3 A new company Pawan Hans Ltd. was incorporated in 1985 to acquire and operate helicopters in the country. The main functions of this company are to plan, provide, develop air support services to meet the requirements of Oil Sector in their offshore operations. To cater to the requirements of skilled manpower, Indira Gandhi Rashtriya Uran Academy (IGRUA) at Fursatganj, Uttar Pradesh was set up.

9.25.4 Annexure - 9.8 gives the details of outlay and expenditure during Seventh Plan and Annual Plans 1990-91 and 1991-92 for the different constituent units in the Civil Aviation Sector.

9.25.5 An outlay of Rs.3998 crores has been approved for Eighth Plan (1992-97). About 97 percent of the outlay would be met from Internal and extra budgetary resources and the balance will be met from budgetary support. Air India, Indian Airlines, International Airports Authority of India, Pawan Hans and National Airports Authority to some extent will meet their outlays from their own internal resources. The DGCA, Bureau of Civil Aviation Security (BCAS) will receive budgetary support. The outlay for IGRUA and Hotel Corporation of India will be met from inter- corporate contributions. In the state sector, an outlay of Rs 107.93 crores has been provided for civil aviation in the Eighth Plan.

TABLE - 9.17 Capacity and Traffic - Air India

(in million)

Year	Capacity Available Tonne Kms	Capacity Utilised Tonne Kms	Load Factor (%)
1984-85	1964	1241	63.4
1989-90	2292	1441	63.1
1990-91	2260	1381	61.1
1991-92*	2249	1493	66.4
*(Ant. Achvt.)			
1996-97 (Target)	3061.60	1980.3	64.8

9.25.6 Air India has come a long way since its establishment as a statutory corporation in

1953. Table 9.17 indicates the growth in capacity and traffic carried by Air India.

9.25.7 The fleet of Air India at the end of the Seventh Plan (1989-90) consisted of 21 aircrafts comprising ten B747-200's, six A310 aircraft, two B747 combis and three A 300-B4. In addition, it took one B747F on wet lease for freighter operation and one IL-62M for passenger operations on India-USSR route. One IL-76 was also used for addition to freighter capacity. Air India carried over 2.15 million passengers during 1990-91.

9.25.8 As against growth rate of 4 per cent per annum, in the Seventh Plan, the growth rate in terms of traffic has been around 3 per cent per annum. In the last year of Sixth Plan, Air India was operating at a loss. This position changed in the course of the Seventh Plan as can be seen from Table - 9.18

9.25.9 Though this is a reasonable financial performance, the airline suffers from several weaknesses and there is potential for improvement. Its share of international traffic from and to India has gradually declined from 42 per cent in 1981 to 35 per cent during the Seventh Plan. The overall load factor also is low, compared to other similar sized carriers of the world.

9.25.10 Air India is expected to have a traffic growth at a rate of 14.4 per cent during the Eighth Plan (1992-97). In terms of targets, the capacity available at the end of the Eighth Plan would be 3061.6 million tonne kms and anticipated capacity utilisation would be 1983.3 million revenue tonne kms. It plans to augment its aircraft capacity in the Eighth Plan with the acquisition of four Boeing 747 aircraft. It acquired two A310-300 aircraft in August, 1990. It would formulate a fleet renewal plan to have a modern and young fleet. Efforts would be made to improve its load factor and market share in the carriage of international cargo, by following appropriate measures including expansion of capacity. Air India can gain appreciably by improving its cargo handling capability. Improvement in cargo handling facilities would be made through better consignment tracking and retrieval systems. This will help reduce the total transportation time.

Indian Airlines

9.25.11 Indian Airlines Corporation (IAC) came into existence in June, 1953 when eight scheduled air transport companies were nation-

Table - 9.19 Capacity and Traffic - Indian Airlines

(In million)

Year	Capacity Available Tonne Kms	Capacity Utilised Tonne Kms	Load Factor (%)
1984-85	960.0	664.0	69.2
1989-90	1134.0	826.0	72.8
1990-91	926.7	699.2	75.5
1991-92*	1134.0	794.0	70.0
*(Ant.Achvt)			
1996-97 (Target)	1916.0	1361.0	71.0

TABLE - 9.18 Air India - Financial Performance

(Rs. Crores)

Financial	1979-80	1984-85	1989-90	1990-91	1991-92
OperatingRevenue	397.37	835.24	1368.17	1626.88	1861.34
Operating Expenses	401.47	764.47	1241.15	1428.65	1713.39
Operating Profit (Loss)	(4.10)	70.77	127.02	198.23	147.95
Total Revenue	402.06	854.31	1428.38	1747.96	2128.84
Total Expenses	417.04	809.62	1357.49	1666.73	2012.13
Net Surplus (Loss) after tax	(15.09)	44.69	70.89	81.23	116.71

TABLE - 9.20 Financial Performance - Indian Airlines

(Rs. Crores)

Item	1979-80	1984-85	1989-90	1990-91	1991-92
Operating Revenue	205.04	603.57	1069.06	1124.00	1441.00
Operating Expenses	191.40	503.80	994.95	1073.00	1436.00
Operating Profit	13.64	99.77	74.11	51.00	5.00
Total Revenue	207.68	621.56	1125.15	1169.00	1457.85
Total Expenses	210.02	568.22	1140.19	1234.00	1657.85
Net Surplus (Loss) after tax	(2.34)	52.84	(15.24)	(64.59)	(200.00)

alised. It provides air services on the domestic routes and operates 57 stations in the country and ten stations in the neighbouring countries. Table - 9.19 indicates the growth in capacity, traffic carried and load factor achieved by Indian Airlines.

9.25.12 IAC fleet at the end of the Seventh Plan (1989-90) consisted of 11 Airbus A-300, 24 Boeing-737, 14 A-320, 3 HS-748 and 4 F-27. During 1989-90, 15 A-320's were acquired of which one was lost in an accident in February 1990.

9.25.13 The Seventh Plan had anticipated a growth rate of 8 per cent per annum in traffic for the Indian Airlines. The actual growth rate has been around 5 per cent per annum. Table - 9.20 indicates the financial performance since 1980.

9.25.14 The overall performance of the Corporation was below expectations during the Seventh Plan. A thorough review of the Airlines and its services is suggested to make it financially viable.

9.25.15 Indian Airlines has projected domestic passenger growth rates of 8 percent per annum in Eighth Plan with 1989-90 as the base year. In terms of targets,Indian Airlines would have capacity equivalent to 1916 million. Available tonne kms and traffic of 1361 million Revenue tonne kms. by the end of the Eighth Plan (1992-97).

ii) Rationalisation of fare structure needs to be undertaken particularly on short haul routes to make it cost oriented. It is advisable to adopt the Long Run Marginal Cost principle of pricing for domestic air services. Subsidisation of air services in regions other than the North East and inaccessible areas is not desirable.

iii) Improvement in productivity of aircraft by improving maintenance schedules so as to reduce aircraft down time to the minimum and improving the turn round time at the airports is necessary.

(iv) An element of competition in the provision of domestic air services is desirable. Private airlines should operate on routes which cater to genuine passenger and tourist traffic. This will lead to improvement in efficiency of air services.

International Airports Authority of India (IAAI)

9.25.16 The IAAI came into being in February, 1972 to manage, operate and develop the four international airports at Bombay, Calcutta, Delhi and Madras. Trivandrum became an international airport in April 1991. During the Seventh Plan period, new international terminal complexes at Bombay and Delhi and domestic terminal at Madras were developed. The IAAI has done well both in respect of physical as well as financial performance during the Seventh Plan. It was able to finance its developmental activities from out of its own resources. Table 9.21 gives details of financial and physical performance.

9.25.17 The main thrust of IAAI during the Eighth Plan will be on optimisation of capacity utilisation, creation of necessary additional ca-

TABLE - 9.21 Physical and Financial Performance - IAAI

Item	1989-90	1990-91	1991-92
Financial (Rs. Crores)			
Revenue	227.83	230.89	246.98
Expenditure	83.38	96.12	110.20
Profit after Tax	64.67	57.39	60.12
Physical			
Passengers(in lakhs)	199.64	177.23	194.09
Cargo(In thousand tonnes)	414.99	376.90	409.50

pacities through modular constructions and improving the quality of service to passengers. The infrastructure requirement for international cargo, especially for sustaining exports would need to be met. Maintenance of facilities and equipment should be given adequate attention. The new major passenger terminals to be taken up are Domestic Terminal Module-I at Delhi, International Terminal Complex (Phase-III) at Bombay and new Domestic terminal (Phase-II) at Madras.

National Airports Authority (NAA)

9.25.18 The NAA provides services such as air traffic, navigational, communication, rescue, runway, apron and terminal at all domestic aerodromes. The provision of air traffic control services, radio, navigation aids, communication services etc. at the four international airports is also the responsibility of NAA. The major scheme during the Eighth Plan is the project for modernisation of Delhi and Bombay airports with an estimated cost of Rs. 210 crores.

Investment in N.E.C.

9.25.19 As per a decision taken in December, 1988, N.E.C. (North Eastern Council) bears 60% of expenditure for development of airports in that region and N.A.A. bears 40%. About Rs.140 crores worth of schemes are proposed to be taken up during the Eighth Plan for the North Eastern Region.

Vayudoot

9.25.20 Vayudoot, the third level airline was established in January, 1981 as a subsidiary of Air India and Indian Airlines. This airline was originally conceived to serve the north-east region where the surface transport facilities are inadequate and surface routes are circuituous. Subsequently,the services of Vayudoot had been extended to other regions also. This had adversely affected its financial performance. After a review, the number of stations on the operational network was brought down to 48 as on 31st March 1991.

9.25.21 Vayudoot has a fleet of eight Dornier aircraft, eight Avro and one Fokker aircraft; Vayudoot also has an Agro Aviation Division which is involved in aerial spraying operations, seeding and afforestation operations. It has a fleet of one helicopter and sixteen aircrafts. Vayudoot's financial performance is not satisfactory. Table - 9.22 indicates its physical and financial performance.

9.25.22 Vayudoot would concentrate on consolidation of its operations and rationalisation of its fare structure rather than embark on large scale expansion of its net work. Its operations would be restricted to North-Eastern region and other inaccessible areas.

Pawan Hans

9.25.23 Pawan Hans which was incorporated in 1985 acquired 48 helicopters, consisting of 27 Dauphin and 21 Westland helicopters. Of these, 6 Dauphin helicopters were transferred to State Governments of Uttar Pradesh, Madhya Pradesh, Bihar and Gujarat. Four helicopters were lost in accidents in 1988-89 and the Corporation presently has a fleet of 38 helicopters consisting of 19 Dauphin and 19 Westland helicopters. The Westland helicopters which have been grounded for a prolonged period are proposed to be phased out by 1992-93.

Table -9.22 Physical and Financial Performance - Vayudoot

Item	1989-90	1990-91	1991-92
Financial (Rs. Lakhs.)			
Total Revenue	3059.61	3942.81	3157.28
Total Expenses	6029.58	7927.35	6846.33
Net Profit (Loss)	(2969.97)	(3984.54)	(3689.05)
Physical			
Available Tonne KMs (thousand)	335.28	339.98	297.24
Revenue Tonne KMs (thousand)	193.28	199.19	187.29
Load Factor (%)	57.65	59.64	62.00
Passengers carried (in lakhs)	5.61	5.53	5.04

9.25.24 The primary users of helicopters are ONGC, NTPC etc. Considering the high operation cost and foreign exchange outgo in maintenance and operations,it is necessary that the helicopter services are primarily restricted to oil exploration sector. The provision of maintenance facilities would have to be accorded priority over acquisition of additional helicopters. The thrust in the Eighth Plan would be on enhanced maintenance capability, man-power development and coordination of the growth of Pawan Hans with its special markets.

Directorate General of Civil Aviation

9.25.25 The main thrust during the Eighth Plan is on stepping up regulatory control through reorganisation, expansion of existing disciplines and development of human resources through intensive advanced training. It would also replace overaged trainer aircraft in Flying Clubs.

Indira Gandhi Rashtriya Uran Academy (IGRUA)

9.25.26 The I.G.R.U.A was set up to provide training for commercial pilots. The Academy located at Fursatganj, U.P is equipped with modern training aids including aircraft, helicopters and flight simulator etc.

9.25.27 With the increase in the capacity of the national airlines and operation of air taxis, IGRUA is expected to play an increasingly important role in the Eighth Plan in the matter of training of pilots and other technical personnel.

Hotel Corporation of India

9.25.28 The Hotel Corporation of India is wholly owned by Air India. It operates a chain of hotels located at Bombay, Delhi, Srinagar and Rajgir besides flight catering units at Bombay and Delhi. Its financial performance has not been satisfactory. Gradual privatisation and/or collaboration with other units would be explored.

Major Thrust areas in the Eighth Plan

9.26.1 The civil aviation sector should aim at being financially self-sustaining. Efforts to generate larger internal resources will be made.

9.26.2 Private sector will be encouraged to cater to the growing demand for air services on short haul routes. Air taxis will also be encouraged on tourist routes.

9.26.3 Air services for distances less than 300 kms are likely to be uneconomical as compared to surface modes. Efforts will be made to identify short haul corridors where good surface transport connections can be introduced as an alternative to air services.

9.26.4 The tariff structures of the domestic carriers are not cost related. The telescopic gradient of fares between short and long haul sectors are low compared to those in other countries. A steeper gradient, which reflects higher costs on short haul is desirable. The adoption of the long run marginal cost principle in pricing of air services is recommended.

9.26.5 There is a growing mismatch between airline requirements and ground support facilities. Priority will be given to upgrading infrastructure and modernising communication facilities to permit full utilisation of aircraft capacity. Maintenance of infrastructure already created should receive immediate attention.

9.26.6 To estimate the manpower requirements for maintenance, pilots and others, the Ministry of Civil Aviation would conduct a manpower planning study.

9.26.7 Among the different modes of transport, civil aviation is closely linked with the development of tourism, as the vast majority of tourists coming to India, arrive and depart by air. Capacity constraints are often felt on air travel to and from India particularly during the peak tourist season. Tourist charters would be encouraged.

9.26.8 Airborne trade has been increasing in importance and now accounts for more than a quarter of total foreign trade in value terms. Stress will be given on upgrading airport infrastructure in terms of increased storage space, better handling capacities and augmentation of upliftment capacity for carriage of more cargo.

TOURISM

General

9.27.1 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.32 crores in 1974-75 to more than Rs.3000 crores in 1991-92. Since imports of goods needed for tourism are limited, value added component in term of foreign exchange earning of this industry in relatively high. Domestic tourism, too, plays an important role in the integration of people, employment generation and economic development of the country.

9.27.2 The Seventh Plan was a water-shed in the development of tourism in the country. For the first time, the vast potential of tourism as a foreign exchange earner and as a generator of employment opportunities was recognised. Several new policy initiatives were taken to develop the tourism sector on an accelerated growth path. Tourism was accorded the status of an industry. At present, 15 States and 3 Union Territories have declared tourism as an industry. In addition, 4 States have declared hotels as an industry. Consequently, a number of incentives have been made available to private entrepreneurs for investment in tourism acitivities.

9.27.3 The Government set up the Tourism Finance Corporation in 1989 to provide financial assistance for setting up or for development of tourist related activities and services which include interalia hotels, restaurants, amusement parks, resorts and complexes for entertainment, education and sports. The marketing activities of private entrepreneurs and other agencies were given additional support through the scheme of "Assistance for the Development of International Tourism (ADIT)".

Review of Tourism Sector

9.28.1 There has been a gradual increase in Plan outlay for tourism over the Plan periods from Rs.1.58 crores in the Second Plan to Rs.138.68 crores in the Seventh Plan.

9.28.2 The foreign tourist arrivals in India increased from about 17,000 in 1951 to 1.71 million in 1990. However, our share in the total world arrivals has ranged between 0.28% and 0.32% in the last 10 years. It is anticipated that tourist traffic will grow at the rate of 9% to 10% per annum and about 2.75 million tourist arrivals are anticipated by the end of the Eighth Plan.

9.28.3 The number of approved star hotels in India has gone up from 186 in 1963 to 650 in 1990 with 40,000 rooms.

Future Perspective and Eighth Plan Thrust

9.29.1 In the development of tourism, the public sector has made significant contribution during the last three decades. The industry is today equipped with a reasonable infrastructural base

and is poised for a self-sustained growth. The future growth of tourism should, therefore, be achieved mainly through private initiative. The State can contribute to tourism by planning broad strategies of development, provision of fiscal and monetary incentives to catalyse private sector investments and devising effective regulatory and supervisory mechanisms to protect the interest of the industry, the consumer and the environment.

9.29.2 The strategy for the development of the tourism sector should be based on the principle of low-cost economy, higher levels of productivity, efficiency in use of infrastructure and provision of clean and economic tourist facilities for middle class tourists, both domestic and foreign. India, being a multi-destination country of continental dimensions, has induced tourism promoters to adopt a "spread approach". It is necessary, in view of the scarce capital, that a selective approach should be adopted for development of tourism.

9.29.3 In the Eighth Plan, the "Special Tourism Areas" concept is being adopted, wherein a few tourist areas with high tourism potential will be identified and provided with full fledged infrastructural facilities.

9.29.4 A package of financial and monetary assistance has been conceived to provide impetus to tourism investment. These include " Tourism Development Fund" to provide financial assistance for tourism activities in Special Tourism Areas and the "Equity Scheme" under which the Central Department of Tourism and the State Government would contribute to the equity capital of tourism ventures.

9.29.5 Tourism marketing and publicity need strengthening. Our marketing strategy has to be made more dynamic in terms of spread, innovation, imagination, new techniques and coordination. A well coordinated publicity drive of all the organisations connected with tourism could yield greater benefits.

9.29.6 The proportion of high spenders among foreign tourists has gone down in recent years and that of low budget visitors has risen. This trend needs to be reversed and effective measures should be taken to maximise the earnings, while increasing the flow of tourists into the country. The focus and promotional strategy during the Eighth Plan should be on high spending tourists from areas like Europe, USA and Japan.

9.29.7 The absence of an uptodate information system with quick retrieval facilities leads to poor tourist facilitation. The technological developments in the field of communication and computers, should, therefore, be profitably utilised for establishing a tourist information network.

9.29.8 There is also a perceptible lack of hygienic and inexpensive accomodation to cater to the need of low spending tourists needs. While State should focus its efforts towards promotion of supplementary accomodation like private guest houses, tourist bungalows, paying guest accomodation, forest lodges etc., investment in three to five star hotels should be restricted to the private sector. Private sector investment needs to be attracted through fiscal and monetary incentives to ease the borrowing and repayment of credit, allotment of suitable sites at concessional rates and other concessions etc.

9.29.9 Anti-poverty and area development programmes for backward areas should be integrated with tourism development programmes. This will provide the local people with employment opportunities and supplementary income.

9.29.10 Indequate airline capacity is a critical bottleneck in air travel to and from India, particularly during the peak tourist season. Charters not only augment air capacity but also help in promoting new destinations. Adequate attention needs to be paid for upgrading road transportation facilities in important tourist centres. Private sector could be encouraged to invest in developing tourist transport by giving relief in excise duties when indigenous vehicles are purchased for tourism purposes.

9.29.11 Rail transportation has a special fascination for foreign tourists as demonstrated by the successful rail tourism projects like the "Palace on Wheels". The "Great Indian Temples" in Southern India should also be introduced. The possibility of having ship cruises along the coastline and the potential offered by the back waters

of Kerala and Sunderbans in West Bengal for river cruises would be fully tapped.

9.29.12 Adequate attention has to be paid to enlist private sector participation in the development of special interest tourism like beach and wild-life tourism, amusement parks, conventions and conferences.

9.29.13 Balanced infrastructural development and preservation of rich cultural heritage is of critical importance. To achieve this objective, it is necessary to formulate master plans for all States highlighting the tourism potential in the State. Such an approach would ensure that economic activities in these States are so planned that they facilitate tourism development, ensure consistency and avoid overlap. An integrated development plan for the heritage centres, with focus on forts, palaces and old havelis with due concern for town planning needs to be introduced.

9.29.14 Human Resources Development is of vital importance in a service industry like tourism. The quality of training programmes and that of teaching faculty should be improved with focus on history and culture. The capacity in terms of the intake of apprentices and the number of institutions both at the craft and diploma levels should be increased. Universities should be encouraged to introduce tourism oriented courses. Short duration programmes for updating the knowledge and skills of those employed at the grassroot and supervisory levels, and career counselling aimed at developing entrepreneurship need to be organised.

Eighth Plan Programme

9.30.1 The Central Sector Tourism Plan encompasses : (i) Department of Tourism (ii) India Tourism Development Corporation (iii) Manpower and Institutional Development.

Department of Tourism (DOT)

9.30.2 The Department of Tourism will carry out effective publicity promotion, and provide infrastructural support and facilities for new forms of tourism like holiday and leisure tourism, wildlife etc. The DOT will, for the most part, play a "promotional" role in the development of tourism. The Eighth Plan visualises identification and development of "Special Tourism Areas" with high tourism potential. The ongoing projects of "Buddhist Places of Interest in Bihar" and "Development of Ajanta Ellora in Maharashtra" were taken up with external financial assistance. A number of new projects would be posed for external assistance including "Agra Heritage Project", "Buddhist Places of Interest in Uttar Pradesh and Bihar".

Table 9.23 Outlay and Expenditure -- Tourism

(Rs. crores)

Organisation	Seventh Plan		1990-91		1991-92	
	Outlay	Expdr.	Outlay	Expdr.	Outlay	Expdr.
Deptt. of Tourism	68.68	121.13	58.00	51.68	64.05	65.60
	(68.68)	(121.13)	(58.00)	(51.68)	(64.05)	(65.60)
ITDC	39.90	48.87	15.50	8.91	16.00	9.80
	(29.90)	(27.65)	(3.00)	(3.20)	(3.00)	(3.00)
Man Powerand Institutional Development	30.00	30.04	12.50	6.09	9.95	4.55
	(30.00)	(30.04)	(12.50)	(6.09)	(9.95)	(4.55)
Total	138.58	200.04	83.00	66.68	90.00	79.95
	(128.58)	(178.82)	(73.50)	(60.97)	(77.00)	(73.15)

Note : Figures in brackets indicates budgetary support.

India Tourism Development Corporation (ITDC)

9.30.3 The ITDC came into existence in 1966 with the basic objective of providing tourism infrastructure for overall development of tourism in the country. The Corporation has 31 hotels/traveller lodges with 3762 rooms. The financial performance of the Corporation has been satisfactory. The turnover increased from Rs.72.11 crores in 1985-86 to Rs. 121.92 crores in 1990-91.

9.30.4 The main emphasis in the Eighth Plan for the ITDC would be on consolidation rather than on expansion of accomodation. Sustained efforts will be made to improve the profitability of its existing hotels through different measures including collaboration with well-known international hotel chains.

Manpower and Institutional Development

9.30.5 At present, there are 14 Institutes of Hotel Management and Food Craft Institutes. A master plan is under preparation for development of manpower for the tourism industry on an integrated basis. In the field of manpower and training, the major scheme relates to setting up of a "Culinary Institute of India" with foreign technical expertise.

9.30.6 The outlay approved for Eighth Plan is Rs. 272 crores in the Central sector. In the States sector, an outlay of Rs. 501.62 crores has been provided for Tourism in the Eighth Plan.

Annexure - 9.1

Pattern of Public Sector Plan Investment in the Transport Sector

(Rs. crores)

Sector	I PLAN 1951-56	II PLAN 1956-61	III PLAN 1961-66	INTER PLAN 1966-69	IV PLAN 1969-74	V PLAN 1974-79	VI PLAN 1980-85	VII PLAN (Estimate) 1985-90	Inter Plan 1990-92	VIII PLAN 1992-97
1. Railways $	217.00	723.00	1326.00	589.00	934.00	2063.00	6586.66	16549.00	10217.70	27202.00
	(11.07)	(15.47)	(15.46)	(7.68)	(5.91)	(5.23)	(6.03)	(9.23)	(7.45)	(6.26)
2. Roads	135.00	224.00	440.00	309.00	862.00	1701.00	3806.66	6334.79	3778.96	13210.04
	(6.89)	(4.79)	(5.13)	(4.66)	(5.46)	(4.31)	(3.48)	(3.53)	(2.76)	(3.04)
3.Road Transport	12.00	18.00	27.00	55.00	128.00	503.00	1275.61	2151.35	1163.98	3849.53
	(0.61)	(0.39)	(0.31)	(0.83)	(0.81)	(1.28)	(1.17)	(1.19)	(0.85)	(0.88)
4. Ports & Lighthouses	28.00	33.00	97.00	55.00	255.00	497.00	724.83	1520.57	878.87	3592.28
	(1.43)	(0.71)	(1.13)	(0.83)	(1.62)	(1.26)	(0.66)	(0.85)	(0.64)	(0.83)
5. Shipping	19.00	53.00	40.00	32.00	155.00	469.00	467.86	719.22	1006.77	3668.91
	(0.97)	(1.13)	(0.47)	(0.48)	(0.98)	(1.19)	(0.42)	(0.40)	(0.73)	(0.84)
6. Inland Water Transport	-	-	4.00	6.00	11.00	16.00	63.23	187.66	103.58	347.63
			(0.05)	(0.09)	(0.07)	(0.04)	(0.06)	(0.10)	(0.07)	(0.08)
7. Civil Aviation	23.00	49.00	49.00	66.00	177.00	294.00	957.32	1948.07	764.58	4105.93
	(1.17)	(1.05)	(0.57)	(1.00)	(1.12)	(0.75)	(0.88)	(1.08)	(0.55)	(0.94)
8. Others**	-	-	-	-	-	-	-	46.55	119.64	165.55
								(0.02)	(0.09)	(0.04)
9. Total Trans porT	434.00	1100.00	1983.00	1032.00	2522.00	5543.00	13962.17	29457.03	18034.08	56141.87
	(22.14)	(23.54)	(23.12)	(15.58)	(15.98)	(14.06)	(12.70)	(16.43)	(13.16)	(12.93)
10. Total Plan	1968.00	4672.00	857.50	6625.40	15778.00	39426.20	109291.70	179277.00	137033.55	434100.00

Note :- Figures in brackets indicate percentage to the total plan expenditure

$ During the first four Plans the expenditure from the depreciation reserve fund was not included in the plan expenditure.

** Includes provision for continuing corrective works on Bhagirathi Hoogly Rivers, Farakka Barrage, States' Share in the railway projects, urban transport road safety, etc. Scheme-wise allocation to be finalised in the Annual Plans.

Annexure - 9.2

Railways : Physical Programmes and achievements during the Seventh Plan

	1984-85	Seventh Plan		
		Original target	Revised target (Mid-term Appraisal)	Actuals 1989-90
I. Traffic output				
(a) Freight				
(i) Originating (Million tonnes)	264.8	340	345	334.3
(ii)Net tonne Kms. (Billion)	182.1	231	252	236.9
(iii) Average Lead(kms)	687.9	680		708.7
(b) Passenger Non-suburban (pkm) (annual increase,, per cent)	0.8	2	3	4.79
II. Track renewals (kms.)	-	20000	20000	19623
III. Electrification (route kms.)	-	3400	3400	2622
IV. Productivity Net tonne kms. per wagon day				
-BG	-	1350	1475	1420
-MG	-	580	730	810

Annexure - 9.3

Railways : Financing of Plans - Approved and Actual Outlays

(Rs.crores)

Year	Budgetary Support	Bonds	Internal Resources	Total
1985-86				
Approved	700	-	950	1650
	(42.4%)		(57.6%)	(100.0%)
Actuals	878	-	1064	1942
	(45.2%)		(54.8%)	(100.0%)
1986-87				
Approved	1030	250	1370	2650
	(38.9%)	(9.4%)	(51.7%)	(100.0%)
Actuals	1379	-	1317	2696
	(51.1%)		(48.8%)	(100.0%)
1987-88				
Approved	1252	720	1428	3400
	(36.8%)	(21.2%)	(42.0%)	(100.0%)
Actuals	1368	720	1330	3418
	(40.0%)	(21.1%)	(38.9%)	(100.0%)
1988-89				
Approved	1472	800	1578	3850
	(38.2%)	(20.8%)	(41.0%)	(100.0%)
Actuals	1543	800	1587	3930
	(39.3%)	(20.3%)	(40.4%)	(100.0%)
1989-90				
Approved	1434	600	2416	4450
	(32.2%)	(13.5%)	(54.3%)	(100.0%)
Actuals	1774	1000	1789	4563
	(38.9%)	(22.0%)	(39.2%)	(100.0%)
1985-90				
Approved	5550	-	6784	12334
	(45.0%)		(55.0%)	(100.0%)
Actuals	6942	2520	7087	16549
	(42.0%)	(15.2%)	(42.8%)	(100.0%)
1990-91				
Approved	1420	1170	2410	5000
	(28.4%)	(23.4%)	(48.2%)	(100.0%)
Actuals	1631.8	1170	2091	4892.7
	(33.3%)	(24.0%)	(42.7%)	(100.0%)
1991-92				
Approved	1694	1500	2131	5325
	(31.8%)	(28.2%)	(40.0%)	(100.0%)

Annexure - 9.4

Railways - Major Plan Headwise Investment

(Rs. crores)

Plan Head	Seventh Plan		1990-91		
	Outlay	Expdr	Outlay	Expdr(RE)	Outlay
1.Rolling Stock	4290	5294	1800	1905.1	2046
2.Workshops & Sheds	1200)	927	300	202.9	275
3.Machinery & Plant	)	353	95	90.2	115
4.Track Renewals	2500	3582	920	903.7	1000
5.Bridge Works	284	251	95	66.8	90
6.Traffic Facilities	1300	1759	654	530.6	620
7.Signalling & Safety	400	425	130	126.9	135
8.Computerisation	400	184	46	41.4	45
9.Electrification	830	961	230	233.3	235
10. Other Elec. Works	80	169	50	55.4	70
11.Nw Linese	350	916	370	289.2	264
12.Staff Quarters	175)	131	40	32.5	35
13Staff Welfare)	)	104	32	27.2	33
14.Users Amenitie)	)	77	28	20.8	31
15.Other Spec. Works	-	112	30	24.9	40
16.Inventories	100	554	40	121.5	55
17.M.T.P	400	473	120	135.5	165
18.Railway Research	25	26	15	4.5	5
19.Investment in Public Sector Undertaking	-	251	5	80.3	66
Total	12334	f6549	5000	4892.7	5325

Annexure - 9.5

Railways : Fleet Awaiting Repairs - Targetted & Actuals

(in percentage)

Item	1984-85		1989-90		1990-91	
	Target	Actuals	Target	Actuals	Target	Actuals
Diesel locos BG	12.5	18.17	10	9.29	10	9.75
Diesel locos MG	12.5	16.52	10	9.28	10	9.48
Electric locos BG	12.5	23.12	10	7.30	10	6.5
Coaches BG	14.0	13.45	10	9.71	10	9.37
Coaches MG	14.0	11.65	10	9.31	10	7.98
Wagons *	4.0	5.85	4	4.26	10	4.29
Wagons *	4.0	6.08	4	4.10	4	3.92

* It is considered that another 2.5 % or so are not fully reported or freely loadable. They earn very little in terms of revenue NTKMs.

Annexure - 9.6

Railways : Composition of Originating Freight Traffic

(in million tonnes)

Commodities	1989-90	1990-91	1991-92 Target	1992-93 Target	1996-97 Target
1. Integrated Steel Plants					
i) Finished Products	10.1	10.0	11.4	11.5	17.2
	(3.0)	(2.9)	(3.1)	(3.0)	(3.9)
ii) Raw Materials	27.4	25.9	29.5	31.0	44.0
	(8.2)	(7.58)	(8.1)	(8.2)	(9.9)
Total	37.5	35.9	40.9	42.5	61.2
	(11.2)	(10.5)	(11.3)	(11.3)	(13.8)
2. Coal (including coal for Railways)	136.4	140.7	151.9	162.0	179.4
	(40.8)	(41.2)	(41.9)	(43.0)	(40.5)
3. Iron ore for export	14.8	13.14	12.8	15.0	14.4
	(4.4)	(3.8)	(3.5)	(4.0)	(3.2)
4. Cement	27.4	28.9	30.5	31.5	41.8
	(8.2)	(8.5)	(8.4)	(8.3)	(9.4)
5. Foodgrains	23.7	25.3	27.1	27.0	32.6
	(7.1)	(7.4)	(7.5)	(7.2)	(7.4)
6. Fertilizers	17.0	18.4	18.5	20.5	25.3
	(5.1)	(5.4)	(5.1)	(5.4)	(5.7)
7. POL Products	24.3	25.0	25.6	26.5	31.2
	(7.3)	(7.3)	(7.0)	(7.0)	(7.0)
8. Other Goods	35.1	36.6	35.5	34.0	35.0
	(10.5)	(10.7)	(9.8)	(9.0)	(7.9)
9. Railway materials	18.1	17.5	20.0	18.0	22.5
	(5.4)	(5.1)	(5.5)	(4.8)	(5.1)
Grand Total	334.3	341.4	362.8	377.0	443.4
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Figures in brackets indicate percentage of Grand Total.

Annexure - 9.7

Seventh Plan Outlay and Expenditure in Ports Sector

(Rs. crores)

Sector	Seventh Plan		1990-91		1991-92
	Outlay	Expdr	Outlay	Expdr	Outlay
A. Major Ports					
Calcutta	47.00	26.62	27.88	26.55	54.50
Haldia	61.95	40.73	38.74	16.78	37.00
Bhagirathi Hougly River Training Works	30.00	17.80	17.82	-	14.50
Jiggherkhali flat	-	-	42.00	-	7.00
Paradip	42.40	45.29	9.61	8.45	40.00
Vizag	50.95	50.39	40.00	8.06	59.79
Tuticorin	18.15	12.56	6.10	2.17	8.95
Madras	67.15	76.32	41.88	33.23	55.00
Cochin	56.25	49.54	50.00	26.78	37.03
New Mangore	18.40	20.32	5.48	2.01	8.56
Mormugao	25.30	16.09	5.76	4.88	7.10
Bombay	106.13	71.03	43.12	12.00	40.00
Kandla	28.15	32.89	31.49	11.11	55.00
Jawahar Lal Nehru Port	402.36	813.81	112.10	33.01	65.00
Total 'A'	954.79	1273.39	471.98	194.95	489.43
B. Other Major Units					
DCI	95.00	31.74	32.50	20.83	20.04
ALHW	25.00	29.36	14.00	3.77	8.98
NIPM	5.00	5.44	0.10	0.65	-
MPSO	3.00	0.82	1.00	-	1.00
CDO	1.00	0.58	-	-	-
R&D	1.00	0.20	0.20	-	0.20
Centre for Research	-	-	-	0.08	-
Development of Minor Ports	20.00	-	1.00	-	0.35
Total 'B'	150.00	68.14	48.80	25.33	30.57
Grand Total 'A' & 'B'	1104.79	1341.53	520.78	220.28	520.00

Annexure - 9.8

Outlay and Expenditure in Seventh Plan, Annual Plans - Civil Aviation

(Rs. crores)

Ministry/Deptt.	Seventh Plan		Annual Plan (1990-91)		Annual Plan (1991-92)
	Outlay	Expdr.	Outlay	Expdr.	Outlay
AIR INDIA	657.13	482.61	142.00	104.46	130.01
INDIAN AIRLINES	606.04	642.28	207.50	77.46	51.27
I.A.A.I.	218.20	216.55	65.00	51.18	97.00
N.A.A.	213.70	204.78	79.59	66.56	120.08
VAYUDOOT	26.99	34.45	8.00	8.00	0.44
PAWAN HANS	170.65	273.92	2.70	0.86	6.28
D.G.C.A.	74.02	46.05	2.45	1.23	4.50
B.C.A.S.	5.90	2.90	0.67	0.18	8.42
I.G.R.U.A.	42.27	19.69	7.13	1.60	11.15
H.C.I.	-	-	5.50	-	3.56
AERO CLUB	O.57	-	0.03	-	0.09
TOTAL	2015.47	1923.23	520.57	315.93	432.80

CHAPTER 10

COMMUNICATION, INFORMATION AND BROADCASTING

Communication

10.1.1 Efficient and well developed communication system has become synonymous with modernity and economic growth. For developing countries like India, it is one of the critical inputs which would determine the pace of socio-economic transformation of society. Telecommunication and Posts are the two main constituents of any modern communication system.

Posts

10.1.2 India has the largest number of post offices in the world. In 1989, the latest year for which comparable data are available, there were 1.45 lakh post offices in the country, which was way ahead of USA (40,031), China (50,811) , France (17,099) and South Korea (3,125) - to name a few. The numbers themselves do not convey much. They have to be seen in juxtaposition to the service they render. An average Indian post office serves an area of 22 sq km and 5,450 inhabitants, compared to 5079 sq km and 15,830 persons in Saudi Arabia, 1,746 sq km and 3,555 persons in Australia, 1,275 sq km and 49,099 persons in Iraq, 229 sq km and 6172 persons in USA, 188 sq km and 21,883 persons in China and 62 sq km and 8056 persons in Pakistan.

10.1.3 Not only is the postal network well spread out, the delivery system also compares favourably with other countries. India is among the few countries where all mail, irrespective of nature and destination, is delivered at home. Singapore, Hong Kong, France and South Korea are some others. This is not so even in USA, Australia, Saudi Arabia and Pakistan. The burden cast by this service on the postal system can best be judged in the light of the volume of mail handled by the system. In 1989, the volume of domestic mail was 130 billion articles, which was lower than only USA (1597 billion), Japan (200 billion) and France (190 billion). In fact, most Asian countries other than Japan, did not have even half of the volume of traffic compared to India.

10.1.4 Postal savings play pivotal role in the national resource mobilisation effort. It is one of the biggest savings institution in the country operating 9.43 crore accounts and the single largest contributor to national savings, accounting for 43.7% of gross domestic savings (1989-90). It is also the most important means of mobilising household savings especially in the rural areas as it accounts for about 53% of household savings. During the Seventh Plan, postal savings increased by 96%, from Rs.21,430 crore in 1985-86 to Rs. 41,900 crore in 1989-90.

10.1.5 The main area where considerable qualitative improvement in the Indian postal system is called for to bring it at par with international standard is mechanised handling of mails, productivity and speed. Leaving aside advanced countries like USA, Australia and Japan who, for obvious reasons, have a highly mechanised system, in these aspects India does not compare favourably even with developing countries like Egypt, South Korea and Saudi Arabia.

Achievements of the Seventh Plan

10.2.1 The number of post offices in the country rose from a mere 22,116 in 1947 to 1,47,236 at the end of the Seventh Plan. The rapid growth is the result of a conscious decision at the start of planned development, to spread the postal network widely in accordance with the social responsibility feature of the postal sector. Despite emphasis on size, both in terms of extent of the network and the volume of mail handled, the Indian postal system has been maintaining a high degree of customer satisfaction and integrity of the system. The number of complaints received normally has been as low as 0.004% of the total traffic handled. More important than this ratio is the fact that there has been a significant decline during the Seventh Plan in the number of complaints received. From 8,17,000 in 1985-86 it came down to 7,12,000 in 1987-88 and further to 7,10,000 in 1989-90.

10.2.2 · Integrity of the system can also be measured in terms of loss and fraud cases registered. Apart from a fall in the number of such cases received over the years including the Seventh Plan period, the absolute number has remained extremely low. The total registered mail handled in 1984-85 was 304 million and the number of loss and fraud cases registered was a mere 508. In 1989-90 the corresponding figures were 291 million and 149 respectively.

10.2.3 The volume of mail handled by the postal system increased rapidly in the Seventh Plan period. and recorded an impressive growth rate of 26 percent. More than 90% of this traffic consisted of unregistered mail. Apart from mail, the system also undertakes transfer of money through money orders. However, over the years, there has been a gradual decline in the number of money orders issued, though the average value of the money orders has been rising by about 8% annually. This is largely due to the growth of rural banking network which provides an alternative and quick mode of transfer of money.

10.2.4 Having achieved a fair degree of spatial spread of the network, the need for modernising the system became imperative at the end of the Sixth Plan. The Seventh Plan marked a watershed in this regard. The scheme of Panchayat Dak Sewak was introduced during this Plan to improve the rural postal network. It involved the village panchayats in collection and distribution of mails. The progress, however, was not up to expectation. The Plan also saw introduction of Speed Post Service to compete with the private courier service and also to provide a comparatively faster and assured service to those who can afford. Modernisation of postal system makes it necessary to take recourse to mechanical aids to manage the ever growing volume of traffic. During the Seventh Plan, a beginning was made in this direction with introduction of elementary aids like multi purpose counter machines, bag dedusting equipment, digital weighing machines etc. Simultaneously, a project for installation of integrated mail sorting system at Bombay was undertaken, but the scheme did not make much headway during the Seventh Plan. Computerisation of postal system was also introduced on a modest scale in this period.

10.2.5 The Seventh Plan performance is not a success story in some other respects. There were shortfalls in several significant areas. Only 4,003 new post offices could be opened against the target of 6,000. Similarly, the achievement in installation of letter boxes was 39%, in construction of postal buildings 38% and in construction of staff quarters only 62 percent. The main reasons for shortfall in the achievement of physical targets were ban on the creation of posts, non availability of inputs and raw materials and other logistic and infrastructural constraints like scattered locations of buildings and non-execution of works by agencies entrusted with the job. These shortfalls led to substantial under-utilisation (nearly 22%) of annual allocations.

10.2.6 In the early stage of its development the postal service was conceived as a `public utility' which met all expenditure from its own receipts. After independence, there was a change in the character of the service with the social aspect receiving considerable emphasis. In fact, the country's postal service has come to be viewed essentially as a social service. So much so, to the common man the post office is synonymous with (a) the presence of the Government and (b) the care and concern that the Government has for him. Consequently, strict commercial viability norms have not been followed and the system is now operating on a deficit. Though, in absolute terms the deficit had increased to more than Rs.1003 crore by the end of the Seventh Plan, the growth rate of net deficit which was 101 % between 1980-81 and 1985-86, was brought down considerably to 60% during the period 1985-86 to 1989-90.

10.2.7 In the Seventh Plan, Science & Technology activities were related mainly to equipment modernisation. Efforts were made to develop a prototype of the electronic weighing scale. PC-based multipurpose weighing machines were introduced on an experimental basis. Automatic sorting has been introduced in association with the Computer Maintenance Corporation (CMC). Development of lighter synthetic material, consisting of jute and high density polythene for making mail bags, and the development of necessary hardware and software for the electronic mail were the other important Research & Development activities.

Eighth Plan

10.3.1 The principal objective in the Eighth Plan would be to transform the postal system into a modern one with necessary technological inputs. New services based on modern technology will be introduced. The recommendations made by the Expert Committee on Excellence in Postal Services would provide the basic framework of modernisation effort during the Eighth Plan. Emphasis will also be laid on upgrading estates management and expansion of postal network to rural areas, not yet having postal facilities.

10.3.2 The main schemes of the Plan would be :-

i) Opening of 500 new urban post offices and 3000 rural post offices;

ii) Installation of 10,000 multi purpose counter machines;

iii) Introduction of mechanised sorting machines in three more metropolitan centres in addition to commissioning of the machines at Bombay;

iv) Speeding up transmission of money orders in 75 centres through satellite link;

v) Computerisation of administrative offices and savings bank operations in major post offices for providing better services to the customers;

vi) Modernisation of Postal Stores Depots/Regional Forms Depot;

vii) Construction of postal buildings and staff quarters and strengthening of Speed Post Service;

10.3.3 The Eighth Plan outlay for Posts is Rs.325 crore. The scheme-wise break up of the approved outlay is presented in Annexure-10.1.

Problems & Strategy

10.4.1 A time has come when the mounting deficit of the postal system has to be addressed. The social character of the service should not be taken to be an open ended commitment to bear heavy deficits. Other than additional resource mobilisation, methods have to be devised to reduce deficits, contain working expenses and improve cost recovery. Since the volume of traffic handled is increasing steadily, better productvity is an answer to the mountng working expenses of which establishment alone accounts for more than 80 percent. So far, commercial considerations have received less importance in establishment of new post offices. Hence any village which has a population of at least 3000 and does not have a post office within a radius of 3 km, qualifies for one. in the case of hilly terrain, tribal and inaccessible areas, the population as well as distance criteria are relaxed. The post offices are expected to earn the minimum revenue of 33.33% of the cost in normal areas and 15% of the cost in hilly, tribal and inaccessible areas. Thus, while opening new post offices, the norms themselves build a deficit into the system and need to be reworked. Moreover, to limit the burgeoning establishment expenses, manpower for the new post offices should be found by redeployment of the existing staff or in the alternative, these may be opened only on an agency or contract basis.

10.4.2 The deficit is also attributable to the subsidized rates for a large number of postal articles and services. Low postal rates has starved the system of resources for development and has, thereby, led to deterioration in the quality of service and failure to introduce new services for which effective demand exists. The element of subsidy has to be rationalised and properly targetted so as not to cause a burden to the postal system. Closer attention also needs to be paid to proper remuneration for all functions performed by the postal system as an agent of the Government, such as small savings, postal savings bank and pension payment to railway pensioners. The strategy during the Eighth Plan will, therefore, be to bring about qualitative improvement through appropriate technology application as well as better generation of resources and further lowering of deficit through improved productivity and rationalized postal tariffs.

10.4.3 The Science and Technology efforts in the postal sector have been confined largely to the random supply of functional mechanical aids for almost 30 years. These efforts will

be pursued to increase the productivity of its employees by upgrading their skills and adding more premium services to meet the communication needs. The science & technology initiatives proposed include introduction of automation in mail handling, PC - based counter machines, electronic mail service using telecommunication network, computerisation of Postal Life Insurance, Saving Bank, accounting and money order pairing work, installation of bag de-dusting machines, improvement in the quality of production of metallic stamps and the use of polymer stamps for counter transaction. Benefits from these measures would reach all sections of the people in the country.

Telecommunications

10.5.1 A well functioning telecommunication network is an essential component of economic infrastructure. The application of modern telecommunications technology can raise productivity and efficiency in all sectors, apart from contributing to improving the quality of life.

10.5.2 Although, in the past Seven Plans, telecommunication has made rapid strides both in quantity and quality, its growth in India as compared to the developments in the world telecommunication can at best be termed modest. At the end of 1988, the latest year for which comparable data are available, India was among the large number of Asian and African countries which had a telephone density of less than one for every hundred inhabitants. Obviously, comparisons with the highly advanced countries of North Amercia and Western Europe, which have telephone density of 45 to 50 for every hundred inhabitants, is not proper. However, even by the standard of many developing countries, India is far behind in providing telephones to the population. The telephone density in the country at 0.52 per hundred, is less than that in China (0.78), Iran (3.43), Brazil (5.5), Egypt (5.1), Philippines (1.01), Malaysia (7.37), Pakistan (0.7), Singapore (35.42) or Thailand (1.84).

10.5.3 The above comparison is not intended to underplay the growth of telephone connections which the country has achieved during the last decade. Between 1.1.79 and 1.1.89, the average annual growth rate of direct exchange lines (DELs) in the world was 5%, in America 3.5%, in Europe 5.7% and in Asia 6.2 percent. In this period, India averaged a growth rate of 8.4% annually, which was higher than Hong Kong, Iran, Israel, Japan and Philippines and only marginally lower than China, Kuwait and Singapore. At the same time, the registered demand has grown much faster at the rate of about 12 percent. Consequently, the waiting list at the end of 1990-91 has more than doubled since the beginning of the Seventh Plan (Figure-1). The telecommunication sector has, perhaps, the highest proportion of unfulfilled demand among all service sectors.

10.5.4 Large population and the huge size of the country have adversly effected the telephone density in India in spite the fact that the telephone network has recorded a considerable growth in the last decade. In 1989, India ranked 19th among the 66 nations in terms of the size of the network. Predictably, countries like the USA, Japan, Germany, United Kingdom and Italy were ahead of India, but other advanced countries like Switzerland, Denmark, Norway, New Zealand and Belgium had smaller telecommunication networks.

10.5.5 Though the relative share of telecommunication services has increased in the successive Plans (Figure - 2), the share of this investement in the gross domestic product (GDP) has been low by the international standard. Between 1986 and 1988, the investment in telecommunication services was 2.5% of the GDP on an average. At this level, India ranked third from the bottom in a list of forty five countries, while the Republic of Korea headed the list with the corresponding figure of 13.2 percent. However, one positive feature is that the low level of investment was not accompanied by less intensive utilisation of the assets created by the investment. This is borne out by the high traffic density witnessed in the country. In 1988, the total number of local calls was 19,334 million. It was way ahead of the traffic density registered in Australia, Germany, Denmark, Netherlands, Israel, Saudi Arabia and several other developed and developing countries.

Seventh Plan Review

10.6.1 Originally, the Seventh Plan outlay for the telecommunication sector was Rs. 4,530 crore, of which, Rs.4,010

crore was for the telecommunication services. Later, the outlay for the telecom services was raised on the condition that additional internal resources are mobilised. Consequently, the outlays in the successive Annual Plans on telecommunication services were continually revised upwards and at the end of the Seventh Plan, the approved allocation for the Plan period stood at Rs.7135.42 crore, while the actual expenditure touched Rs.8122.41 crore. Nearly 70% of the additional expenditure was financed by generating more internal resources.

10.6.2 The Seventh Plan of the Department of Telecommunications was principally aimed at reducing the long waiting period for a telephone connection. Therefore, almost 60% of the investment on the telecom services was made on providing additional switching capacity in the local telephone system, though originally only 42% of the total outlay was contemplated to be spent as such. Consequently, 16.98 lakh direct exchange lines (DELs) were provided during the Plan against a target of 16 lakh lines. The waiting list, however, did not come down and actually increased from 8.43 lakhs to 12.87 lakhs. Targets were achieved in most of the other components except in the trunk automatic exchange capacity, telex capacity and optical fibre cables, where substantial shortfalls occured.

10.6.3 In rural communications, about 2,500 exchanges were added with a local switching capacity of 0.84 lakh lines and 0.63 lakh of direct exchange lines. About 9,200 new Long Distance Public Telephones (LDPTs) were installed bringing the total number of LDPTs to 31,000. Around 5,000 new telegraph offices were opened. Thus, by the end of the Seventh Plan, the country had 11,000 rural exchanges and 37,000 telegraph offices.

10.6.4 The principal physical targets and the corresponding achievements during the Seventh Plan are given in Annexure-10.2.

10.6.5 Introduction of new technologies like the digital switching systems, digital microwave, coaxial and optical fibre system in the long distance transmission, multi access rural radio system in the rural network etc., are important accomplishments of the Seventh Plan. Further, digitalisation increased from 3% to 18% in the local switching, from nil to 38% in the long distance switching, from 1% to 11% in the long distance transmission and from 30% to 39% in the telex. In the area of non voice services, a three Node Packet Switched Data Network (PSDN) was introduced on an experimental basis. Modern technology also helped to extend the improved telecommunication services to rural, remote and backward areas. Against the six countries available on the international subscriber dialling network at the beginning of the Seventh Plan, 178 countries were added by the end of the Plan. Of the 447 district headquarters in the country, 380 were put on the subscriber trunk dialling network.

10.6.6 During the Seventh Plan, the major thrust areas of Research & Development in the telecommunication sector were digital radio and line system, advanced switching system, large scale introduction of fibre optic technology, networks management system, development of CAD tools and data modems besides development of transmission equipment for railways and steel plants. The Centre for Development of Telematics (C-DOT) was set up in August, 1984 to develop a state-of- art digital switching system, suitable for Indian environment and with a capability of introduction in future of an Integrated Services Digital Network (ISDM). Based on indigenous technology, the Centre successfully produced 128 port EPABX (Electronic Private Automatic Exchange) and RAX (Rural Automatic Exchange). The production of the same by a large number of licensees has already started. Another major achievement of the Centre was the completion of the design of larger capacity exchanges. The prototype developed have been put on field trial.

Eighth Plan Objectives

Telecom Services

10.7.1 The Plan of telecommunication services is framed on the long term objective of a gradual building up of the telephone density to 6/7 telephones for every 100 persons. The waiting period for the telephone connection is now very long not only in the metropolitan cities but also in smaller towns which have

shown a sharp increase in demand as soon as new telephone connections are released. Hence, the Plan aims at reducing the waiting period to less than two years in general and also to provide the telephones practically on demand in rural and tribal areas. This will be ensured by installing additional switching capacity of 93 lakh (110 lakh including replacements) lines in order to provide 75 lakh new telephone connections.

10.7.2 In addition to the availability of telephones, accessibility, connectivity and reliability will be the primary goals. Accessibility to telephones will be ensured by providing a telephone in all the Gram Panchayats by April 1, 1995 and having LD-PTs, in additional 1.5 lakh villages by 1st April, 1997 so that 3.6 lakh of the total 5.7 lakh villages in the country are covered by the facility. One Public Call Office (PCO) will be provided for every 100 households in the urban areas. Provision of highway telephones on the national highways will also be a part of this programme.

10.7.3 The objective of connectivity will be achieved by providing subscriber trunk dialling facility to all exchanges by April 1, 1997. As part of this programme, all subdivisional/tehsil headquarters or equivalent towns and all exchanges with 500 or more lines will have STD facility. There will be a similar facility for all the industrial growth centres, tourist and pilgrim centres by April 1, 1995. In addition, all the district headquarters will be linked by digital network.

10.7.4 Reliability will be achieved through the provision of media diversity in the transmission network between the trunk automatic exchanges, network management centres for control and management of networks and a ducting programme to lay 3000 km of new ducts.

10.7.5 A beginning will be made in the Eighth Plan to provide a range of value added services (telematics) mainly on the basis of franchise. This will consist of cellular mobile services, voice and electronic mail services, audio and video conferencing services, radio paging and videotex. In the telex and telegraph services, the aim will be to convert the telex network to an all electronic one, to provide access to the telex network from all district headquarters through public telex offices and to make available bureaufax centres at the sub-divisional/tehsil headquarters or equivalent towns. In telegraph services, the aim will be to deliver 98% of the booked telegramms within 12 hours and 100% within 24 hours.

10.7.6 The outlay for telecommunications sector in the Eighth Plan is Rs.25,137 crore. The main physical targets are given in Annexure-10.3.

10.7.7 The entire programme outlined above will need substantial increase in the availability of switching and transmission equipment. Under the new economic policy initiated by the Government, fundamental policy changes regarding deregulation of industries including telecom sector have been effected. Manufacture of telecom equipment has been thrown open to the private sector. Despite this, it is expected that there will be a significant gap in the first two years between the requirement and the indigenous production of equipment. In the past, the main supplier of equipment was Indian Telephone Industries. However, in the new industrial policy, the telecom equipment industry has been delicensed. The interest evinced by several leading foreign manufacturers is most encouraging and it is hoped, will lead to very substantial addition to the indigenous capacity in the private sector.

National Capital Region (NCR)

10.7.8 The development of telecommunication services in the National Capital Region, which consists of 20 priority towns and 5 counter magnet towns in the three States adjoining Delhi, will recieve special emphasis in the Eighth Plan. For this purpose, the DOT has prepared a sub-plan with the aim to make available in the Region a reliable and modernised telecom facility, which will be comparable to that of the Capital itself so that a harmonised and balanced growth of the Region takes place. In order to achieve this, almost 97 per cent of the switching equipment to be provided for expansion of telecom services in the Region will be of electronic type and only 3 per cent will consist of electro-mechanical equipment. The transmission system would entirely be a digital one consisting of ultra high frequency/mi-

crowave and optical fibre systems. A total of 3.67 lakh lines of switching capacity is proposed to be added to NCR telecom network during the period. The outlay proposed for the sub-plan of the NCR is Rs. 995 crore. The likely scenario of the NCR telecom network at the end of the Eighth Plan is presented in Annexure-10.4.

Problems and Strategy

10.8.1 The target of 110 lakh gross additions of direct exchange lines over a five year period is a modest one and is well within the capacity of the Department of Telecommunications to achieve. However, the problem is one of availability of funds and equipment and choice of technology. Clearly, the amount of resources that the DOT would be able to generate internally would not be sufficient to meet the investment required. Since the fiscal deficit has to be brought down significantly during the Eighth Plan, the option of market borrowing is also limited.

10.8.2 As resources of that magnitude do not appear to be in sight within the public sector system, there is a need to draw up a time-bound concrete plan of allowing private enterprise and private sector funding in the basic telecommunication services. Some concrete methods must be devised to obtain resources by way of share capital and convertible or non-convertable bonds from the capital market. There are several options for this including leasing, joint venture with a minority share for the Government etc. Even foreign direct investment in some of the areas could be encouraged. However, all these fundamentally have to aim at involving the private sector in the expansion of telecom network. Private sector participation should not be viewed as abdication of responsibility by the public sector. On the contrary, it should be seen as healthy sharing of work. Unless innovative methods are devised, the public sector resources alone will not be able to support the programme needed by our vast country in the Eighth Plan. This sector needs sweeping structural and institutional reforms. Without a bold initiative for allowing private enterprise in areas hitherto kept as a preserve of the public sector, it is apprehended that the long term objective of improving telecom services in the country to international standards and to match even the level obtaining in the more progressive developing countries will not be achieved.

10.8.3 It is not enough to provide the telephones alone. It is equally necessary to improve the quality of service. During the Seventh Plan, the quality of service, specially fault rate per 100 stations per month, did not improve significantly despite expansion of the network and upgradation of technology. The average fault rate in the metro and major cities continued to be in the range of 18-20. Even if telecom service is allowed to be provided by the agencies other than the DOT, efficiency of the basic network will have to be maintained by the Department of Telecommunications and in the final analysis, improvement in the level of service will depend on the work culture and the work ethics of that Department.

Public Sector Undertakings

Indian Telephone Industries (ITI)

10.8.4 In the Eighth Plan, ITI envisages a production level of 49.34 lakh lines of electronic switching equipment at its Bangalore complex. The Rai Barelli unit is expected to reach full production of 17.28 lakh lines of electronic switching system and the Mankapur unit 32.70 lakh lines of digital switching equipment. The main Palghat unit will produce 2.82 lakh lines of digital trunk auto exchange equipment, in addition to 1.27 lakh lines of small local exchanges. The old strowger and crossbar exchanges will be phased out of production. New schemes will envisage expansion of digital trunk auto exchange, manufacture of cordless telephones and transmission equipment including the fibre optic systems. An outlay of Rs. 350 crores has been approved for ITI for the Eighth Plan.

Videsh Sanchar Nigam Ltd.(VSNL)

10.8.5 With the expansion of the International Trunk Dialling Services to most of the countries by the end of the Seventh Plan, VSNL will aim at improving the quality of service and utilisation of the network through improvements in call completion rates. Reliability will be provided by diversifying the international transmission media through addition of digital submarine cables which will provide an alternative to satellite transmission. Additional international gateway

centres will be established so as to provide uniform network access to various regions of the country. Moreover, new services for improved information transfer will be introduced through facilities like teletex, mail box service, database access, voice mail etc. The VSNL also plans to offer mobile international telecom services to the customers on land, on the high seas and in the air. An outlay of Rs. 800 crores has been provided for the VSNL for the Eighth Plan.

Hindustan Teleprinters Limited (HTL)

10.8.6 With electromechanical teleprinters being phased out of the system, the HTL is actively planing to diversify into new product lines including manufacture of the Roman and bilingual electronic teleprinters. Electronic key boards, FAX machines, payphones, chip cards, voice cards and C-DOT switching exchanges (upto 1400 lines) are some of the new products which will be manufactured. A provision of Rs. 15 crores has been made for HTL as plan outlay for the Eighth Plan.

Wireless Monitoring Organisation (WMO)

10.8.7 The Eighth Plan proposals of the WMO consist of using continuing programmes viz., satellite monitoring earth station project to monitor emissions from communications satellite in the geostationary orbit and strengthening and modernising existing facilities. This' will include augmentation of High Frequency (HF) channel facilities, provision of HF direction finding system, extension of microwave mobile monitoring facilities and upgradation of existing satellite monitoring stations to take care of the UHF/VHF and the Ku/Ka bands. For the Eighth Plan, a provision of Rs. 26 crores has been made as the plan outlay for WMO.

S & T Programme

10.8.8 The C-DOT, Telematics Engineering Centre (TEC) and Telematics Research Centre (TRC) are the main Research & Development agencies in the telecom sector besides the in - house facilities of ITI and BEL. The basic goal of Research & Development effort in the Eighth Plan would be to meet the higher technology needs of the entire range of switching and transmission equipment, keeping in view the objectives of extending telecom facilities to all villages, providing STD facilities to all exchanges and making available the latest value added services. The specific areas that will receive priority attention are ISDN capability for C-DOT switches, digital time division technology for rural communication and advanced microwave and fibre optics systems. Besides, systems - related Reseach & Development for improved operations and maintenance will also be carried out involving both hardware and software development. Standardisation, approval and evaluation work will continue to be carried out at the TEC. Greater coordination between the Research & Development activities of ITI and TEC will be achieved during the Eighth Plan. Besides optimally utilising the manpower resources available in the Government and Public Sector research organisations, concerted efforts will be made to harness the immense potential of IITs and other research laboratories in the country.

Information & Broadcasting

10.9.1 Today, the advancements in information technology and the spread in dissemination of information have virtually become an index of a country's development. Moreover, in a democracy, successful development needs participation of the people which is possible only if they are adequately informed. This calls for optimum investment on collection and dissemination of information and for ensuring access to the media of radio and television. At the same time, these media have to cater to the need for entertainment. Both the Ministry of Information and Broadcasting (I&B) and Publicity and Information Departments of State Governments are involved in these efforts.

Seventh Plan Performance

10.10.1 The major thrust of the Seventh Plan relating to Information and Broadcasting sector was on raising the level of consciousness of the people. It laid emphasis on skillful synthesis of traditional and folk forms of communication on one hand and modern audio visual media including satellite communication on the other. The actual outlays and expenditures of different media organisations at the Centre in the Information and Broadcasting sector are at Annexure-10.5.

Broadcast and Telecast Media (Akashvani and Doordarshan)

10.10.2 The Seventh Plan saw maximisation of the reach of All ndia Radio's (AIR's) signal almost over the entire country, both in terms of population and geographical area. A three - tier system of radio broadcasting - national regional and local levels - was introduced. The National Channel was visualised to be the best method to relieve regional and local stations of the need to relay broadcasts from Delhi and to allow local radio staions opportunity to express themselves. AIR also laid stress on completion of spillover schemes of the Sixth Plan like, 1000 KW mediumwave transmitter for the National Channel at Nagpur and shortwave transmitters for the external services of 250 KW at Aligarh and of 500 Kw at Bangalore. The intention was to maximise the day time coverage and to provide new radio stations in uncovered pockets, utilize FM service for local transmissions and to encourage FM compatibility of small radio sets made in the country, to upgrade medium wave transmitters, to strengthen and consolidate external service transmitters, to replace and to modernise obsolete equipment, to extend radio networking through INSAT and to have uninterrupted broadcast for North Eastern region. By the end of the Seventh Plan the coverage of AIR had increased to about 93% of the population. The number of broadcasting centres (including auxilliary centres) had risen to 134 and the number of transmitters to 226. The major achievements of AIR during the Seventh Plan include the introduction of hourly news bulletins from six in the morning till midnight, introduction of FM broadcast and launching of National Channel.

10.10.3 Likewise, Doordarshan, laid emphasis on introduction of two-tier service in a phased manner which included a television service for the whole country with Delhi as a main production centre and drawing programmes from other regional production centres and each major State having its own primary service originating in the State in the language of the State. By the end of the Seventh Plan, the coverage of Doordarshan had increased to about 53% of the population, the number of its studios had gone up to 31 and the number of transmitters (including transposers) to 535. The coverage will increase to 67% when all the Seventh Plan schemes and projects initiated in 1990-91 and 1991-92 are completed. The major achievements of Doordarshan include introduction of INTEXT-(teletext) service at Doordarshan Kendra, Delhi, starting of second channel at Bombay, Calcutta and Madras, introduction of a special news bulletin from Delhi for the benefit of persons whose hearing is impaired, introduction of morning and afternoon transmissions and significant increase in transmission time from all the Doordarshan Kendras.

Science and Technology Programme

10.10.4 The major thrust of Science and Technology (S&T) component in the Seventh Plan was on improving transmission quality and modernisation of production facilities. The main areas of work included digital technology, networking of transmission through satellite and antenna development. The Centre for Digital Techniques in Broadcasting has been established for introduction of digital techniques in radio and TV. Propagation and attenuation studies for both TV and FM (Frequency Modulated) radio signals; improvement of sound insulation and acoustics of studios; development of computer programme for Radio Frequency network planning and antenna development were among the important Research and Development programmes of the Seventh Plan. Very high frequency helical antenna was designed and put on tests on various modes of transmission. Based on indigenous technology, prototypes for amplitude/frequency modulation receivers, radio and TV signal generators, pulse-coded modulation based multiplexers etc. have been developed. This R & D effort will help promote industry-user linkages in high technology areas of communication, transmission, sound retrieval and image intelligence.

Information Media

10.10.5 The Seventh Plan saw considerable increase in investment on the electronic media. A substantial infrastructure was created in the different information and publicity units. As part of the modernisation process the Press Information Bureau (PIB) introduced dissemination of news and information

through computerised channel and a computer was installed at the Headquarters of the Registrar of Newspapers of India (RNI). The Publication Division, which publishes a large number of journals including "Yojana" - a journal on planning and development - added Punjabi and Kannada editions of the journal during the Sevnth Plan. A "Book Bazar on Wheel" was launched by the Division. The Directorate of Field Publicity which targets its publicity effort mainly to the rural areas and has a large network, organised nearly 3.13 lakh film shows, arranged song and drama programmes, held 2.15 lakh photo exhibitions and 3.03 lakh oral communication programmes, thus reaching an estimated audience of over 30 crore during the Seventh Plan period. The advertisement wing of Directorate of Advertising and Visual Publicity released 84,662 advertisements to various newspapers and journals on behalf of the Union Ministries/Departments during the Seventh Plan period. The Indian Institute of Mass Communication completed construction of its own building at the new campus of Jawahar Lal Nehru University. A Post Graduate Diploma course in Hindi Journalism was introduced and the Institute acquired personal computers and desk - top publishing facilities.

Film Media

10.10.6 The principal activities of the films media are to produce and distribute films, to participate in films festivals in India and abroad and to impart training in film and TV production. During the Seventh Plan, the Films Division produced 28 feature films, the Children's Film Society of India produced ten feature films and eight short films and the National Film Development Corporation produced/co- produced 36 films.

10.10.7 India continued to participate in and organise film festivals. The first International Documentary and Short Film Festival was held in Bombay in March, 1990. The International Film Festival of India was held in Calcutta in 1990 and the Sixth International Children's Film Festival was held in Delhi in 1989. The Directorate of Film Festival participated in 117 international film festivals. The Films and TV Institute of India also participated in several film festivals abroad. Several of the Indian films screened in these festivals won awards. In order to encourage production of quality films the National Film Development Corporation financed the production of over 200 films.

10.10.8 So far as State Plans relating to Information and Publicity are concerned, the approved outlay for the Seventh Plan was Rs.93.14 crore, against which the anticipated expenditure was Rs. 115.90 crore. The State-wise position is given in Annexure-10.6.

The Eighth Plan

All India Radio

10.11.1 Having achieved almost full coverage of its signals, the thrust in the Eighth Plan of AIR will be on consolidation and modernisation of existing facilities so as to bring about a qualitative change in broadcast. The programmes for consolidation will involve the National Channel, transmission for border areas, new FM transmitters and external services.

10.11.2 The Plan contemplates extension of the National Channel so that it reaches a much larger area and population. This will release time for the regional and local stations which can then focus better on their respective target population. Strenghening of the external services of AIR is also envisaged.

10.11.3 For extending the National Channel, it is imperative that AIR strengthens its engineering infrastructure. This will primarily comprise a number of additional stations. The FM option has been chosen for these stations to enable a steady signal throughout day and night. Since, however, the large number of existing receivers have reception facility only for AM broadcasts, the AM transmission has to be continued. Thus, the Plan envisages a judicious mixture of AM and FM, low power as well as energy - efficient stations.

10.11.4 The Seventh Plan made a visible contribution to the map of local radio in the country and the Eighth Plan will consolidate and replicate this effort. The need for 79

additional local radio stations in the Eighth Plan has been identified mainly on the basis of cultural homogenity of the areas. Improving signal strength and proper coverage in several pockets will constitute a special objective in the Eighth Plan. Some areas of the country although covered by transmitters from neighbouring States, are not within the day - time range of transmitters of their own State. Relay transmitters will be set up in such areas. Very low power transmitters will be installed so that certain remote areas with low density of population and situated in difficult terrain are covered by AIR.

10.11.4 Under the expansion programmes, a second channel with FM transmitters and additional studios is proposed to be set up at 15 centres subject to some prioritisation. A separate channel will also be provided for the Armed Forces. Three short wave transmitters of 250 Kw each located in and around Delhi will be installed for coverage in the border and neighbouring areas of the country. These transmitters will be provided with adequate number of antennas so that all border areas in North/North West and and East/North East are covered.

10.11.5 Commercial broadcasting was introduced on the Vividh Bharati channel in 1967 to mobilize resources for the network. At present, 29 centres carry commercial broadcast service. During the Eighth Plan, the commercial service on Vividh Bharati will be introduced at 10 additional centres which have been identified on the basis of potential audience and generation of revenue. The Vividh Bharati centre at Panaji is also proposed to be converted into a commercial channel. Additional duplicating facilities will be provided at Bombay for catering to the requirement of the new centres.

10.11.6 On completion of the Seventh Plan schemes, there will be 16 short wave transmitters of 500 KW supporting the external services. Besides, one 50 KW transmitter at Gorakhpur is dedicated to service in Nepali. Currently, AIR broadcasts approximately 75 hours of programmes daily in 23 foreign languages. To face the challenge from other foreign broadcasting organisations which are introducing 500 KW transmitters for their external services using multiple frequencies for a single service, it is essential that AIR has transmitters of matching power which can overcome inteference. It is, therefore, proposed to augment the capacity of external services through four SW transmitters of 250 KW each and two of 500 KW each during the Eighth Plan. Location of some relay transmitters in friendly countries are contemplated in order to provide proper coverage of external services in Oceania and countries in the Pacific Ocean.

10.11.7 Modernisation and greater application of the state-of- the-art technology in all spheres of broadcasting operations for improving the quality of broadcasts will be a major endeavour of the Eighth Plan. Thus, the Plan will provide for introduction of equipment based on digital technology selectively and Compact Disc Systems in all transmission booths of existing network. Since the effort has to be matched by availability of compact discs of Indian Music, this area will engage special attention. Schemewise outlays are given in Annexure-10.7.

Doordarshan

10.11.8 The thrust of Doordarshan's Plan will consist of consolidation of the achievements by suitably augmenting the production facilities at the existing centres and replacing equipment which has outlived its useful life, extension of coverage to about 76% of the population on completion of all the Eighth Plan schemes and increasing the use of satellite linkage. An important effort will be to overcome the congestion of the National Channel by starting a Second Channel which will permit diversification and variety. This Channel should provide entertainment of such a quality that it can compete effectively against foreign satellite TV services, private cable TV networks and video services. Very high professional skill and motivation to meet the challenge of others can only make the new Channel a success. To ensure this, a new approach may be needed on its structure and organisation.

10.11.9 In the software area, emphasis will be on augmentation of studio and outdoor facilities, phased reduction of sponsored programmes and corresponding increase in commissioned and in-house programmes. A ratio of 40:60 between sponsored and in-house/commissioned programmes is targetted during the Eighth Plan. News gathering activities will also be extended to all State capitals and the teams will be provided with the latest gathering and editing equipment. The production facilities will see a multi - pronged approach in the Eighth Plan consisting of spill over schemes of the Seventh Plan replacement of old equipment, setting up of production facilities at new centres with greater emphasis on post-production complement, modernisation, upgradation and additional facilities at existing centres and augmentation of outside broadcast coverage facilities.

10.11.10 Television coverage in the border areas was given considerable importance during the Seventh Plan. Nevertheless, even after completion of the Seventh Plan schemes, the coverage will need to be improved, particularly in the North East. For this purpose, 12 high power transmitters will be set up at different locations in Jammu and Kashmir, West Bengal, Rajasthan, Uttar Pradesh and Bihar and 100 low power transmitters mostly in hilly regions and tribal areas.

10.11.11 During the Eighth Plan, the existing satellite based services will be expanded with main emphasis on introduction of more regional services in the languages of the States through terrestrial re-broadcast transmitters. Satellite news gathering facility is also proposed to be introduced. Scheme-wise outlays are given in Annexure-10.8.

Information Media

10.11.12 The main thrust of the information media during the Eighth Plan will be on the modernisation of the information storage, retrieval and transmission system. The Press Information Bureau plans to develop an integrated transmission network for the Bureau so that news can be released simultaneously to newspapers located at different parts of the country. The integrated network will be of benefit particularly to small and medium newspapers. In order to keep pace with the fast modern photo techniques,the Photo Division on its part will be acquiring latest equipment like computerised auto processors, cibchrome processors, auto computerised enlargers. It also plans to develop a computerised photo bank. The Directorate of Field Publicity will similarly, procure modern equipment like video projection system. It is also proposed to install computers in all the regional centres. These computers will be hooked up to a main frame computer at the head quarters, thus providing a fast and reliable communication channel.

Films Media

10.11.13 The schemes of the films media during the Eighth Plan will in many ways be a continuation of the programmes of the earlier Plan. However, the emphasis will be on re-orientation of the functioning of the organisations based on modern methods. Thus the Film Division which at present is shooting a large number of films in colour, has to convert them into black and white due to lack of funds and also to ensure their release in all the theatres of the country. Needless to say, this is not only counter productive but also wasteful. Hence a major scheme during the Eighth Plan will be production of adequate number of colour prints of the films produced by the Film Division. Similarly, the National Film Archive of India, apart from completing the ongoing schemes, will instal multi-terminal computers to computerise archival of data and films. The Television Institute will procure new equipment like S-VHS camcorder, directors view finder, multi projector multi standard in order to replace old and outdated equipment. Media - wise outlays in respect of Information and Publicity sub-sector are given in Annexure-10.9.

10.11.14 For the Eighth Plan, an outlay of Rs.3634 crore has been provided for the Information & Broadcasting sector.

Strategy and Problems

10.12.1 The important issues, in so far as information and broadcasting sector is concerned, are autonomy of media including more effective use of media for development of communication, regulation

of cable television, increasing coverage of rural areas and ensuring that target audience is reached either through individually owned or community TV sets. There is already a commitment to convert the electronic media into an autonomous corporation. The Prasar Bharati (Broadcsating Corporation of India) Act, 1990 was passed some time ago by the Parliament. There are several questions relating to the functioning of the electronic media which need careful consideration. Autonomy is not a matter just of structure and form but of substance as well. It can flourish only in a competitive situation. Also it is not something that can be conferred but must be earned. At the same time, autonomy can not imply the absence of accountability. These issues have to be addressed and resolved, if autonomy has to be effective. Further, the electronic media must be in a position to generate resources needed for expansion and modernisation out of its own earnings, if autonomy is to be sustained in practice.

10.12.2 On the issue of funding of the electronic media particularly, Doordarshan, irrespective of whether or not autonomy is forthcoming, it is necessary that these organisations make the most of commercial opportunities available to them. Doordarshan should be able to sustain itself out of its own income both for current expenditure and investment needs. Currently, Doordarshan's revenue generation is often severely handicapped on account of use of its prime time free of cost by advertisements issued on behalf of Government Departments. In order to promote cost consciousness among the latter, as well as more accountability in Doordarshan, use of this time should be paid for. Charges for advertisement time should also be fixed having regard to what the market can bear.

10.12.3 Apart from autonomy and funding, ensuring credibility of the broadcasting media is vital and of immediate necessity. The importance and urgency of this is all the more because of the increasing onslaught from foreign radio and television broadcasts, including those recieved via satellite, either directly or through cable distribution. Therefore, pending final action on the creation of Prasar Bharati, the endeavour should be to ensure that the electronic media enjoy full functional autonomy and work with professionalism to spread information and education without compromising entertainment considerations.

10.12.4 A significant development in television technology is the advent of cable television the world over. Emergence of cable television is a natural corollary to advances in satellite communication which has broken national boundaries. Cable television with the roof top dish antenna and distribution of programmes through the cable network raises issues like whether it should be allowed in the private sector; if permitted, whether there should be a system of licensing and transmission of Doordarshan programmes be made obligatory by the cable television operators and whether there is need for a policy to ensure quality of programmes distributed on the cable television network.

10.12.5 Within the framework of existing laws the conclusion seems inescapable that it would be practically impossible to prevent the operation of cable television. Attempts can be made to regulate its growth but these are unlikely to be effective. The pragmatic approach will be to allow it to function within a liberal regulatory framework to ensure maintenance of minimum standards in respect of hardware and adherence to existing laws relating to public dissemination of news, control of obscenity and maintenance of public order. It is desirable that a policy be enunciated as early as possible. The official organisation will have to learn to live with the competition from cable television and match it in quality.

State Level Programmes

10.12.6 State level programmes relating to strengthening of Departments of Information and Publicity, including film media will be substantially strengthened. The Film Development Corporations set up by various State Governments will be encouraged to be self supporting in their commercial operations.

10.12.7 Television has come to be recognised as the most persuasive, effective and sought after medium for educational institutions and rural areas, where 40% population live below poverty line and vast majority of people cannot afford to buy a television set. Therefore, the concept of community viewing has proved highly attractive for reaching the urban and rural poor, farmers and industrial workers to meet their needs of entertainment, information and education. Community viewing which started in India simultaneously with the advent of television in the country in 1959 is still in an early stage. According to the latest available statistics, the total number of community viewing sets as on 1.1.90 was 50,032. In other words, almost one in every ten villages of the country has access to a community viewing set. State - wise break-up of community TV sets is given in Annexure-10.10.

10.12.8 The scheme of community viewing is an important component of State Plans because this is an activity which is best handled by the State Governments. The scheme envisages installation of TV and their maintenance through technical support from the field level staff.

10.12.9 The biggest problem in the scheme of community viewing is effective maintenance of the existing community viewing sets. Inadequate supply of electricity, inadequacy of staff and transport facilities as well as the absence of an effective organisation for undertaking maintenance at widely dispersed centres are contributory factors. Despite these difficulties, the importance and potential pay-off from community viewing is very high and it should be given top priority. Training unemployed youth through TRYSEM or other schemes in maintenance of sets should be explored as also participation of voluntary agencies and the panchayats. By the end of Eighth Plan, at least half of the 5.5 lakh villages in the country should be covered by a community viewing set. Achievement of this target rests with the respective State Governments.

Science and Technology Programme

10.12.10 The focus of Science & Technology programme in the Eighth Plan will continue to be on the development and introduction of higher and appropriate technology with the objective of improving the quality of production, transmission and reception. Major programmes envisaged relate to : computer aided design for studios, stereophonic sound broadcast and acoustic engineering; digital and high definition TV; fibre optic transmission links; antenna systems for microwave transmission and receiving; radio working and television receive-systems designs, compatible to future satellite system (viz. INSAT-II series) etc.

Annexure-10.1

Financial Outlay for the Eighth Plan - Postal Sector

(Rs. crores)

Schemes	8th Plan outlay
1.Expansion of postal network	23.65
2.Modernisation & mechanisation	138.30
3.Speed Post	5.50
4.Marketing	6.50
5.Mail Vans	2.50
6.Mail motor service	14.80
7.Materials management	4.90
8.Training projects	5.00
9.National savings	2.50
10.Postal buildings & staff quarters	121.35
Total	325.00

Annexure-10.2

Achievement During the Seventh Plan - Telecom. Sector

Scheme	Unit	Seventh Plan	
		Target	Achievement
I. Department of Telecom.			
1. Local Switching System			
i) Switching system	Lakh lines	21	19.61
ii) Direct exchange line	- do -	16	16.98
2. Long Distance Switching System			
i) Trunk auto exchange	Nos.	28	23
ii) Trunk capacity	Lines	130550	55100
iii) Manual Trunk Board	Nos.	1100	700
3. Long Distance Transmission System			
i) Coaxial cable system	Route Kms.	8620	5953
ii) Microwave system	-do-	11319	10478
iii) UHF system	-do-	12920	9890
iv) Optical fibre system	-do-	5144	2323
4. Openwire & Telegraph			
i) Telegraph offices	Nos.	8000	5514
ii) Long distance pub. telphn.	-do-	15000	6808
iii) Telex exchange	-do-	100	144
iv) Telex capacity			
a) Local	Lines	32200	10760
b) Transit	- do -	4800	3200
II. Indian Telephone Industries Ltd.			
1.Switching equipment	Kilo lines	2775	2914
2. Telephone instrument	'000 Nos.	3870	914
3. Transmission equipment	Rs. Lakh	67,492	27,611

Annexure-10.3

Proposed Physical Targets for the Eighth Plan - Telecom. Sector

Name of Scheme	Likely Status 31.3.92	Target 1992-97	Likely Status 31.3.97
Local Telephone System			
Switching (Lakh) Capacity	67.75	93.00	160.75
Direct Exchange (Lakh) Lines	57.75	75.00	132.75
Long Distance Switching			
TAX Capacity (Lines)	196600	272000	468600
Long Distance Transmission			
Coaxial Cable (R Km) Systems	27420	3000	30420
Microwave (R Km) Systems	36786	20000	56786
UHF Systems (R Km)	21157	150000	171157
Optical Fibre (R Km) System	8810	20000	28810
Others			
LDPTs	38952	338000	377000
Telex Capacity	54660	31200	85860

Annexure-10.4

Proposed Physical Target for the Eighth Plan for the National Capital Region

(Nos.)

Item	Likely Switching capacity		Net addition
	as on 1.4.92	as on 1.4.97	
1. Priority towns	1,21,158	4,10,353	2,89,195
2. Counter magnet towns	51,600	1,29,268	77,668
Total	1,72,758	5,39,621	3,66,863

Annexure-10.5

Actual Outlay and Expenditure: Information & Broadcasting Sector

(Rs. crores)

Name of Scheme	Seventh Plan	
	Approved Outlay	Expenditure
1.Akashvani	700.00	588.20
2.Doordarshan	700.00	716.07
3.Films media	41.51	44.32
4. Information media	30.00	11.45
Total	1471.51	1360.17

Annexure-10.6

Statewise Outlay/Expenditure for Seventh Five Year Plan of Information and Publicity Sub-sector

(Rs. Lakhs)

State	Seventh Plan	
	Approved outlay	Expenditure
1. Andhra Pradesh	126.00	1060.36
2. Arunachal Pradesh	50.00	130.11
3. Assam	250.00	219.41
4. Bihar	200.00	290.21
5. Goa	110.00	174.73
6. Gujarat	758.00	727.48
7. Haryana	480.00	305.16
8. Himachal Pradesh	100.00	336.10
9. Jammu & Kashmir	203.00	170.00
10. Karnataka	700.00	734.00
11. Kerala	450.00	415.63
12. Madhya Pradesh	324.00	294.00
13. Maharashtra	760.00	618.21
14. Manipur	100.00	126.60
15. Meghalaya	60.00	103.38
16. Mizoram	70.00	145.56
17. Nagaland	350.00	327.25
18. Orissa	300.00	762.00
19. Punjab	325.00	592.00
20. Rajasthan	160.00	154.56
21. Sikkim	47.00	120.05
22. Tamil Nadu	300.00	94.95
23. Tripura	127.00	362.92
24. Uttar Pradesh	1250.00	1600.43
25. West Bengal	580.00	1724.71
Total :	9314.00	11589.81

Annexure-10.7

Eighth Plan Outlay - All India Radio

(Rs. crores)

Name of Schemes	Outlay
I. Continuing Schemes	439.46
II Modernisation & Replacement Schemes	232.57
III. New Schemes	442.92
VI. Software & Programme Development Schemes	20.00
Total :	1134.95

Annexure-10.8

Eighth Plan Outlay - Doordarshan

(Rs. crores)

Name of Scheme	Outlay
I. Continuing Schemes	877.00
II. Software Scheme and Human Resource Development & Audience Research	200.00
III. Replacement, Augmentation and Modernisation	270.00
IV. Satellite Services including Regional Services	343.00
V. Extension of coverage	500.00
VI. Production facilities and other Schemes	110.00
Total :	2300.00

Annexure-10.9

Eighth Plan Outlay - Information and Publicity

(Rs. crores)

Scheme	Outlay
I. Information Media	
1. Press Information Bureau	20.00
2. Publication Division	2.50
3. Directorate of Advertising & Visual Publicity	5.00
4. Song and Drama Division	10.00
5. Directorate of Field Publicity	15.00
6. Photo Division	4.00
7. Register of Newspapers for India	0.50
8. Indian Institute of Mass Communication	7.00
9. Soochna Bhavan	11.20
10. Main Secretariat	0.20
Total (I)	**75.40**
II. Films Media	
1. Films Division	34.00
2. National Film Archive of India	6.00
3. Film & Television Institute of India	8.00
4. Childrens Film Society of India	10.00
5. National Film Development Corporation	20.00
6. Directorate of Film Festivals	15.00
7. Film Society Movement	0.15
8. Central Board of Film Certification	1.00
9. F.T.I.I.., Calcutta	29.50
Total (II)	**123.65**
Total (I + II)	**199.05**

Annexure-10.10

Statewise Break - up of the Community TV Sets as on 1.1.90.

(Nos.)

State	Number of Village	Number of Community TV sets	Deficiency
1. Andhra Pradesh	27221	1284	25937
2. Arunachal Pradesh	2257	225	2032
3. Assam	21995	1260	20735
4. Bihar	78027	2156	75871
5. Gujarat	18114	5260	12854
6. Jammu & Kashmir	6477	590	5887
7. Karnataka	27024	652	26372
8. Madhya Pradesh	71352	3247	68105
9. Maharashtra	35778	8938	26840
10. Manipur	2035	521	1514
11. Meghalaya	4902	485	4417
12. Mizoram	2035	521	1514
13. Nagaland	966	569	397
14. Orissa	46992	736	46256
15. Punjab	12342	533	11809
16. Rajasthan	34968	1799	33169
17. Sikkim	440	100	340
18. Tamil Nadu	15735	11647	4088
19. Tripura	4727	716	4011
20. Uttar Pradesh	112566	7758	104808
21. West Bengal	41107	349	40758
22. Delhi	388	1074	*
Total :	566148	50032	516802

* 1074 TV sets have been provided in 368 villages.

CHAPTER 11

EDUCATION, CULTURE AND SPORTS

GENERAL EDUCATION:

Introduction:

11.1.1 I t is now universally acknowledged that the goal of Plan efforts is human development, of which human resource development is a necessary pre-requisite. Education is the catalytic factor, which leads to human resource development comprising better health and nutrition, improved socio-economic opportunities and more congenial and beneficial natural environment for all. There is already enough evidence in India to show that high literacy rates, especially high female literacy rates, are associated with low rates of population growth, infant mortality and maternal mortality besides a higher rate of life expectancy. Although the country has not so far achieved the goals of universalisation of elementary education (UEE) and eradication of adult illiteracy (EAI), the 1991 census results reveal a literacy rate of over 52 per cent, with a higher rate of growth for female literacy. This is highly encouraging and the country can hope to achieve the broader goal of `Education for All' (EFA) by 2000 AD, which has incidentally received international recognition at the world conference on EFA held at Jomtien in March, 1990. The commitment of the Government to the National Policy on Education (NPE), implemented from 1986-87 onwards and reviewed in 1990, has been reaffirmed with revised for mulation in respect of a few paras, placed before the Parliament on 7.5.1992. On the eve of Eighth Plan, therefore, the country is poised to make a real breakthrough in achieving its long-cherished educational goals as well as in supporting the drive for higher rate of economic growth.

Plan Performance Review (1985-92):

11.1.2 The development of education in terms of institutions and enrolment from 1984-85 onwards is indicated in the Annexure 11.1.

Elementary Education

11.1.3 The Seventh Plan gave over-riding priority for the realisation of the objective of UEE by 1990. It was estimated that for achieving the goal, over 5 crores additional children would have to be enrolled. By 1991-92, however, about 2.53 crores were actually enrolled in the formal system and even after taking account of 0.72 crores in the non-formal system, the target could not be achieved. At the end of 1991-92, the gross enrolment at the primary and upper-primary stages is likely to have reached 10.09 crores and 3.44 crores respectively. The details of enrolment at the elementary stage are given in the following table:

Table 11.1 Enrolment in Elementary Education: Additional and Cumulative Achievement During 1985-92

(Figures in Crores)

Sl. No.	System/Stage	7th Plan (1985-90) Addnl. Achivt.	Annual Plans (1990-91 & 1991-92 Addnl.Achivt.	Cumulative Enrolment at the end of 1991-92
1.	Formal:	1.95	0.58	13.53
	a) Primary	1.34	0.36	10.09
	b) Upper primary	0.61	0.22	3.44
2.	Non-formal:	0.64	0.08	0.72
	Total	2.59	0.66	14.25

The latest data show that in 1990-91, the gross enrolment ratio (GER) had reached 101.03 per cent at the primary stage and 60.4 per cent at the upper primary stage. Considering that the number of overage and underage children in the GER data was in the range of 16-23 per cent and the dropout rate for primary stage in 1987-88 was 46.97 per cent and for elementary stage as a whole 62.29 per cent, we are clearly far away from the goal of universal enrolment and retention, much less achievement.

11.1.4 The strategies of the Seventh Plan underwent a change in the middle of the Plan period with the adoption of the NPE in 1986. The new thrust in elementary education emphasized the aspects of: (i) universal enrolment and universal retention, and (ii) substantial improvement in the quality of education. As part of implementation of NPE, the new scheme of `Operation Blackboard' (OB) was launched. Besides,the scheme of Non-Formal Education (NFE) was revised and a number of schemes for teacher education were also taken up. By March, 1992, the scheme of OB covered about 80 per cent of the blocks and 49 experimental, innovative NFE projects were sanctioned. There were 27,342 NFE centres run by 419 voluntary agencies and there were 2.72 lakh State-run NFE centres.

Teacher Education

11.1.5 In 1987-88, a Centrally-Sponsored Scheme (CSS) for restructuring and reorganisation of teacher education was started, which included Mass Orientation of School Teachers (MOST), strengthening of Secondary Teacher Education Institutions (STEIs), State Councils of Educational Research and Training (SCERT), setting up of District Institutes of Education and Training (DIETs) and establishment and strengthening of Institutes of Advanced Studies in Education (IASE) in Universities. Between 1987-88 and 1991-92, 12.96 lakh teachers were covered under the scheme of MOST and Central assistance was extended to set up 287 DIETs, 25 STEIs and 12 IASEs. The scheme of strengthening SCERTs did not, however, make headway.

Adult Education

11.1.6 The NPE and the Programme Of Action (POA) envisaged that the Adult Education Programme (AEP) would cover 4 crore illiterates by 1990 and another 6 crores by 1995. With the launching of the National Literacy Mission (NLM) in 1988, the targets were reformulated and strategies recast. Accordingly, 3 crores illiterates were expected to be covered by 1990 and 5 crores by 1995. While Rural Functional Literacy Programme (RFLP), the post-literacy the teaching-learning process were modified, new strategies like area-specific and time-bound approach to achieve 100 per cent total literacy (TL), massive participation of non-governmental organisations (NGOs) and students and effective utilisation of traditional and folk theatre forms in literacy work were evolved. By 1991-92, the post- literacy programme was institutionalised in the form of 32,000 Jan Shikshan Nilayams (JSN). Apart from the introduction of Improved Pace and Content of Learning (IPCL) method, which reduced the duration of learning from 500 to 200 hours, technology demonstration programmes were initiated in 42 selected districts. The scheme of Shramik Vidyapeeths (SVs) was reviewed, suggesting a need for expansion. The number of State Resources Centres (SRCs) increased from 19 to 20. A National Institute of Adult Education (NIAE) was set up in January, 1991 to augment the technical and academic resource support to adult education and to undertake quality research and evaluation studies.

11.1.7 Area-specific and time-bound mass campaigns for TL first launched in Kottayam town and Ernakulam district in Kerala in 1989 with the active participation of students and voluntary agencies have been extended to other districts. By March 1992, twenty-five districts had achieved total literacy (in the sense of 85 per cent literacy) and TL campaigns were at different stages of progress in 80 districts in Andhra Pradesh, Bihar, Gujarat, Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Uttar Pardesh and West Bengal covering over 3 crore illiterates with the help of about 30 lakh volunteers.

Secondary Education

11.1.8 As part of NPE, new CSSs for vocationalisation of higher secondary stage, improvement of science education and environmental orientation to school education were started. The

new Central schemes of Navodaya Vidyalayas (NVs) and National Open School (NOS) were also initiated. The existing schemes of Integrated Education, Educational Technology and Computer Literacy Studies (CLASS) Project were strengthened.

11.1.9 By the end of 1991-92, about 8.7 per cent of the higher secondary students (5.85 lakhs) would have been diverted to vocational stream. The Open School affiliated to Central Board of Secondary Education (CBSE) was converted into an autonomous NOS in 1989 and by 1991-92, the total enrolment was in the neighbourhood of 1.50 lakhs. Under the CLASS Project, 2,598 schools were equipped with computers, with 60 institutes providing resource support to these schools. As many as 275 NVs designed to provide good quality school education to talented rural children have been established in 29 States/Union Territories. As on March 31, 1991, there were 64,517 students in the NVs and the pass percentage of the first batch, which took Class X examination was 95.77. The National Council of Educational Research and Training (NCERT) brought out the National Curriculum Framework for all stages of education and undertook a massive revision of text books for classes I-XII on the basis of the revised syllabi designed as per the framework.

Other Programmes

11.1.10 The Central language institutions relating to Hindi, Indian Languages, English, Urdu, Sanskrit and Foreign Languages implemented a variety of schemes relating to training of language teachers, publication of language teaching materials,assistance to voluntary organisations, support for Urdu Calligraphy Centres etc. The National Book Trust (NBT) was involved in the work relating to preparation of literature for neo-literates under the NLM and preparation of a Central list of books for the libraries of 5.5 lakhs primary schools under the OB Scheme. The NBT's Nehru Bal Pustakalya and Adan-Pradan Schemes have also made a mark. Besides continuing the schemes relating to national scholarships and scholarships for the talented children from the rural areas, in 1988-89 a new scheme for upgradation of merit of SC/ST students through remedial and special coaching was started as part of NPE.

Eighth Plan Thrust Areas

11.2.1 Universalisation of elementary education, eradication of illiteracy in the age group of 15 to 35 and strengthening of vocational education (VE) so as to relate it to the emerging needs in the urban and rural settings are the major thrust areas of the Eighth Plan in the Education Sector. Utilisation of formal, non-formal and open channels of learning would be the strategy for this purpose. The changed approach, improved methodology of teaching, increased participation of NGOs and student volunteers have infused a new vitality into the literacy programme and have given it a fresh momentum. The aim would be to impart a similar vitality and momentum to the universal primary education programme with a definite edge in its favour. The programmes of AE and UEE are complementary and there are situations where the Elementary Education (EE) programmes may benefit from the spin-off effect of the AE programmes. The improvement in the literacy percentage in the decade 1981-91, after allowing for statistical adjustment due to the exclusion of age group 0 to 6 is as much due to the higher literacy rate of school age cohorts and attrition of old-age cohorts with low level of literacy as to the special efforts on the AE front. The need for according the highest priority to UEE is, therefore, well-established. Within the overall school-age population, the focus would be on girls, who account for two-thirds of target, and among adults the focus would be on women's literacy which has a beneficial impact on children's literacy as well as other national objectives like population control and family welfare.

11.2.2 So far as UEE is concerned, the NPE stress on retention, participation and achievement, rather than mere enrolment, would be reinforced. Enrolment data are easily available and enrolment is a pre-condition for any further action. However, special attention would be paid to increase retention, improvement of quality, specification of minimum levels of learning (MLL) and their attainment by the learners.

11.2.3 In regard to literacy, the emphasis would be on sustainability of literacy skills gained and on the achievement of goals of remediation, continuation and application of skills to actual living and working conditions.

Table 11.2 Elementary Education: Projected Enrolment for Eighth Plan (1992-97)

(Figures in Crores)

Sl. No.	Stage	Population by 1997		Population with overage/ underage children		Enrolment achieved upto 1991-92		Addnl. Population to be enrolled by 1997	
		Total	Female	Total	Female	Total	Female	Total	Female
1	2	3	4	5	6	7	8	9	10
1.	Elem.Edn	16.64	8.09	19.14	9.30	13.53	5.54	5.61 (67%)	3.76
a)	Primary (I-V)	10.53	5.12	12.11	5.89	10.09	4.24	2.02 (82%)	1.65
b)	Upper Primary (VI-VIII)	6.11	2.97	7.03	3.41	3.44	1.30	3.59 (59%)	2.11

11.2.4 In view of the employment orientation of the Plan and the need to establish meaningful linkages between the world of work and the world of learning, VE would be another priority area. This would not be confined to higher secondary stage but permeate the whole arena of secondary education and non-formal education/training. A combination of vocational and academic courses would be offered at secondary stage with open education (OE) as an important channel, preparing the students for wage employment and self-employment. In the service sector, expansion of health-related courses having a rural orientation would be emphasised. In the rural areas, agro-based and technology-based vocational courses would be developed by combining the strengths of existing institutional structures with OE institutions.

Targets

11.3.1 It is estimated that additional enrolment to be achieved during the Eighth Plan to reach universalisation is approximately 5.61 crores children. These data are based on the assumption of 15 per cent incidence of overage/underage phenomenon both at the primary and the upper primary stages. Enrolment of about 4.38 crores would be achieved through formal schools, about 1 crore through non-formal centres and the rest through the open learning channel of upper-primary stage. These targets are much higher than the Seventh Plan achievement. They are, however, within the realm of possibility, if the requisite will and mobilisation of organisational and financial resources are brought to bear on the task and innovative schemes like voluntary primary schools and OE at the upper primary stage are introduced. The NDC Committee on Literacy recently appointed is expected to give a lead in this regard. Working targets in relation to retention and achievement based on institutional capabilties and consultations with State Governments need to be laid down. The details of enrolment targets are given in Table 11.2 and State-wise targets of formal system in Annexure 11.6.

11.3.2 According to the 1991 Census, the number of illiterates in all age-groups is 33.6 crores. It is estimated that there will be 11. 2 crore illiterates in the 15-35 age group of whom 70 lakhs would have become literate by the end of March, 1992. Thus, the target to be covered during the Eighth Plan will be about 10.5 crores, compared to the achievement of 2.65 crores during the Seventh Plan. In the context of the emphasis on sustainability of literacy and on continuing education, suitable targets in this regard need to be laid down after consulting State Governments.

11.3.3 In the VE, the target is to cover 15-20 per cent of students of higher secondary stage by the end of Eighth Plan.

Strategies

11.4.1 The main strategy for achieving the targets would be: (a) adoption of the decentralised approach to educational planning and management at all levels through Panchayat Raj (PR) institutions; (b) combining this approach with a convergence model of rural development involving integrated utilisation of all possible resources available at Panchayat, Block and District level for activities relating to elementary education/literacy, child care/development, women's socio-economic empowerment and rural health programmes; (c) large scale participation of voluntary agencies and (d) development of innovative and cost-effective complementary programmes including open learning system (OLS) supported by distance education techniques.

11.4.2 In specific terms, the following measures will be adopted:

(1) The formal school system will be expanded and improved.

(2) The non-formal system mainly catering to the needs of children working for wages, children working whole-time in domestic or household duties and children in schoolless habitations will be expanded, improved and strengthened in the matter of supply of teaching-learning materials, instructional delivery and achievements.

(3) A voluntary school scheme will be introduced. At present, elementary education is considered a responsibility of State and local bodies. However, there is scope for providing part-time non-formalised education to a large number of learners who are not able to avail of the facility of formal full-time school or non-formal education centres. Voluntary agencies would be encouraged in a big way to start non-formal part-time schools, thus catering to the learning needs of urban working children and children in the tribal, hilly and inaccessible areas.

(4) A well-defined open learning system will be developed with a network of educational opportunities relevant to the needs and circumstances of learners, especially girls, women, SCs/STs, and the poor, the unemployed and the untrained. The major thrust of OLS would be on the acquisition of life-skills, vocational skills, directly contributing to productivity and inculcation of habits of self-learning.

(5) The MLL with reference to class III, V and VIII will be laid down for improving learning achievement. The educational system will be required to ensure that every child who completes any of these stages of learning reaches the minimum level of achievement. Measures for improving classroom teaching like introduction of a comprehensive evaluation system and a continuous inservice training of teachers will be taken up simultaneously. The MLL approach will be decentralised, each planning unit being able to determine its present levels of achievement, adopt appropriate MLLs and define a realistic timeframe within which to achieve the mastery level, through additional efforts and inputs where necessary.

(6) District Boards of Education (DBEs) would be set up. They are conceived as the nodal agency for planning and management of education at the district level comprising formal education, AE, NFE and teacher training, vertically linked to Block/ or Mandal Education Committees and Village Education Committees (VECs) in a decentralised framework.

(7) The school complexes would be developed as the basic unit for educational planning, mobilisation and supervision, building organic linkages between educational institutions, DBEs and the Panchayati Raj Institutions.

(8) The involvement of the people in school management would be operationalised by giving VECs a more prominent role in planning and management of educational programmes at local level so that VECs, which know the micro-level problems, needs and expectations of the local community, will be accountable for the enrolment, retention and achievement of children and teachers.

(9) The methodology of Mahila Samakhya (MS) project of mobilising women's groups to voice their needs would be extended in conjunction with the involvement of local community to create a favourable environment to serve as a

monitoring mechanism for promoting UEE and adult literacy.

(10) The district will be treated as a unit of educational planning in the Eighth Plan. For grant of central assistance under CSSs during Sixth and Seventh Plans, a number of States were characterised as educationally backward. The Gross Enrolment Ratio was considered as a benchmark for the identification of backwardness. It was considered that there is a need for special assistance to the educationally backward States to overcome the historically obtaining disadvantages and also for reduction of regional disparities in educational development. The district-wise data of various indicators of educational development, however, show that the inter-district variations are more significant than the inter-State variations. Moreover, the State is too large and variegated an area to serve as a homogeneous unit for educational planning. Therefore, educationally backward districts would be identified and special inputs would be provided in proportion to the degree of backwardness. The Working Group on early childhood and elementary education had ranked the districts in terms of a composite indicator giving equal weight to four parameters of general/female literacy and general/female GER - primary. Although, almost all districts in the top 200 backward districts were from backward States, there is no guarantee that assistance to backward States will necessarily flow to backward districts within them. During the Eighth Plan, accordingly, the backward districts irrespective of the State where they are located, will be targetted. A more systematic study to identify the criteria for educational backwardness of districts and the ranking of the districts in terms of the selected indices on the basis of latest Census data, as a basic tool for investment decision would also be initiated.

(11) Special efforts will be made to bring down construction cost of school buildings and other educational structures using available materials and adopting locally relevant architectural styles. Attention will be given as much to full utilisation of resources as to larger allocation e.g. more intensive use of buildings by operation of double shifts in schools and of equipment by inter-institutional sharing.

(12) In the case of teacher education, the stress will be on improving the standard of pre-service teacher education institutions and the quality of its programmes, providing continuing education of a suitable kind to every teacher educator and to a substantial number of teachers and on creation of a system to discourage setting up of sub-standard institutions and phasing out of existing sub-standard ones.

(13) Time-bound, area-specific and cost-effective TL campaigns by involving all sections of society, specially students and non-governmental organisations would be expanded. While the whole adult education programme will be debureaucratised, the strategies of ensuring continued political commitment, strong administrative support, use of traditional and non-traditional media and cultural and art forms will be adopted. Students and teachers of universities, colleges and schools would be involved in a big way not only by awarding marks to students for their literacy work but also by making literacy work as a part of curriculum.

(14) Apart from consolidation, and expansion of secondary education increasingly through the open channel, the stress during the Eighth Plan will be on qualitative upgradation of secondary education through reorientation of its content and process, examination reform, diversification by way of vocationalisation and modernisation by way of technological inputs.

N.B: The revised policy formulation relating to the NPE, 1986 which was placed before parliament on 7th May, 1992 should be kept in view while working out details of programmes under General Education, University and Higher Education and Technical Education.

Programmes

11.5.1 The Eighth Plan is being launched in the backdrop of acceptance by the NDC of the recommendations of the Report of the Narasimha Rao Committee which has removed the uncertainties regarding the continuance of CSSs in Education Sector. All the existing CSSs will be continued. Introduction of new CSSs would require approval of full Planning Commission but they may be taken up in the priority areas when justified.

Elementary Education

11.5.2 Early Childhood Education (ECE) would be expanded by attaching pre-primary classes to selected primary schools. Voluntary agencies and other NGOs would be encouraged and provided financial assistance by reorganising the scheme of ECE. Integrated Child Development Scheme (ICDS) model would be supplemented by Balwadis, Creches and Vikas Wadis.

11.5.3 Primary schools or alternatives to primary schools like non-formal centres etc. would be provided to every child within a walking distance of one kilometer, with suitable adjustment for special cases. Voluntary agencies, factories, cooperatives etc. would be encouraged to set up part-time primary schools to serve several groups of children belonging to hilly, desert, marshy, forest areas and nomadic tribes, seasonal migrants, urban poor etc with freedom to adjust the number of school days, instructional hours and appoint teachers on contract basis.

11.5.4 Innovative programmes like Shiksha Karmi which have given good results in an experimental project in Rajasthan would be expanded. Besides, a range of activities that suit the requirements of specific groups of learners, who are usually left out of the ambit of large scale projects, would be taken up. Opening of night schools in urban areas, pre-primary and lower primary centres for children of 3-9 years of age, `half-time' instructors and special projects to tackle educational problems of areas with concentration of child labour would be tried out.

11.5.5 Open schools would involve themselves in the post-primary stage education on an experimental basis to provide wider access to children who are working or not in a position to attend regular schools due to socio- economic or any other reasons.

11.5.6 Special efforts will be made to increase enrolment rates and improve participation rates at the upper- primary stage especially in respect of girls. Hence, while ensuring effective universal access to all children at the primary stage, the infrastructure at the upperprimary stage will have to be considerably expanded.

11.5.7 Besides expansion of school facilities, there will be need to improve the quality of education by providing existing schools with sufficient facilities. Therefore, the "Operation Blackboard" scheme will not only be continued and completed during the Eighth Plan in relation to primary schools but also extended to upper primary schools. The eventual aim would be to move towards a situation where every class has a classroom and a teacher.

11.5.8 In order to expedite universalisation of middle stage education and increase the enrolment of girls,the ratio between primary and upper primary schools would be brought down from the existing 1:4 to at least 1:3 with the ultimate aim of 1:2.

11.5.9 Apart from expanding Tribal Sub-Plan (TSP) and Special Component Plan (SCP), special measures are required for promotion of education of SCs/STs. Certain sub-castes, tribes and communities need particular attention because literacy rates among them are extremely low. The existing scheme of residential ashram schools will be expanded to cover classes from I to X and scholarship schemes for talented children at the secondary level would be expanded.. This will be supplemented by the scheme of voluntary schools wherever possible. Suitable incentives will be provided to all educationally backward sections of society, particularly in rural areas. Hill and desert districts, remote and inaccessible areas and islands will be provided adequate institutional infrastructure. Greater attention will be paid to the educationally backward minorities keeping in view the recommendations of the Empowered Committee on Minority Education (1991).

Incentives and Support Services

11.5.10 A system of incentives to overcome social, economic and educational handicaps, which lead to high incidence of dropout has been an integral part of educational planning for universalisation since long. A recent evaluation of these schemes has made a positive assessment but has also emphasised the need for paying adequate attention to management aspects of the system so that they yield the desired results. A comprehensive package of incentives and support services for girls, SCs, STs and children of the economically weaker sections of society will be provided. The emphasis will be on provision

of facilities that have special relevance for retention of girls, such as establishment of Day Care Centres for pre-school children and infants, provision of free uniforms, textbooks and stationery, attendance allowance and coordination of support services such as drinking water, fodder and fuel to release children, especially girls as well as women from related domestic chores.

Evaluation

11.5.11 A National Evaluation Organisation (NEO) will be set up to undertake assessment of student learning on national scale on a sample basis to implement the strategy of MLL.

Monitoring of the Progress of UEE

11.5.12 Annual sample studies to estimate the completion rates as envisaged in NPE viz. "number of children of about 11 years of age completing five years of schooling or its equivalent through the formal/non-formal stream" will be undertaken. The data of completion rates and MLL will be used to set targets for the States under the 20- Point Programme also.

11.5.13 A comprehensive computerised institutional and related data base at the district level will be developed so that information, relevant not only to monitor the internal efficiency of the educational system, both formal and non-formal, but also to improve the planning and management at the district level, is available in time. Computerisation would be extended to all districts of the country in phases.

Teacher Education

11.5.14 Statutory status will be accorded to the National Council for Teacher Education (NCTE) to lay down and maintain standards in institutions and courses. The schemes of DIETs, STEIs and IASEs would be continued and their coverage expanded with a view to strengthening the institutional infrastructure and programmes of teacher education. The scheme for strengthening of SCERTs would be sanctioned and implemented and suitable measures for selection and professional development of staff in SCERTs, DIETs and IASEs will be undertaken. A large number of teachers will be covered through in-service programmes, both institutional and distance education, and reputed professional organisations will be encouraged to conduct inservice and reresher courses for teachers. Open universities at the national and State level will be encouraged to introduce induction teacher training courses to supplement the efforts of the existing training institutions. The bulk of seats in teachers' training colleges would be reserved for rural women.

Adult Education

11.5.15 Literacy programmes will be launched in districts/regions which are educationally backward or have high concentration of SC/ST population or have low female literacy. By the close of the Eighth Plan, 345 districts including about two-thirds of all districts in the educationally backward States would be covered by the TL campaigns, while the centre-based approach would be gradually phased out and confined to hilly, tribal and sparsely populated regions. The strategy for backward districts would be two-fold. First, a few blocks would be selected where the literacy campaign can achieve success within a reasonable period. The demonstration effect of the blocks would influence the backward blocks which, in course of time, could develop appropriate literacy programmes. Secondly,the voluntary base in educationally backward districts being somewhat weak, ways and means of identification, strengthening and expansion of the same would be evolved in consultation with the respective State Governments. It is also necessary to develop technical comptence among voluntary agencies so that the partnership between the Government and the operating agencies becomes meaningful.

11.5.16 The possibility of further enhancing contributions from the community especially in urban areas and industrial towns would be explored so that apart from voluntary service, at least 20 per cent of the total expenditure on the campaign may be met.

11.5.17 In States, where library movement is strong, rural libraries should be integrated with the JSNs which are envisaged as innovative post-literacy and continuing education centres. Reputed NGOs, educational institutions, distinguished individuals, ex-servicemen, war widows, award winning teachers etc. will be encouraged to set up and run JSNs. Particular attention would be paid to the availability of a variety of quality materials in adequate quantity to the neo-literates. Reputed printing presses and publishers would be motivated to print gratis literacy materials, posters and charts.

11.5.18 The academic and technical support to Adult Education programmes would be provided by the newly set up NIAE, which would be involved to a greater extent in various aspects of training, action research and monitoring, so that the Directorate of Adult Education can be phased out by the end of the Eighth Plan. At the State level, the State Resource Centres will be strengthened.

11.5.19 The scheme of SVs, which provide a variety of training programme to the industrial workers and their families would be extended to cover workers in unorgnised sector and would also experiment with a variety of training models including distance education.

11.5.20 The contents of adult education would also include inculcation of values like secularism, national integration, scientific temperament, small family norm, concern for environmental conservation, cultural appreciation and so on. Even a society with a literate population is required to provide many avenues for continuing education in the context of the march towards a learning society, in which open schools and open universities would play an important role.

Secondary Education

11.5.21 The expansion of secondary schools would be regulated and new schools opened on selective basis, particularly to cater to the needs of deprived sections like girls and SCs/STs and in rural areas generally. Quality improvement and the raising of the internal efficiency of the existing (10+2) system would be emphasised. While an increasing number of students may like to discontinue their formal studies either temporarily or permanently after 10+2, there would be provision for there re-entry into the education system at a later stage. For this purpose, education would be linked to the world of work by expanding the facilities and improving the quality of vocational education as also provision of subjectwise examination credits.

11.5.22 For widening the reach, an open channel of education would be provided to those who do not have access to regular institutions because of socio-economic and locational constraints and those who have already entered the world of work but are keen to improve their skills and income generating capacity. Open education programmes will be imparted with the help of multi-media packages and contact centres.

National Open School (NOS)

11.5.23 The NOS will continue its existing programmes and revise the syllabi and textbooks for the secondary/senior secondary courses and bring out a fresh set of instructional materials for the bridge course. It will develop and introduce vocational courses, especially in the areas of health, agriculture and rural development in collaboration with the concerned departments. The coverage is expected to increase progressively with registration of more and more accreditted institutions, which now number 191. It should also coordinate and standardise the work of similar State-level mechanisms. The idea of starting state level open schools in all the States as recommended by the Conference of Boards of Secondary Education should be pursued. The NOS is expected to provide programme and resource support to State-level Open Schools. The setting up of a National Consortium on Open Education to facilitate accreditation of courses and of maintenance of quality through a process of networking and evaluatiion should be pursued by NOS in cooperation with the Indira Gandhi National Open University (IGNOU).

Vocational Education

11.5.24 The courses which have already been started would be consolidated. Special attention will be given to paramedical vocational courses to meet the needs of health manpower in the Eighth Plan. In addition to vocational courses forming part of the higher secondary courses, efforts would be made to offer varied courses of suitable duration to women, rural and tribal students and deprived sections of society. These courses may be coordinated with the working of Krishi Vigyan Kendras/organisations which offer training for self-employment. Non-formal, flexible and need-based vocational programmes would be made available to neo-literate youth who have completed primary education, to the school dropouts, to persons engaged in work and to the unemployed or partially employed persons. Institutions of Open Education will be actively involved in this area. Suitable programmes would also be started for the handicapped.

11.5.25 Candidates who have completed vocational courses should have ample opportunities for career improvement and professional growth. For this purpose, bridge courses which would give them an opportunity to take up higher technical and professional courses should be a necessary component.

11.5.26 It is essential that experimental projects with other vocational education models are also tried out, e.g. pre-vocational education at the lower secondary level, exposure to various occupations right from the primary level for attitudinal change etc. It is also proposed to involve major industrial houses and all large projects and to prevail on them to include human resource development as part of project cost. The services of commercial agencies and NGOs will also be utilised.

Other Programmes

11.5.27 The target for the Eighth Plan would be to cover about 200 blocks by following the composite area approach to the planning and implementation of the integrated education for the disabled. Crucial areas like health, physical and art education should be made an integral part of school curriculum and accorded parity with other subjects. It is necessary that the work of NCERT in the area of Value Education is supplemented by work at the State level by SCERTs and measures to enrich teacher education. The CSS for introduction of Yoga in schools should be implemented more effectively and comprehensively. The activities of the National Population Education Project would be directed, in addition to the formal schools, towards the non-formal sector for which the curriculum, material development and facilitator orientation would have to be specially developed. It is proposed to continue assistance to State Institutes of Educational Technology (SIET) and to extend in a phased manner facilities for Educational TV programme production. The government is committed to the establishment of Navodaya Vidyalayas in each of the districts of the country. The construction work for the existing 275 Vidyalayas would be completed. The possibilities of reducing the cost of construction and expenditure towards infrastructure will be explored. The setting up of new NVs in all the remaining districts will be appropriately programmed keeping in view the stipulated target date. In view of the key role of computers in modernisation of Secondary Education, the CLASS Project will be continued in a modified form and would cover 15,000 higher secondary schools by 1997. The project will be implemented with the collaboration of private agencies, with the elements of accountability and monitoring built in. The physical facilities and characteristics of the selected schools will be ascertained prior to the launching of the project. Full-time teachers will be provided for computer literacy by the private organisation and this subject will be taught during the normal school hours unlike the earlier practice of teaching it beyond school hours. The existing schemes of improvement of science education and environmental orientation to school education would be stengthened by improving teacher training inputs. A new scheme for improvement of teaching of Mathematics at school level is being started. The NCERT would undertake Sixth Education Survey and a scheme for examination reforms apart from watching implementation of National Curricular Framework and MLL.

Language Development, Scholarshps and Book Promotion

11.5.28 For the implementation of the Three Language Formula in a uniform manner, 100 per cent financial assistance for appointment and training of modern Indian language teachers in Hindi-speaking States is envisaged. The Bureau for Promotion of Urdu would be accorded an autonomous status as per the recommendations of Jafri Committee. The long pending Sindhi Vikas Board would be established. The Education Department would collaborate with the Department of Electronics (DoE) in the project 'Technological Development in Indian Languages'. For promotion of classical languages, a national level body is proposed to be set up for maintaining, coordinating and improving teaching of Sanskrit and classical languages as also Arabic and Persian. The potentalities of voluntary Sanskrit organisations for promoting Sanskrit learning would be fully utilised by reorganising and developing the existing ones. Vedic learning and its linkage with modern scientific development under the Rashtriya Veda Vidya Prathisthan (Vedic Endownment) will be strengthened. The scheme of scholarships to upgrade the merit of SC/ST students would be revised with respect to number of awards and amount in consultation with State Governments.

The number of awards under other schemes would be suitably enhanced so as to increase coverage and make them attractive. To foster book mindedness in the country, a Readers' Club Movement would be introduced. The National Book Trust intends to set up a National Centre for Children's Literature with the aim of producing 3,000 titles every year. Under its Adan Pradan Scheme,translations of a large number of significant books from various Indian languages would be brought out. Besides developing manuscripts for neoliterates and school dropouts by organising workshops in various States, the NBT would provide assistance to publishers and voluntary agencies for production of books. The school Library Programme under OB would continue. A National Society of Authors is envisaged to oversee the interests and needs of authors.

Planning & Management and Information & Monitoring

11.5.29 The Eighth Plan would focus on decentralisation of planning and management activities; providing autonomy to educational institutions; building capabilities for the involvement and participation of the stake-holders in the educational process and building up of capabilities and professional competence among the administrators and voluntary associations and NGOs. The State Advisory Board of Education (SABE) would provide strong advisory support for training, research and dissemination of information on methodologies of planning and management strategies appropriate to the State level and to the district-level bodies, namely the. DBEs referred to earlier. The existing bodies like Central Advisory Board of Education (CABE), UGC, NCERT and NIEPA would be strengthened. The CABE needs to be reorganised and should have a number of sub-committees to continuously review and monitor the progress in specific areas of education. A standing Committee of CABE on Open Education is proposed to be set up. For streamlining the flow of information and developing the planning capacity at the district level, an Educational Management Information System (EMIS) covering all the districts in the country needs to be operationalised by the end of the Eighth Plan. The National Informatic Centre (NIC) has already developed a comprehensive computer network linking all the districts with computers. There is need to coordinate the working of educational management information system with NIC network. Following steps are also necessary to improve the system of educational statistics:

(1) Compulsory registration of non-recognised educational institutions; (2) More extensive use of sample surveys to monitor the progress in respect of some critical indicators of educational development; (3) Continuation of educational surveys conducted by NCERT by clearly defining their frequency and objectives vis-a-vis other sources of data; (4) Construction of composite indicators of educational development of various States/districts and periodical monitoring of their behaviour; (5) Coordination between various sub-sectoral agencies for sharing of information; (6) Development of a comprehensive methodology and a sound data base on private costs of education to rationalise and to improve the efficiency in the use of financial resources.

Resources and Financial Allocations

11.5.30 The NPE statement that from the Eighth Plan onwards, the outlay on Education would uniformly exceed 6 per cent of the national income would be treated as a guideline for allocation of resources during the Eighth Plan. The present public sector allocation is much lower and requires to be appropriately stepped up. A conscious effort to tap various avenues for raising resources for education needs to be made. In view of the paucity of domestic resources, vigorous efforts to attract external assistance for financing educational programmes, especially priority programmes without compromising country's basic educational policies is necessary. While the external funding would be an additionality to the resources for education, the externally-aided projects would be in total conformity with the national policies, strategies and programmes and drawn up on innovative lines emphasising people's participation, improvement of quality, equality of education and substantial upgradation of facilities. The project formulation would be the responsibility of implementation agencies. At present, India is availing of bilateral assistance for Shiksha Karmi Project in Rajasthan and Mahila Samakhya Project in Uttar Pradesh, Gujarat and Karnataka. Within the broad objectives of the Eighth Plan, it is proposed to take up externally-aided projects, both bilateral and multi-lateral in various educationally backward States for promotion of

basic education which includes: primary schooling, non-formal education, adult literacy, women's education and development and post-literacy and continuing education. Such projects are at various stages of development in respect of Bihar, Rajasthan, U.P. and South Orissa.

11.5.31 The actual expenditure on general education sector in the Seventh Plan was Rs. 6549.57 crores, of which Rs. 2294.57 crores were in the Central Plan and Rs. 4255.00 crores in the State Plan. The outlays and expenditure for Seventh Plan and approved outlays for the Eighth Plan are shown in Annexures 11.3 and 11.7. The requirements of UEE, AE, Vocationalisation and OLS would be the first charge on the outlays.

UNIVERSITY & HIGHER EDUCATION

Review of the Seventh Plan and Annual Plans (1985-92)

11.6.1 Improvement of quality and consolidation continued to be the main concerns in the field of higher education during the Seventh Plan. The enrolment of students in 1991-92 was 44.25 lakhs 36.93 lakhs in affiliated colleges and 7.32 lakhs in university departments. Women students to failed 14.37 lakhs (34.2 per cent) and the enrolment, of SCs/STs was about 10 per cent. The growth of student enrolment which was 5 per cent per annuam upto 1985-86, declined from 1986-87 onwards to around 4.1 per cent. The enrolment in the Correpondence Courses and Open Universities at the end of the Seventh Plan was approximately 5 lakh students, out of which the Indira Gandhi National Open University (IGNOU) alone accounted for more than one lakh students. The number of universities rose to 177, including 29 "deemed" universities. For data see Annexure 11.1.

11.6.2 The NPE had suggested: (1) creation of autonomous university departments and colleges; (2) State Councils of Higher Education (SCHE); (3) enhanced support to research; (4) strengthening of Open Universities (OUs) and Distance Education (DE); (5) consolidation of existing institutions and improvement of quality of teachers and teaching; (6) mechanism for delinking degrees from jobs; (7) establishment of a new pattern of Rural Universities; and (8) establishment of an apex body covering higher education in all areas.

11.6.3 Eleven more colleges were granted autonomous status, thus bringing the total number of such colleges to 106 till December 1991. Under the Academic Staff College Scheme for orientation of newly recruited and in- service college/university teachers, 48 academic staff colleges have been established, which organised 464 Orientation and Refresher Courses covering 12,970 teachers upto December 1991. An SCHE may be elaborated was established in Andhra Pradesh. The University Grants Commission (UGC) provided developmental grants to Central universities and 95 State universities, besides assisting more than 3000 colleges for general development programmes and for implementation of special programmes. About 295 departments received special assistance under different programmes such as Centres of Advanced Study (CAS), Departments of Special Assistance (DSAs) and Departmental Research Support. Under the Programme of Coordinated Strengthening of Infrastructure in Science & Technology (COSIST), 112 departments were assisted. To support educational broadcasts, the UGC has set up 7 audio-visual research centres and 7 education media research centres for production of softwares. As many as 2,332 programmes, popularly known as Country-wide Classroom Programmes, have already been produced. A new organisation called Inter-University Consortium of Educational Communication (IUCEC) is being set up. Programmes like Teacher Fellowships and Research Fellowships for SC/ST candidates and remedial teaching for weaker sections including minorities were continued. The UGC provided assistance for installation of mini/macro-Computer Systems to 110 universities and 1216 colleges. In collaboration with the Department of Electronics (DoE), several courses in Computer Science were run. An information and library network called "INFLIBNET" has also been proposed. With a view to providing common research facilities and services of the highest quality, inter-university centres in Nuclear Science, Astronomy & Astrophysics and Atomic Energy were established. The IGNOU widened the access to higher education by providing opportunities to learners from disadvantaged groups like women, people living in backward regions and hilly areas with an enrolment of 1.64 lakhs by March, 1992. The Research Councils - Indian Council of Social Science Research (ICSSR), Indian Council of Historical Research (ICHR) and Indian

Council of Philosophical Research) (ICPR) - continued their activities relating to support of research in respective areas.

Thrust Areas during the Eighth Plan

11.7.1 The higher education system at present suffers from several weaknesses, such as proliferation of substandard institutions, failure to maintain academic calender, outdated curriculum, disparities in the quality of education and lack of adequate support for research. Recent consultations including the "Brain-Storming" session organised by the Planning Commission to consider future directions have underlined the following thrust areas:

(1) Integrated approach to higher education; (2) Excellence in higher education; (3) Expansion of education in an equitable and cost-effective manner, in the process making the higher education system financially self-supporting; (4) Making higher education relevant in the context of changing socio-economic scenario; (5) Promotion of value education; and (6) Strengthening of management system in the universities.

11.7.2 The strategy for achieving the goals in these thrust areas would be as follows:

1. At present, the higher education, system comprising of general, technical, medical and agricultural streams, is fragmented in terms of structures and policies. Greater cooperation among the streams should be encouraged by promoting networking, sharing of facilities and development of manpower including teachers' training/ orientation facilities. There should be greater coherence in policy and planning. To adequately meet these requirements, the NPE had envisaged the establishment of a National Council of Higher Education (NCHE). This has, however, not made progress so far and a coordination mechanism should be constituted during the Plan period.

2. Several measures will be taken to promote excellence. The NPE/POA proposal for establishment of a National Accreditation Council (NAC) would be followed up. Apart from continuing the existing programmes of CAS/DAS, COSIST and the inter-university centres, IUCEC and the proposed INFLIBNET, new inter-university centres would be established to provide facilities in the emerging areas like Biotechnology, Atmospheric Science, Oceanography, Electronics and Computer Sciences. Facilities for computer education would be further strengthened in collaboration with the Department of Electronics. Model curricula for all disciplines have already been prepared but their implementation needs to be monitored. The suggestions of the Working Group constituted by the Planning Commission to improve undergraduate courses in science and the teaching of mathematics at Indian universities/colleges would be implemented in a phased manner.

3. The additional enrolment in higher education during the Eighth Plan is estimated to be around 10 lakhs of which 9 lakhs will be at the undergraduate level. This expansion in higher education, keeping in view the present resource crunch has to be accommodated in an equitable and cost-effective manner mainly by large-scale expansion of Distance Education system and providing opportunities to larger segments of population, particularly the disadvantaged groups like women and people living in backward and hilly areas and by measures for resource generation. The programmes of Distance Education should absorb at least 50 per cent of the additional enrolment during the Eighth Plan and their cumulative enrolment should reach 15 lakhs, including 5 lakhs adult learners beyond the normal age-group 17-23 who have left school long back. Open universities should also start innovative programmes of a vocational nature for meeting the learning needs of rural areas. Opening of new conventional universities and colleges should not be encouraged. Simultaneously, involvement of voluntary agencies and private sector participation in the opening and conduct of higher education institutions would be encouraged with proper checks to ensure maintenance of

standards and facilities to make higher eduation as far as possible self-financing. However, the quality of education is not to be compromised at any cost. Upward revision of fee structure has to be considered but at the same time, the fees charged should not be exhorbitant and should be supplemented by the provision of scholarships and other financial assistance to SCs/STs and students below the poverty line and loans to other students.

4. The tremendous potential of 44.25 lakhs students enrolled in higher education has to be utilised by actively involving them in the programmes of adult literacy, continuing education, population education and other constructive activities. Such extension activities of the universities and colleges would be expanded to cover 95 universities and 2,500 colleges during the Eighth Plan.

5. The significance of Value Education has been highlighted by several committees and commissions on education. The Planning Commission has recently constituted a Core Group on value orientation in education. The recommendations of the Group will be considered for implementation in consultation with the Ministry of Human Resource Development, UGC, Association of Indian Universities (AIU) and NCERT.

6. Stress would also be laid on modernisation and restructuring of the management of university system which entails vigorous pursuit of the programmes of autonomous colleges and autonomous university departments. Facilities in universities and colleges, including research facilities, would be consolidated and strengthened. The schemes of redesigning and restructuring of courses to meet the developmental needs of the country, examination reforms and teachers' training would be expanded.

Other Programmes

11.7.3 The research activities of ICSSR, ICHR, ICPR and Indian Institute of Advanced Study (HAS), Shimla will receive specific attention for promotion of inter-disciplinary research. Action to support research in humanities which at present is neglected, would be taken up.

11.7.4 With a view to delinking degrees as a requirement for recruitment to services, the NPE visualised establishing a National Testing Service (NTS) to conduct tests on a voluntary basis and evolving norms of comparable competence across the nation to determine the suitability of candidates for specified jobs. Towards this end, the idea of setting up of an appropriate national organisation will be pursued.

11.7.5 A strong need has also been felt for providing training to personnel dealing with university administration, for which the existing infrastructure will be further strengthened rather than creating a separate organisation.

Financial Allocations

11.8.1 The Seventh Plan's actual expenditure on higher education was Rs. 1201.13 crores, of which Rs. 659.96 was in Central Sector and Rs. 541.17 crores in State Sector. The Eighth Plan outlays are shown in Annexure 11.7.

Conclusion

11.8.2 Strategies, thrust areas and programmes as highlighted above, represent the priorities for implementation during the Eighth Plan. They are by no means exhaustive. Higher education is a vast sector and its significance as a source of new knowledge, research and manpower for preceding stages of education namely, elementary and secondary, should not be minimised. Adequate resources should be mobilised and provided to support the higher education sector so that the nation is fully equipped to face the challenges of the future, which is increasingly becoming information and knowledge-intensive.

TECHNICAL EDUCATION

Introduction

11.9.1 Technical education including Management education is one of the most potent means for creating skilled manpower required for developmental tasks of various sectors of the economy. Technical education incorporates the technological dimension which is a vehicle for development. While this implies high costs of construction, laboratory equipment, library books and journals and high rate of obsolescence, such high cost, being directly related to development, should be viewed as an essential productive investment, yielding valuable returns to the society and contributing to socio-economic development.

Plan Performance Review (1985-92)

11.9.2 The Seventh Plan emphasised consolidation and optimum utilisation of existing infrastructural facilities, their upgradation and modernisation, identification of critical areas and creation of infrastructure in new areas of emerging technology, effective management of the overall system and institutional linkages between technical education and other development sectors.

11.9.3 Under the thrust areas programme of technical education 510 projects with a grant of Rs. 53.43 crore were supported for strengthening of facilities in the crucial areas of technology where weaknesses exist, 685 projects involving a grant of Rs. 76.84 crore were supported for creation of infrastructure in areas of emerging technologies and 202 projects involving of Rs. 27.1 crores were supported for programame of new technologies. A comprehensive report of requirement of instrumentation engineers at national level for the period 1990-2000 has been prepared by the National Technical Manpower Information System (NTMIS). The number of Community Polytechnics (CPs) increased to 159 with an annual training coverage of 20,000 rural youth and women.

11.9.4 The following new schemes were started as part of the implementation of NPE:

(i) Continuing Education: The scheme envisaged preparation and disseminatioin of course material packages suited to the needs of industry. Under the scheme implemented by 5 Indian Institutes of Technology (IITs) 4 Technical Training Teachers' Institutes (TTTIs), 1 Indian Society of Technical Education (ISTE), 4 engineering colleges/university departments and 4 polytechnics, more than 30,000 working professionals have undergone training.

(ii) Institution-Industry Interaction: Under the scheme, Proposals of 21 engineering colleges and 11 polytechnics have been approved for interaction with the industry.

(iii) Research & Development in Technical Education: 126 R&D Projects were supported.

Eighth Plan Perspective

11.10.1 The perspective of development of technical education for the Eighth Plan would have to take into account the following imbalances and distortions:

(i) During the past four decades, there has been a phenomenal expansion of technical education in the country. Today, we have over 200 recognised technical education institutions (TEIs) at the first degree level and more than 560 polytechnics at the diploma level with annual admission capacities of 40,000 and 80000 students, respectively. About 140 institutions offer facilities for postgraduate studies and research in several specialised areas with an annual capacity of 9,400 students. (ii) The quantitative expansion has resulted in the lowering of the standards and there exists a structural imbalanace of skill requirement of the business sector and the traditional curriculum followed by the educational institutes. These factors give rise to problems of unemployment and under-employment. The wastage in the system is enormous, being 30 per cent at degree level, 35 per cent at diploma level and 45 per cent at post-graduate level. The situation in unrecognised institutions is still worse. A related phenomenon is that of brain-drain involving migration abroad of those trained in emerging areas in excellent institutes. (iii) The infrastructural facilities available in the vast majority of TEIs are extremely inadequate. There is an acute shortage of

faculty with about 25 to 40 per cent of faculty positions remaining unfilled. In most of the institutions, there is hardly any R&D activity. (iv) The TEIs are functioning in isolation. Linkage and interaction between TEIs and user-agencies, such as industries, R&D and design organisations and development sectors are not sufficiently strong. Neither is there a strong interaction among institutions by way of sharing of facilities like equipments, libraries, teaching faculty and other resources. (v) There has been an enormous increase in public expenditure on education but little attention has been paid to the strategies for raising non-budgetary resources and maximising people's participation.

Eighth Plan Strategy and Thrust

11.10.2 The thrust areas for the Eighth Plan have, therefore, been identified as follows:

(1) Modernisation and upgradation of infrastructural facilities. (2) Quality improvement in technical and management education. (3) Responding to new industrial policy and industry-institution R&D labs interaction. (4) Resource mobilisation. (5) Institutional thrusts.

11.10.3 The strategy to be adopted to achieve these objectives would be on the following lines:

Modernisation and Upgradation of Infrastructural Facilities

11.10.4 Modernisation relates both to technical equipments and teaching methods. Technology development is a capital-intensive process. The country cannot afford to go on changing the technology every year. It is, therefore, imperative to adopt futuristic approaches for achieving modernisation and self-reliance in a sustained manner. Coordinated and concerted efforts would have to be made to upgrade and consolidate the infrastructural facilities in the existing institutions. The process of removal of obsolescence would include enhancement of computer facilities and establishment and interlinking of large computer systems with educational and research institutions through appropriate telecommunication facilities. Steps would be taken to strengthen and create the facilities in crucial areas of technology where weaknesses exist, in areas of emerging technologies and in new specialised fields. Upgradation of infrastructure would also include a crash programme for recruitment of about 10,000 teachers in polytechnics and colleges and strengthening of arrangements for teacher training.

Upgradation of Polytechnics

11.10.5 Central Government has launched a massive project with the assistance of the World Bank to enable the State Governments upgrade their polytechnics in capacity, quality and efficiency for the period 1990 to 1999. The project is being taken up in two phases with a total outlay of Rs. 1,892 crores. The first phase would cover 296 polytechnics recognised by the AICTE in eight States - Bihar, Gujarat, Karnataka, Kerala, M.P., Orissa, Rajasthan and Uttar Pradesh. The second phase would cover 262 polytechnics in Andhra Pradesh, Assam, Haryana, Himachal Pradesh, Maharashtra, Punjab, Tamil Nadu, West Bengal and Delhi. The project has also a Central Sector component for establishment of a national project implementation unit. Coresponding outlay is being provided vide Annexure 11.8.

Quality Improvement in Technical and Management Education

11.10.6 A holistic and need-based approach would be adopted

to reorient the technical and management education (TME). A more broad-based flexible system with provision for multi-point entry is required to enable a better response to the unspecified demands of the future. At the micro-level, the curriculum would be developed to encourage creativity and innovation in experimental work by introducing problem/process-oriented laboratory exercises. New technology-oriented entrepreneurship and management courses would be introduced in selected institutions having adequate infrastructural facilities. There would be greater emphasis on production engineering towards design and product development.

Technology Watch

11.10.7 The Government has recently established a Technology Information Forecasting and Assessment Council (TIFAC). Its objectives include: evaluation of existing technologies, preparation of technology forecast reports and estimation of the nature and quantum of

likely demands for goods and services in future. It would be desirable to couple the technology forecasting system with the system of manpower forecasting and planning. Universities and IITs are familiar with the frontiers of knowledge and hence should play an important role in technical forecast and technological assessment with the fruitful involvement of TIFAC, Institute of Applied Manpower Research (IAMR) and the Indian trade and industries associations. It should be possible to develop the right type of indigenous technologies to assess the related manpower requirements and to produce such trained manpower.

11.10.8 The existing facilities for continuing education and retraining are inadequate. There is a need to formalise the retraining programme for engineering and technology personnel engaged in all sectors and to make them mandatory. Increasing use of modern communication devices should be made. Programme-learning packages need to be created and distance learning methodologies employed to enable self-development and training of all scientific and technical personnel.

Responding to New Industrial Policy

11.10.9 There is a need to establish linkage between industry, national laboratories, developmental sectors, professional bodies, technical education, vocational education and craftsmen training and to bring about networking among institutions. In the context of the new industrial policy, the priority may be assigned to interaction with industry as it holds the key to industrial competitiveness in a global market. A strategy may be evolved for effective interaction between industry and institutions and for promotion of interaction through apprenticeship opportunities, consultancy and sponsored research, continuing education programmes for industry personnel, adjunct professorships in institutions for willing and capable personnel from industry, seconding of institutional faculty to industry, involvement of industry in the development of curricula and courses etc. For this purpose, organisational mechanisms such as Industrial Liasion Board, Industry-Institution Cells, Industrial Foundation etc., will have to be set up. The R&D activities may be taken up through the support of industry.

11.10.10 In this context, a reference may be made to a model for university-industry symbiosis conceived and implemented at Jawaharlal Nehru Technological University, Hyderabad for bringing about a greater and more effective interaction between technological university and industry. The model envisaged the setting up of a Bureau for Industrial Consultancy and Research and Development (BICARD) in universities/technological institutes of higher education, preparation of a comprehensive directory of technology experts to operationalise various aspects of interaction like orientation of university curriculum, exchange of experts between teaching institutions and industries, involvement of teaching staff in industry, technological database and self-reliance of institutions etc. This model was recently revised by its author to include the loop of R&D organisations. A national cell to promote and coordinate the linkages between the promotional agencies, university, industry and R&D organisations has also been suggested. The revised model could be adopted/adapted with benefit by other TEIs.

Resource Mobilisation

11.10.11 Since technical education is inherently expensive, concrete steps to ensure cost-effectiveness as an aspect of resource mobilisation are of vital importance. These include:

1. Avoidance of duplication of investment in TEIs located close to each other and proper maintenance of available facilities and instruments;

2. Developing institution-wise specialisation in respect of courses and technical manpower so that the institutions can have the most sophisticated and modern library and laboratory facilities in their chosen fields;

3. Weeding out of outdated and stereotyped courses and introduction of relevant courses in emerging areas;

4. Multiple use of infrastructural facilities through part-time courses, continuing education programmes and consultancy and testing services;

5. Marginal increase in intake capacities in areas of scarce manpower and decrease in intake of low demand areas. In this connection, an increase in the intake in better institutions by 10 per cent should receive urgent attention;

6. Introduction of multiple or at least double shifts in TEIs;

7. Maximum use of non-monetary inputs, like better planning, advanced technologies and practices, better system of supervision and administration, minitoring and review etc; and

8. Commercialisation of research work of the institutions.

11.10.12 The Task Force appointed by AICTE to go into the question of laying down tuition and other fees and to suggest other sources of mobilisation of resources for technical education has suggested raising of fees in relation to Government, Government-aided and unaided institutions on a graduated scale. A beginning has been made by raising fees in the IIMs. The IITs and other TEIs are also required to raise the fees. The measure of raising fees, however, should be coupled with scholarships for SCs/STs and for students below poverty line and a loan scheme for other students.

11.10.13 Creation of a corpus fund can be another way of mobilising resources for an institution, especially in the case of IITs. Contributions to the corpus fund will have to come from various sources viz. industry, alumni, charitable trusts etc. as well as Government.

11.10.14 Another way of enhancing investment is to implement NPE/POA idea of requiring development departments to allocate a fixed per cent of their annual budgets for development of TEIs. The question of collection of education cess' from industry, which can thus share the cost of educating technical manpower and of giving tax exemption to industry for contributions made by it to development of technical eduction should also receive serious consideration.

Institutional Thrusts

All-India Council of Technical Education (AICTE)

11.10.15 The AICTE was given statutory status in 1988 in view of the need for maintaining and developing standards. It would be further strengthened to ensure coordinated development with its four regional committees located at Kanpur, Madras, Bombay and Calcutta. A Board of Accreditation is expected to be set up shortly and most of the schemes implemented by the Technical Education Bureau of the Department of Education are expected to be taken over by AICTE.

Technical Institutions in the University Sector

11.10.16 The UGC provides financial assistance to 32 institutions in engineering and technology for their overall development. Although some of the institutions in this sector like Indian Institute of Science, Bangalore, are centres of excellence and this sector as a whole accounts for 1,600 M.E/M.Tech students, the financial allocations tend to be limited, as they are part of the overall UGC allocations. A separate mechanism may be set up which would advise UGC regarding the financial needs and priorities of these institutions and the Planning Commission should allocat appropriate earmarked outlays for this sector covering not only post-graduate education as in the past but also under-graduate education on a selective basis.

Other Post-graduate Institutes

11.10.17 Sixteen State Governments and 24 non-Government post-graduate institutions are being assisted by the Central Government with a view to developing specialised fields of engineering/technology having national relevance. The intake for post-graduate courses per year in engineering and technology is proposed to be increased from 10,000 to 11,000 by the end of Eighth Plan.

Indian Institutes of Technology (IITs)

11.10.18 The new Industrial Policy has created an environment which requires IITs to adopt a new role as leaders in current and futuristic technology development. The following four areas for further action have been identified in the light of consultations held by Planning Commission:

(1) Thrust areas of technology development, (2) International consultancy, (3) Resource mobilisation and setting up of Corpus Fund and (4) Industrial Foundation.

Technology Development

11.10.19 The technology development through innovation and its subsequent transfer to industry by five IITs would be the first step towards the identification of project mission and creation of appropriate environment. These project missions are conceived in three groups:

(1) Areas where gains are likely to be visible in the long-term such as biotechnology, fuel-efficient engines, microelectronics, photonics.

(2) Areas where short-term gains can be planned, such as communication and software technology, food processing, instrumentation and central integrated production engineering and design, non-conventional energy, remote sensing and transportation.

(3) Areas where results in the intermediate term are possible like coal, computer, integrated manufacturing, natural hazard mitigation and new materials technology. It is expected that each of he IITs would select a few areas from among those to work on during the Eighth Plan.

International Consultancy

11.10.20 The IITs have a potential to offer educational and industrial consultancy services at international level. The consultancy would cover: institution building, establishment of specialised laboratory facilities, development of curricula, organising continuing education/joint research projects and faculty development etc. There is good scope for international consultancy assignemnts for IITs in South-East Asian and other countries. This can be a source of additional resource mobilisation.

Resource Mobilisation and Corpus Fund

11.10.21 Resource mobilisation measures would be taken up on the lines mentioned earlier, including corpus fund to which Government could contribute a block grant annually over a period of years subject to contributions from other sources. Two ideas specific to IITs are: permitting them to charge from foreign students a full cost tuition fee in foreign exchange and obtaining an endowment grant from countries with an explicit commitment to training specified manpower for that country.

Industrial Foundation

11.10.22 In order to facilitate interaction and collaboration with industry and other user-organisations in programmes of mutual interest, an industrial foundation needs to be set up in each IIT. The foundation would function as a registered society/corporate body linked to the parent-IIT, with financial and administrative autonomy and adopt industrial culture and methods. Resource generation of these foundations would be through Government grants/corporate membership fees/overheads on projects and services/donation and gifts etc. These foundations would render technical support to small-scale industry and engineering entrepreneurs and develop products and processes at the request of industry. There would also be manpower exchange between IITs and industry.

Regional Engineering Colleges (RECs)

11.10.23 There are 17 Regional Engineering Colleges in the country which are joint ventures between Government of India and State Governments. They are expected to be pace-setting institutions in their regions. They need academic autonomy and their funding should be from one source, preferably Central Government. The ultimate aim should be to make them deemed universities. A proposal involving assistance of 6 million pound sterling to develop collaboration between RECs and some British Universities in the emerging areas such as design, materials, energy, informatics etc. is being worked out.

Indian Institutes of Management (IIMs)

11.10.24 The four Indian Institutes of Management set up as pace-setting and premier centres of excellence in management education and research have been instrumental in producing highly qualified managerial manpower. Their activities need to be revamped, particulaly keeping in view the changing scenario both at the national and international level. A consultation held by Planning Commission led to the suggestion that there should be links between management institutes and training institutes in

specific sectors like health, rural development, agricultural extension etc. It was also suggested that there should be an integrated view of management education and there should be resource mobilisation, corpus fund, mutual sharing of facilities and division of labour in the matter of thrust areas etc. A plan of action is being prepared in this regard.

Community Polytechnics (CPs)

11.10.25 It is proposed to cover all the remaining polytechnics under the scheme of CPs by suitably reorganising and strengthening them in the light of the recommendations of the National Expert Committee set up to appraise them. The Community Polytechnics are expected to play a major role in rural manpower development and their outreach should be expanded by resorting to distance education methods.

Financial Allocations

11.10.26 The actual expenditure on technical education in the Seventh Plan was Rs. 1083.34 crores of which Rs.610.96 crores was in the Central Sector and Rs. 472.38 crores in the State Sector. The outlays and expendiure for the Seventh Plan and approved outlays for the Eighth Plan are shown in Annexures 11.3 and 11.7. The Eighth Plan outlays in the State Sector are required to be higher to reflect the implementation of the World Bank-assisted Technician Education Project.

ART AND CULTURE

Review of the Seventh Plan and Annual Plans 1985-92

Culture

11.11.1 Preservation and promotion of culture is a common objective of the Central and State Departments of Culture. At the Central level, sizeable institutional infrastructure has been built up. During the Seventh Plan, the School of Archaeology, under the Archaeological Survey of India (ASI) was raised to the status of an Institute of Archaeology with a two-year course. Major conservation works were taken up in 303 monuments. Seven Indian monuments were included in the World Heritage List making a total of 14 such monuments in India. Conserevation work of Ankorvat Temple (Kampuchea) was taken up on behalf of UNESCO on a major scale. Important discoveries were made through excavation of 19 new places like Banawali (Harappa), Sanghol (Punjab) and Udaygiri (Orissa). The National Archives of India (NAI) brought out the first volume of Guide to Sources of Asian History and provided financial assistance to 209 voluntary organisations in 22 States for preservation of manuscripts and to 13 State Archives for their development. The archives building project was completed. The National Museum set up the National Institute of History of Art, Conservation and Museology (NIHACM) as a deemed university. The main thrust of the Anthropological Survey of India (An.SI) centred around the project 'People of India' initiataed in 1985 under which 5,000 communities were studied and reports thereon prepared. The building of the Central Research and Training Laboratory of National Council of Science Museums (NCSM) Calcutta has been completed. The Hall of Science, Technology and Energy in Delhi, Raman Science Centre in Nagpur and Regional Science Centre in Guwahati were set up. The National research laboratory for conservation of cultural property extended assistance to Maldivean Government for cnservation of Hukru Mosque. The collections of National Library Calcutta were enhanced bringing them to 23 lakh books. The Central Secretariat library initiated work on creating a data base on Mahabharata. The Raja Ram Mohan Roy Library Foundation which gives matching assistance to State/District Libraries, set up an Integrated Research Cell-cum-Computer Unit for promoting research in librarianship and data base of public libraries in the country. Seven Zonal Cultural Centres (ZCC's) at Patiala, Nagpur, Allahabad, Udaipur, Shanti Niketan, Dimapur and Thanjavur organised over 300 major events including workshops, fairs, exhibitions of folk, tribal arts and crafts, classical dance performances, music concerts, theatre fairs etc. The Sahitya Academi (SA), Sangeet Natak Akademi (SNA) and Lalit Kala Akademi (LKA) continued their schemes relating to awards and fellowships to distinguished literary scholars and artists; held workshops, exhibitions, kala melas and brought out useful publications like fourth volume of Encyclopaedia of Indian literature and literary works on 22 Indian languages. The SNA also provided financial assistance to cultural institutions for training, production and research besides holding zonal theatre festivals. The LKA held the 7th Triennale India, `Colours of the Earth', an

exhibition of ceramics from Britain and provided assistance to studios/regional centres at Madras, Calcutta, Lucknow and Bhubaneswar. The National School of Drama (NSD) inter alia, introduced a repertory company of adults performing for children besides holding theatre workshops and staging shows.

11.11.2 A number of schemes, like building grants, financial assistance to dance, drama, theatre ensembles, promotion and dissemination of tribal/folk art and culture, preservation of cultural heritage of Himalayas and development of Buddhists/Tibetan orgnisations, have been implemented by the Department to encourage voluntary efforts. The Central Institute of Higher Tibetan Studies, Varanasi became a deemed university in 1988.

Arts

11.11.3 The Indira Gandhi National Centre for the Arts (IGNCA) was registered as an autonomous trust in March, 1987 with four academic divisions of Kala Nidhi, Kala Kosha, Janapada Sampada, Kala Darshan and Sutradhara. The IGNCA has been designated as a nodal agency to prescribe technical standards for all agencies under the Central and State Governments for storage, retrieval and dissemination of data on arts, humanities and cultural heritage. It has launched a massive programme of collecting multi-media primary and secondary source materials by identifying 3,000 repositories of unpublished manuscripts in various institutions and libraries and micro-filming of unpublished manuscripts. Under Janapada Sampada, IGNCA undertook lifestyle studies of tribal communities and their art forms particularlyin North-Eastern region of Nagaland, Mizoram and Arunachal Pradesh. Field studies have been undertaken and archaeological sites located for setting up a permanent multi-media presentation of pre-historic and aboriginal art (Adi Drsya and Adi Sravya). It also held multidisciplinary programmes on unified themes of KHAM (Space), AKARA (Calligraphy) and KALA (Time) and an exhibition on Buddhist cave paintings from China.

11.11.4 Regarding the buildings of IGNCA, 23 acres of land in the Central Vista area has been allotted. A design has been approved after holding an International Design Competition. The Building Project Committee has finalised the Architectural Services Agreement and sought approval from Delhi Urban Arts Commission and Central Vista Committee. Detailed site survey soil-testing and scrutiny of concept stage plans have been completed.

Cultural Policy

11.11.5 In the field of cultural policy, the three notable developments have been the NPE '86, departmental efforts for formulation of a National Policy on Culture and the Report of the High-level Committee on Academies and NSD (Haksar Committee). The NPE 1986 emphasised the need to bridge the schism between the formal system of education and the country's rich and varied cultural traditions, it suggested enrichment of curricula by cultural content and establishment of linkages between the university systems and institutions of higher learning in art. The Central Department of Culture circulated a discussion draft on the basic issues relating to National Cultural Policy and initiated a series of regional seminars. The Haksar Committee gave a detailed exposition of its views on approach to culture, arts and values. In a number of Expert Group meetings initiated in Planning Commission in the last two to three years, the need for reexamination of some of the basic issues on culture in the national context was highlighted by various eminent participants. It was suggested that the policy should be evolved democratically, associating State Governments, voluntary cultural organisations and people who generated culture in different areas instead of confining it to bureaucrats, educationists and specialists. A large number of inputs are available for formulation of a cultural policy. The strategies and thrust areas now projected should be seen in this background.

Strategy and Thrust Areas

11.12.1 (a) There is a growing recognition that Culture is at the core of all developmental activities, giving a sense of direction and guidance to human life for pursuing goals,cultivation of good values and attainment of excellence in every walk of life. The country has a very ancient civilisation comprising numerous styles, namely classical, folk and tribal which need to be preserved, documented, expressed and disseminated not only by strengthening State and Central departments and upgrading the existing facilities, but also by encouraging voluntary

effort, community effort and organised private and corporate effort.

(b) Community can be involved in a big way for preservation and protection of cultural monuments. India has nearly 8,000 monuments, of which 5,000 are under the States and 3,000 under the Centre. Many more in the interior areas need to be identified and protected. Local initiatives, particularly from rural areas, can be encouraged by appealing to local pride of possession by preservation of our ancient heritage; (c) Many museums at State and national level having immensely valuable artistic objects have been unable to display them due to lack of space and buildings and apart from expediting sanctiond construction, there is need to evolve suitable policies. Although the ASI has 31 site museums located all over the country, there is need for many more such museums for housing objects scattered in the country.

(d) Under State Tribal Departments, the Anthropological Survey of India and Rashtriya Manav Sangrahalaya (RMS), Tribal Museums are maintained but there is no living movement to identify, collect, preserve and support existing talents among the tribal, rural and folk artists and craftsmen for sustaining their artistic and culturai pursuits. These tribal arts and crafts were integral part of the way of life of people having an economic dimension. With the spread of industrialisation and commercialisation, the tribal artists have taken to modern occupations and their arts are now languishing e.g. the paintings of Warlis in Maharashtra, Kantha work of Bengal, Kalamkari of Andhra etc. Documentation of the dying and languishing arts, identification of arts and crafts having a viability to stand on their own under modern circumstances, providing them economic assistance, marketing and other support services is necessary. There could be a network of cooperatives of tribal artists and craftsmen linked to State-level organisations as every State has varied arts and crafts traditions which are quite attractive and fascinating. Drawing inspiration from this, States should start inter-district programmes inviting local grassroot level artists of dying art forms; (e) Resources, other than monetary, need to be catalysed,involving universities and voluntary organisations. The present method of the Zonal Cultural Councils inviting troupes to perform in an ad hoc manner is demeaning to folk artistes. The ZCCs need to make a deeper impact, and their activities should have an echo in every State. Taking threads from ZCC, the States should take up innovative schemes.

(f) While various programmes of central organisations would be supported, the tendency for central organisations to set up their regional branches would be discouraged. Central agencies would be expected to work along side State, district and local level cultural organisations and avoid bureaucratisation.

(g) The role of the State Departments of Culture in stimulating and promoting cultural development in the following fields needs emphasis: (i) development of regional language and literature and the translation of significant literary works in the regional language into other regional languages; (ii) preservation and protection of cultural property including monuments, and (iii) inculcation of cultural topics and values in the textbooks for primary and secondary schools in the regional language. States should intervene in the cultural field and ensure that a high priority is given to cultural development in their overall programme of development.

(h) A policy-related aspect of cultural conservation is the need to evolve tools for assessment of cultural impact of development projects and to make this assessment an integral part of appraisal of new development projects. Such tools and such assessment have become well-accepted and standard in the field of environment. Similar exercises in relation to culture should take place for every project, taking care to see that they are not perceived, and do not actually operate, as a hindrance to development process.

Eighth Plan Programmes

Culture

11.13.1 The Archological Survey of India (ASI) would take up 125 monuments for comprehensive special repairs. The major thrusts are: establishment of an effective linkage between Central and State institutions; strengthening of the role of voluntary organisations in preservation of cultural property, including antiquities; improving effectiveness of legislation; documentation of both movable and immovable cultural property; revival of popular interest and

awareness among the masses in our archaeological heritage through media; expansion and augmentation of the Institute of Archaeology. The new schemes proposed are: establishment of document centres; the setting up of site museums in rural areas; grants to State Departments for conservation of unprotected historical structures at district and Panchayat level, grants to universities and research bodies for archaeological investigation and studies and setting up of World Heritage Wing. A new building for ASI headquarters and buildings for its circle and field offices are also contemplated. The Institute of Archaeology would be involved in studies relating to cultural impact assessment of development projects. The Anthropology Survey of India apart from its building programme, would take up new schemes on urban anthropology and health and healthcare issues and strengthen its palaeo-anthropological research, study of Indian settlers in Africa and neighbouring countries. It would also complete the line of work, by survey and documentation, started by Verrier Elwin to salvage and document those specimens of the tribal and folk art which face the threat of extinction. It proposes to study inherent socio-religious disabilities of the tribals, nature of transformation and mobilisation of their special skills in arts, dance and music and mastery over musical instruments. The RMS in Bhopal, apart from developing its "permanent exhibitions" and "Relevant collections" under various themes, would set up the four regional collection centres and strengthen its museum education outreach programmes and operation salvage. The NAI would bring out the remaining four volumes of the Guide to the Sources of Asian History. The School of Archives would be modernised. Acquisition of micro-film copies of records of Indian interest from abroad would continue. A records centre to serve as intermediate repository for semi-noncurrent records of Central Government offices located in Eastern Zone is proposed to be set up. The Khuda Baksh Public Library proposes to establish an Institute of Oriental Studies and open regional units to carry out research on Indo-Islamic and comparative religion. The Rampur Raza Library would acquire sophisticated equipment for preservation of its collections. Asiatic society, Calcutta proposes to set up an Art Gallery, introduce desktop publishing system and construct a new building. The National Museum proposes to set up new galleries in second phase building, set up museum shops, expand photographic department and modernise it, provide museum consultancy service and software aid projects, computerised library, open museum corners in schools, instal modern security equipment and to introduce digital image and retrieval system. The Indian Museum, Calcutta proposes to set up new galleries on textiles, folk people, gems and jewelleries, take up research project on South and East Asian Art, organise display of artefacts from tribal belts, adopt tribal museums and promote their crafts and performing arts through mass communication programmes. A new multistory building in the adjoining site is envisaged. The Salarjung Museum, proposes to initiate computerised documentation of art objects in addition to its programmes of acquisition, reorganisation of galleries and post-graduate centre in museology and security. It has a substantial programme of construction of new buildings for housing its Western and far Eastern collections. The Victoria Memorial Hall, Calcutta proposes to remodel and renovate its galleries and initiate Son-et-Lumiere on the history of Calcutta. The National Gallery of Modern Art proposes to promote art in rural areas, tribal art forms, develop sculpture garden, produce documentary films, acquire works of art and arrange display at Archaeological site museums. Construction of a new building at Delhi and structural repairs of its Bombay branch will be taken up. The Nehru Memorial Museum and Library, apart from construction of its new library building, proposes to take up new schemes for reorganisation of reprography services, strengthening of Oral History Division and acquisition of a computer. The Allahabad Museum proposes to set up photo and chemical laboratory, construct a building and reorganise galleries. The NCSM with a very intensive outreach programme intends to create 1,000 science centres to reach the doorstep of the common man. Five new regional centres, 20 District Science Centres and 203 school science centres in the under-privileged rural schools, 20 new mobile science exhibition buses attached to regional centres, a "Science Train" and "Travelling" science exhibitions are also envisaged. The NRL proposes to set up a National Information Centre for Conservation to cope with world-wide developments and latest technology and thus facilitate retrieval and exchange of information on conservation. It also proposes to set up a Regional Laboratory at Ahmedabad, open a Technical Information cell

and conduct further studies and surveys. The six months training course of curators and conservators is proposed to be raised to 9 months. It is proposed to set up a Centre for Social and Cultural Studies in Calcutta to commemorate the memory of Maulana Abul Kalam Azad. It would specialise in area studies of Central Asia and South-East Asia. It is also proposed to promote and strengthen regional and local museums. The new schemes of National Library include: modernisation scheme, library of microfilms, national union catalogue and National Book Production Statistics (a monitoring cell). There is a substantial construction programme including annexe building known as Bhasha Bhavan for keeping three million documents. It is proposed to reorganise the Centrel Reference Library into a National Bibliographical and Documentation Centre which would also have a Computer Centre. The Delhi Public Library proposes to set up two new libraries in its service area. The new scheme of RRL Foundation include assistance to State Central Libraries for reprographic equipment, to reputed libraries for processing of rare books and assistance to a network of public libraries which have completed 100 years. The question of assisting a network of rural libraries would also be explored.

11.13.2 The Sangeetha Natak Akademy (SNA) proposes to publish a three-volume encyclopaedia of music, dance and theatre, have a new campus for Kathak Kendra, open two peripheral centres in Delhi and hold naional workshops on music, dance and theatre. The LKA would commission sculptures and murals of monumental nature and acquire gallery space for Triennale India. The SA would undertake publication of best of children's literature and their translation into 21 Indian languages. All the three Academies, housed in Rabindra Bhavan, propose to share cost of construction of the second phase. The NSD, in addition to establishment of an independent campus, proposes to set up a Theatre Archives Museum, collect period costumes, model costumes and theatre traditions, extend its repertory company and organise an Annual Theatre Festival. The Shilpagram at Western ZCC, Udaipaur where artisans, craftsmen hailing from remote areas stay and create artistic items has been a great success. The State Government has allotted 100 acres of land to it for building a complex of huts and ampitheatre and more States are asking for establishment of such Shilpagrams. It is also proposed to initiate a National Cultural Exchange Programme with ZCCs acting as a nodal point for research in art forms, documentation of folk and tribal arts, museums etc. and another scheme for documentation of vanishing folk and tribal art forms under ZCCs. With the joint efforts of CCRT and NCERT, cultural component for students and youth would be strengthened through a new training programme for education administrators and inservice training of 15,000 teachers. It is proposed to set up children's cultural resource centres involving children on projects for cultural conservation and preservation. The centres would be linked up with DIETs for pre-service training of teachers. About 10 workshops of ten-days duration, each training 100 teachers and 1,000 students are envisaged. It is intended to prepare 200 cultural resource persons for dissemination purpose. Other new schemes include: dissemination of cultural education through illustrated material for school children, Bal Bharat Darshan and education for the physically handicapped and economically deprived students. The Programme Evaluation Organisation (PEO) has been asked to evaluate the scheme of Financial Assistance to Dance, Drama and Theatre Ensembles under which grants are given to well-established institutions to meet the expenditure towards salaries for `gurus' and artists, production grants etc. Further expansion would depend on results of evaluation.

To expose children and youth to the finest forms of erective expression multi-purpose cultural complex including those for children has been conceived as a joint venture of Centre and States. A cultural complex of international standard is proposed to be established in New Delhi through Sangeet Natak Academy to be financed partly from government resources and partly through non-budgetery sources.

11.13.3 The Central Institute of Buddhist Studies, Leh proposes to compile an encyclopaedia of Himalayan culture and set up a printing press. The Central Institute of Higher Tibetan Studies, Varanasi proposes to develop its library and strengthen its faculty.

Arts

11.13.4 The IGNCA has done significant work so far and has successfully networked traditional centres of classical learning and scientific institutions. When fully developed, the entire rich heritage of ancient Indian manuscripts is expected to be available at one place for consultation and reference by academics, scholars, students and art critics. The proposed major programmes for the Eighth Plan are: acquisition of reprographic copies of manuscripts from Indian and foreign repositories; setting up of a National Facility for Interactive Multi-Media Documentation of Cultural Resources; collection, cataloguing, classification and display of personal collections of artists/scholars; expansion of the cultural archives and their preservation in hi-tech formats; studies of South-East Asian countries, Indo-Mexican and Indo-African studies and multi-volume Encyclopaedia of Arts. The requirements of IGNCA, both in respect of building project and in respect of its multifaceted academic progrmmes would be adequately provided for.

Financial Allocations

11.13.5 The Seventh Plan expendiure for Art and Culture was Rs. 450.89 crore, of which Rs. 268.73 crore was in the Central Sector and Rs. 182.16 crore in the State Sector. In the context of the strategy and thrust areas relating to our cultural heritage and need for promoting tribal and folk art and also likely formulation of National Cultural Policy, appropriate oulays for the Eighth Plan have been provided vide Annexure 11.7.

YOUTH AFFAIRS AND SPORTS

Introduction

11.14.1 The role and contribution of youth are of vital importance in all countries. In a country like India where population is growing rapidly and the proportion of the young in the overall social and demographic profile is continuously increasing, the role of youth becomes all the more significant. In 1981, the population of the youth (15-35 years of age-group) was estimated to be 219 million, i.e. 32 per cent of the total population. The corrosponding figure in 1991 is estimated as 270 millions. Youth constitute the most creative segment of our society. Investment in the development of youth is an investment in human capital. It is, therefore, imperative to provide increasing opportunities to youth to develop their functional capabilities covering a variety of actions for development, training and utilisation of youth potential, making them economically productive and socially purposeful. Though a number of youth welfare schemes have been conceived at the higher level, there is a need to have a participative and decentralised framework for the youth in the nation-building enterprise. This should cover their participation in literacy, family welfare and asset-creating activities.

11.14.2 Sports is a manifestation of the competitive nature of the play element in human life whose promotion has cohesive impact on health, productivity and social harmony. It is an activity in which persons of all ages can engage but the peak period in the sports also occurs in the young age with a gradual decline thereafter. The two activities in Youth Affairs & Sports sector, therefore, reflect the holistic nature of this area of human endeavour and are logically dealt with jointly.

YOUTH AFFAIRS

Plan Performance Review (1985-92)

11.15.1 In the Seventh Plan, youth development was given a thrust as reflected in the increased outlay of Rs. 98.90 crores for the youth programmes compared to Rs.12.54 crores in the Sixth Plan. In the light of the guidelines of the NPE, the Government also evolved a National Youth Policy (NYP) towards the end of 1988 which, inter-alia, emphasised the following:

(1) Special efforts to foster and develop contact between youth from different parts of the country; (2) Meaningful programmes of mass education, formal and non-formal; (3) Training programmes for skill development of youth for self-employment; and (4) Opportunities for youth leadership training.

11.15.2 The main schemes for student youth relate to Bharat Scouts & Guides, National Service Scheme (NSS) and National Service Volunteers Scheme (NSVS) in addition to National Cadet Corps (NCC) which is a scheme implemented by Defence Ministry with the support of State Governments. At the end of the Seventh Plan, the enrolment in these activities was: NSS - 10 lakhs; NCC - 11 lakhs; Scouts &

Guides - 22 lakhs; and NSVS 3,000. This coverage is extremely inadequate in the context of overall strength of 11 crores school students and 42 lakhs college students.

11.15.3 The main scheme for non-student youth launched in 1972 is Nehru Yuva Kendra (NYK). In 1986-87, NYK Sangathan, an autonomous organisation, was set up with a view to providing a new thrust to the programme and to taking up innovative schemes. The number of NYKs increased from 247 to 398 and of youth clubs from 25,000 to 50,000 with substantial involvement in adult education. The results of evaluation by the Programme Evaluation Organisation (PEO) of Planning Commission in 1990 are generally positive, though some weaknesses by way of disparities in structure and service conditions of the youth coordinators, in the monitoring of the programmes, lack of proper linkage with other development activities at the operational level etc. were also noted. The Youth Clubs were found to be useful in creating awareness among the people about development programmes, in creating assets in the villages and in developing organisational skills of the non-student youth in the villages in respect of sports and cultural activities.

11.15.4 During the Seventh Plan, 1,600 proposals were approved, involving financial assistance to institutions/groups, individuals and voluntary organisations for mountaineering and allied activities as also for training of young people to undertake such activities. The scheme of youth hostels was transferred from the Department of Tourism to the Department of Youth Affairs and Sports in 1985. Thirty-three youth hostels have so far been commissioned and work on 25 hostels is in progress. Steps were taken to intensify the National Integration Programmes, particularly in the north-east and border areas. New schemes pertaining to training of youth, exhibtions for youth and youth clubs and National Youth Awards were introduced.

Eighth Plan Strategy and Thrust

11.16.1 Considering the fact that youth comprise 32 per cent of the population, of whom about 50 per cent are illiterate and that student youth comprise only 10 per cent of the population, it is clear that the programmes for the youth have to be directed towards maximisation of the participation of non-student youth and since a majority of them are illiterate and a very large number unemployed, the programme would have to concentrate on two aspects: (1) human resource development activities geared to achieve the goals of "Education For All" and "Health For All" involving modules in health education, population education and functional literacy and (2) training for skill formation among the non-student youth for enabling them to participate in meaningful and remunerative work. The main schemes in this regard are NYKs in rural areas and Sharmik Vidyapeeths (SVPs) in urban areas.

11.16.2 The coverage of existing schemes for student youth, namely NSS, NCC and Scouts & Guides would have to be expanded in such a manner that almost all the High School-going and college/universtity-going youth are covered by one or the other activity by 1997. Keeping in view the recommendations of the NPE/PoA to make participation in sports/NSS/Social services an inseparable part of the learning process and also the recommendations of the C.D. Deshmukh Committee, the possibility of making NSS obligatory would be examined so that youth contribute massively and not merely marginally to the nation-building activities like eradication of illiteracy, promotion of health and family welfare education and afforestation programmes. The NSS can be made cost-effective by involving the community in a big way in the matter of boarding and lodging of students when they go out for national service. The evaluation of NSS Programme has disclosed some weaknesses like low participation of female students because of paucity of female programme officers etc, which need to be corrected. State Governments should also be fully involved with the expansion of various youth programmes.

11.16.3 At present, the Youth Department deals with programmes for youth (15-35 years of age-group) and the Child Development Department primarily deals with developmental programmes for the children in the age-group upto to 6 years, leaving an age gap for which special programmes nedd to be mounted. Action should be initiated to deal with this age-group so that implementation of appropriate development programmes side by side with the normal educational activities is facilitated.

Eighth Plan Programmes

11.17.1 Within the framework outlined above and in the background of NYP 1988, various youth development programmes would be strengthened and expanded.

11.17.2 The aim during the Eighth Plan will be to ensure that the activities of the NYK are conducted in a cost- effective manner with emphasis on vocational training and employment promotion, Family Planning and survival values, eradication of illiteracy and provision of drinking water facilities. Pollution control, promotion of national integration and active involvement of youth clubs to fight social problems like corruption, dowry, drug addiction etc. are other thrust areas. Appropriate training modules would be developed particularly in the areas of health education and population education, which have been neglected so far. Efforts would also be made to develop functional linkages with other departments engaged in similar activities as recommended in the PEO report. The NYKs would function as the nucleus of rural youth activities, as a positive catalytic agent and as a multiplier in the development programmes of rural areas, namely TRYSEM, Community Polytechnics, Krishi Vigyan Kendras, entrepreneurship development programmes etc. The assistance of IGNOU and of the State-level open universities as well as the Open Schools would be taken to implement massive training programmes for the rural youth. Special attention would be paid to ensure that women participate fully in all these training and literacy progrmmes and that women's participation is not confined to the traditional skills only but are exposed to all the modern occupations and vocations in common with men. An appropriate Management Information System (MIS) model for concurrent evaluation andmonitoringofNYKwould be set up. The NYK organisation would also be made self-supporting tothe extent possible.

11.17.3 A new scheme called Youth Development Centre (YDC) envisages setting up of an intermediate tier between youth clubs at village level and NYK at the district level. It would provide opportunities for full participation of rural youth in developmental and recreational activities. There would be 18,000 YDCs at the rate of one centre for a group of ten villages with facilities for information, sports, training and youth programmes for mental and physical development and promotion of entrepreneural capabilities of rural youth. The Village Panchayat is expected to make contribution by way of donation of land for the Centres, provision of voluntary labour and supply of material.

11.17.4 Youth comprises the larger proportion of the urban migrant labour lacking in basic education and literacy skills. Shramik Vidyapeeths which impart a variety of educational and vocational skills to urban migrant labourers would be expanded substantially to tackle this problem.

11.17.5 In view of the rising cost of maintenance, the funding of activities under NSS has recently been increased from Rs. 80 to Rs. 120 per participant per year for normal activities and Rs. 150 to Rs. 200 per participant per year for special camping activities. This increase in per capita cost should be balanced by an increase in the number of days spent by students in national service. The rates of Centre-State share of expenditure are proposed to be changed from 7:5 to 3:2. The growth of volunteers enrolment would be about 10 per cent per annum during the Eighth Plan so that at the end of the Plan period, the volunteer strength will reach 15 lakhs. It is proposed to increase the coverage under Scouts & Guides and to set up regional centres for effective implementation and supervision of the programmes. The NCC functioning under the Ministry of Defence is not subject to the planning discipline and its evaluation is necessary. There are disparities in per capita expenses as between NCC and NSS which may be looked into. The NSVS which has very laudable aims has a very small coverage. It should be properly evaluated before expansion.

11.17.6 Adequate infrastructural and resource support would be provided for popularising adventure sports at low cost at the grassroot level. More than 2.50 lakh youth would be involved in various adventure activities. This facility would be expanded for children in the age-group of 8-14 years also. It is planned to include disaster management under adventure and introduce obstacle courses in schools. There is a proposal for a national institute for adventure which would be considered after reviewing the existing arrangements. In order to promote national integration through inter-State exchange of youth in work situations, National Integration Camps would be conducted annually in each

of the States with 500 participants from all over the country who would work along with 500 participants drawn from the State. The Camp would facilitate youth to travel and work in areas other than their own, marked by cultural differences and also create assets in the process. The four Information and Development Resource Agencies (IDARAs) for youth training activities at Narendrapur, Lucknow, Gandhinagar and Nagpur would continue. The proposal for setting up a National Institute of Youth Development for youth training, research and development would be considered in the context of gaps in existing training arrangements.

SPORTS INCLUDING PHYSICAL EDUCATION

Plan Performance Review (1985-92)

11.18.1 The successful organisation of the 9th Asian Games, in 1982 gave a new impetus to sports and games and the implementation of the National Sports Policy 1984 was taken up which inter alia emphasised importance of health and physical fitness through physical eduction, provision of the necessary sports facilities and infrastructure on a large-scale, necessity of raising national standards in sports and games and the need for spoting and nurturing sports talent at a young age and to provide coaching, training and nutrition required for the development of the talented sportspersons. The Sports Authority of India (SAI) was set up in March, 1984 for promoting sports and games and for managing infrastructural and other facilities created for the 9th Asiad. With the amalgamation of the Society for National Institute of Physical Education and Sports (SNIPES) with SAI in May, 1987, the SAI has become the premier institution in the country not only for the broadbasing of sports but also for identifying talent and training sports persons to achieve excellence in international events.

11.18.2 In 1987, the Department undertook a thorough review of all the schemes of the Government as well as of SAI designed to promote sports and games including physical education. The various recommendations of the Committee are being implemented. The SAI implemented the following schemes:

(1) Under the National Physical Fitness Scheme, the national-level 'Bhartiyam' display consisting of 50,000 children was staged on the 14th November, 1989 at Nehru Stadium, New Delhi.

(2) The Sports Project Development Areas (SPDA) Scheme was introduced in 1988-89 to provide facilities for sports infrastructure and for training, coaching and conducting competitions in each project, covering an area of 80-100 development blocks. So far, 21 SPDAs as against 78 projected have been sanctioned infrastructural assistance. Of these, 14 and another 9 Centres have become functional generally on the basis of existing infrastructure.

(3) Under the National Coaching Scheme, 8,000 coaches have been trained through different centres of Netaji Subhash National Institute of Sports, Patiala. More than 1,600 of the above coaches have already been deployed by NIS/SAI to various State Sports Councils, University Field Stations and Nehru Yuva Kendras under the Rajkumari Amrit Kaur Sports Coaching Scheme.

(4) Under the Special Area Games (SAG) Scheme, sports talent from tribal, costal, hilly and other far-flung areas of the country is scouted, located and trained in modern competitive sports at special centres where all facilities of sports infrastructure, coaching, training, equipments and educational and vocational requirements are provided. The Archery and Water Sports Centres established under the scheme have shown good results.

(5) A sum of Rs. 9.26 crores was spent as incentive for promotion of sports activities in schools during the Seventh Plan.

11.18.3 The Department continued to implement the scheme of National Sports Orgnisation (NSO) under which universities/colleges were assisted through UGC for creation of sports infrastrucure. Under the scheme of sports clubs, financial assistance was provided to voluntary sports clubs to promote sports activities at the grassroot level. Under the scheme of Promotion of Sports among Women, scholarships are provided to meritorious sportwomen. Boarding and lodging expenses were provided to women in physical education and sports academic centres for doing diploma, degree and PG courses.

11.18.4 In the field of physical education, the infrastructure consists of Rani Laxmibai National Physical Education Institute, Gwalior, Regional Centre at Trivandrum under Central Government and about 200 colleges of physical education of all kinds in various States. Physical Education as an activity was transferred to the Department of Youth Affairs and Sports in 1988-89.

Eighth Plan Strategy and Thrust

11.19.1 Although on the eve of 1990 Asiad, an 'operation excellence' was launched specially to prepare Indian sportsmen for successful participation in that prestigious event as well as subsequent events, India's actual performance belied these hopes and exposed the weak links of the Indian sports sector. The other countries improved their medal tally position. It is noted that comparable countries in the neighbourhood have reached the top after concerted efforts for 15 years or so. It is, therefore, necessary that a long-term Plan is drawn up for effective Indian participation in various international events, keeping in view the pitfalls of earlier experiments. The procedures relating to identification of disciplines, selection and preparation of Indian sportspersons/sports- teams, identification of national coaches, selection of sportspersons for inclusion in the coaching camps, venues of the coaching camps, designing of a battery of physical fitness/medical/skill tests during coaching camps and the need for additional facilities for substantive coaching camps would all be taken into account for preparing an immediately implementable plan for building up and enhancing the medal-winning capabilities of Indian sportspersons. Not only the concerned federations and the State Governments but the private and public sector orgnisations would have to be fully involved with the formulation and implementation of the Plan. However, such a short-term Plan must have a long-term perspective of broadbasing the sports with a view to achieving physical fitness for all and excellence in sports through talent spotting and nurturing. The elements of this long-term Plan are mentioned below:

(1) Creation of desired sport climate in the country and consciousness in every citizen to be physically fit and to participate in games and sports. This requires creation of infrastructure in a planned manner and more efficient and fuller use of available sports infrastructure and coaching facilities with promotion of activities like 'Bharatiyam'. (2) Erection of pyramidal structure beginning with primary and secondary schools and culminating at college level with flexibility of networking between different levels. For these resource potentials to develop, adequate number of physical education teachers are required and in addition to the play fields at the school stage and necessary 'encouraging' environment for the willing students to make further progress, there is a need to afford adequate support to the Special Area Games (SAG) and the National Sports Talent Centre (NSTC) schemes, which provide opportunities to potential sportspersons in tribal, remote and rural areas for getting them trained in selected disciplines. A related aspect is the need to have separate infrastructure of sports institutions. A beginning has been made in this regard by developing sports infrastructure in the regional and other centres of SAI.

(3) The large number of coaches who have been trained under the National Coaching Scheme need to be retrained in modern professional and scientific methods. In view of the finding of PEO evaluation study of the scheme in Rajasthan and U.P. that the overall achievement of trained coaches and supervisors was in the region of 69.2 per cent and 65.5 per cent respectively, action to improve these levels of achievement need to be taken especially because SAI is not likely to be able to assign coaches to State Sports Councils at its own cost.

(4) To fill the talent gap in the age-group of 17-23 years, a new look needs to be given to the development of sports and games in colleges and universities. Sponsorship and prize money tournaments for sub-junior/junior age-group upwards will have to be arranged with the active cooperation of industrial undertakings interested in the development of sports having ultimate link with employment according to qualifications and performance level in sports.

(5) Adoption of a scientific approach towards development of sports potential requires promotion of sports medicine and application of its techniques in selection and fostering of talents. For high performance, there is a need to examine and establish the correlation of the cardinal factors, i.e. anatomical/physiological factors,

gender-related factors, nutritional inputs, psychological and other factors with the performance at all levels (initial and peak). The SAI should undertake a research study in the priority area by involving competent institutions, biomedical scientists, nutritionists, specialists in physical and sports medicine and sportsmen.

(6) States are vitally concerned in development of sports. State Governments need to be encouraged to prepare comprehensive plans for the development of sports with adequate resources built up within the Eighth Plan so that the national objectives of building up of medal-winning capabilities on the broad foundation of "Sports For All" covering promotion of community sports in various sections of the population can be achieved.

(7) As per the International Olympic Charter, sports should be independent of Government control. This pre-supposes the conduct of affairs in the sport areas by the connected non-official organisations in a highly professional manner. It is necessary to have a constructive dialogue with the concerned non-official organisations in the interest of enhancing and realising winning potential and projecting the merit of India's sportspersons on the international scene and also to ensure that Sports Federations eventually become self-supporting.

(8) Besides setting up new projects, it is equally important to complete the projects earlier started and to utilise playing and coaching facilities already created to the optimum extent.

11.19.2 It may also be noted that the Sports Policy 1984 is being reviewed by the Department of Sports and Youth Affairs.

Eighth Plan Programmes

11.20.1 Most of the schemes formulated are designed for broadbasing of sports or for achieving excellence in sports or for strengthening the weak links. A much larger number - around 25,000 representing ten-fold increase - of talented sports children would be supported for round-the-year house training/coaching with optimal nutrition inputs for promotion of excellence in about 15 disciplines of sports. Seventeen State Sports Training Complexes, 55 Sports Project Development Area Complexes, 50 District Sports Complexes, 1,000 playgrounds and sports facilities for 42,000 rural schools will be built up. A scheme for rewards and incentives, earlier absent in the universities and colleges, is being introduced. Infrastructure will be created in 20 universities and colleges having a history of tradition of excellence in games and sports. In each university and college only two or three disciplines would be nurtured. SAI has since taken over the work of AIU in the matter of holding of coaching camps.

11.20.2 Priority would be given to only 15 out of 50 sports disciplines for support to Federations with a view to improving the medal-winning potential of Indian athletes in international competitions. Fifty per cent of expenditure could be borne by public and private sector corporations. Such support is required in other components also, viz. internatinal sports events and national championship with the objective of making the sports federations self- supporting.

11.20.3 The range and sweep of rural sports programme would be amplified by promoting sports activities throughout the year through voluntary sports clubs in each community development block working under the supervision and guidance of Nehru Yuvak Kendra. About 5,000 blocks would be covered with each block being given one-time fixed financial support and annual recurring expenditure, the clubs being expected to generate resources to the maximum extent possible.

11.20.4 A new scheme called 'Rajiv Khel Yojana' meant exclusively for the benefit of slum-dwellers in metropolitan towns would be started, beginning with the slums of Bombay, Madras, Delhi and Bangalore through voluntary agencies under the guidance of SAI.

Financial Allocations

11.20.5 The Seventh Plan expenditure for the Sports and Youth Affairs was Rs. 484.51 crore, of which Rs. 248.67 crore was in Central Sector and Rs. 235.84 crore in State Sector. The approved outlays for the Eighth Plan within the framework of priorities and thrust areas indicated in this sector are shown in Annexure 11.7.

S.No

LIST OF ANNEXURES

Annexure 11.1

Progress Of General Education During 7th Plan - (1985-90)

Institutions = Numbers
Enrolment = Thousands

Sl. No.		1984-85(6th Plan ending)		1989-90 (7th Plan ending)	
		Institutions	Enrolment	Institutions	Enrolment
1.	2.	3.	4.	5.	6.
1.	Primary Edn. (Class-I-V,age 6-10)	519701	83933	550700	97318
2.	Middle (Classes VI-VIII age 11-14)	129879	26153	143747	32188
3.	Elementary Edn. (Classes I-VIII age 6-14)	649580	110086	694447	129506
4.	Non-Formal Edn. (Classes I-VIII age 6-14)	-Nil-	-Nil-	27087 (Centres)	6400
5.	**Grand total -Elementary(Items 3+4)**	649580	110086	694447 +27087	135906
6.	High/Hr.Secondary Edn.Classes IX-XII)	58834	13828	76119	19970
7.	Colleges(Art,Science,, Commerce)	4005	2577	4755	3814
8.	Universities (Including deemed universities)	135	347	174	388
9.	Engineering colleges	198	145	278	733
10.	Polytechnics	389	148	840	284

Source: Selected Educational Statistics,1984-85 and 1989-90, Deptt. of Education, Ministry of HRD Govt. of India

Annexure 11.2

Achievement Of Additional Enrolment At Elementary Stage (classes I-viii) And Adult Education In The Seventh Plan

(Fig.in lakhs)

S l . No.	States/UT's	Primary Classes I-V		Upper Primary Classes I-VIII		Elementry Classes I-VIII		Adult Education
		Girls	Total	Girls	Tqtal	Girls	Total	
1.	Andhra Pradesh	4.12	9.09	1.47	3.78	5.59	12.87	11.12
2.	Arunachal Pradesh	0.15	0.29	0.05	0.09	0.20	0.38	0.92
3.	Assam	1.80	11.42	0.96	3.74	2.76	15.16	5.99
4.	Bihar	2.40	5.66	0.72	1.52	3.12	7.18	39.99
5.	Goa	0.04*	0.06*	(-)0.01	(-)0.04	0.03	0.02	0.017
6.	Gujarat	3.71	6.60	1.69	3.90	5.40	10.50	19.32
7.	Haryana	1.43	1.63	0.89	1.28	2.32	2.91	5.21
8.	Himachal Pradesh	0.40	0.70	0.47	0.71	0.87	1.41	1.43
9.	Jammu & Kashmir	0.48	0.99	0.31	0.72	0.79	1.71	2.88
10.	Karnataka	6.72	13.69	1.19	2.79	7.91	16.48	11.88
11.	Kerala	0.27	0.53	0.50	0.95	0.77	1.48	5.08
12.	Madhya Pradesh	7.39	16.35	3.26	8.65	10.65	25.00	26.02
13.	Maharashtra	5.07	7.66	4.30	8.70	9.37	16.36	20.90
14.	Manipur	0.15	0.23	0.04	0.04	0.19	0.27	1.17
15.	Meghalaya	0.20	0.39	0.06	0.10	0.26	0.49	0.89
16.	Mizoram	0.12	0.27	0.04	0.35	0.16	0.62	0.21
17.	Nagaland	0.07	0.13	(-) 0.08	(-) 0.18	(-) 0.01	(-) 0.05	0.65
18.	Orissa	2.55	5.83	2.03	2.87	4.58	8.70	8.22
19.	Punjab	0.64	1.07	0.58	1.05	1.22	2.12	4.86
20.	Rajasthan	3.19	7.20	0.83	3.34	4.02	10.54	14.46
21.	Sikkim	0.07	0.10	0.02	0.02	0.09	0.12	0.41
22.	Tamil Nadu	3.05	6.34	3.52	7.14	6.57	13.48	26.76
23.	Tripura	0.19	0.38	0.14	0.32	0.33	0.70	0.63
24.	Uttar Pradesh	10.32	17.89	2.25	4.26	12.57	22.15	39.72
25.	West Bengal	8.44	17.24	1.59	3.10	10.03	20.34	12.42
	Total - (States)	62.97	131.74	26.82	59.20	89.79	190.94	261.157
26.	A & N Islands	0.02	0.05	0.03	0.05	0.05	0.10	0.13
27.	Chandigarh	0.07	0.15	0.04	0.07	0.11	0.22	0.17
28.	D & N Haveli	0.02	0.02	0.01	0.01	0.03	0.03	0.11
29.	Daman & Diu	0.05	0.10	0.04	0.08	0.09	0.18	0.001
30.	Delhi	0.72	1.63	0.56	1.16	1.28	2.79	3.60
31.	Lakshadweep	0.00	0.00	0.00	0.00	0.00	0.00	0.011
32.	Pondicherry	0.08	0.15	0.06	0.10	0.14	0.25	0.45
	Total - (UTs)	0.96	2.10	0.74	1.47	1.70	3.57	4.472
	Total-(States & UTs)	63.93	133.84 ✓	27.56	60.67 ✓	91.49	194.51 ✓	265.629

* Including Daman & Diu

Source: 1. Elementry Education: Selected Educational Statistics of 1984-85 and 1989-90 Deptt. of Education Ministry of H.R.D. Govt. of India.

2. Adult Education- Directorate of Adult Education.

Annexure 11.3

Outlay And Expenditure On Education Seventh Plan And Annual Plans: 1990-91 And 1991-92 - Central And State Sector

(Rs. in crores)

Sl. No.	Sub-head	7th Plan 1985-90		Annual Plan 1990-91 Actual Expdr.	Annual Plan 1991-92 Antic. Expdr.
		Approved Outlay	Actual Expdr.		
1.	2.	3.	4.	5.	6.
	1.Elementary Education	1963.70	2854.69	805.77	937.50
	2.Adult Education	360.00	469.57	173.84	195.08
	3.General Education	4775.30	6549.51	1797.82	2120.21
	4.Technical Education	681.79	1083.34	314.63	537.45
	5.Art and Culture	482.13	450.89	103.90	132.41
	6.Sports & Youth Affairs	443.43	484.51	113.01	170.78
	(Total Col. 3 to 6)	6382.65	8568.31	2329.36	2960.85

Annexure 11.4

Outlay and Expenditure on Education - Seventh Plan and Annual Plans: 1990-91 and 1991-92 - Central Sector

(Rs.in Crores)

S.No	Subhead	7th Plan Approved Outlay	1985-90 Actual Expdr.	Annual Plan 1990-91 Actual Expdr	Annual Plan 1991-92 Anticipated xpdr.
1	2	3	4	5	6
1.	Elementary Education	233.25	658.49	218.75	283.50
2.	Adult Education	130.00	313.04	131.15	129.19
3.	Secondary Education	667.75	596.01	195.21	209.90
4.	University & Higher. Education	420.00	659.96	131.55	171.592
5.	Language Devlopment	38.64	43.58	10.78	14.00
6.	Planning and Admn.)	29.00	23.49	3.46	6.78
7.	Other Educational Programmes)				
8.	Total General Education	1518.64	2294.57	690.90	814.96
9.	Technical Education	220.00	610.96	157.60	188.25
10.	Art and Culture	350.00	268.73	60.41	74.20
11.	Sports and YouthAffairs	300.00	248.67	47.56	76.16
12.	**Total Education** (Col.8-11)	2388.64	3422.93	956.47	1153.57

Annexure 11.5

Outlay and Expenditure on Education Seventh Plan and Annual Plans: 1990-91 and 1991-92 - State Sector

(Rs.in Crores)

S.No	Subhead	7th Plan Approved Outlay	1985-90 Actual Expdr.	Annual Plan 1990-91 Actual Expdr	Annual Plan 1991-92 Anticipated Expdr.
1	2	3	4	5	6
1.	Elementary Education	1730.45	2190.92	588.41	644.12
2.	Adult Education	230.00	156.53	43.52	71.44
3.	Secondary Education	N.A.	1235.50	326.16	315.99
4.	University & Higher. Education	N.A.	541.17	159.37	154.93
5.	Language Devlopment	N.A.	13.48	6.71	10.10
6.	Planning and Admn.	N.A.	10.05	7.15	9.72
7.	Other Educational Programme	N.A.	107.35	26.89	29.88
8.	Total General Education	3256.66	4255.00	1158.21	1296.18
9.	Technical Education	461.79	472.38	157.03	349.20
10.	Art and Culture	132.13	182.16	43.49	58.21
11.	Sports and Youth Affairs	143.43	235.84	65.45	94.62
12.	**Total Education** (Col.8-11)	3994.01	5145.38	1424.18	1798.21

Annexure 11.6

Eighth Plan (1992-97) Targets- Additional Enrolment - Elementary And Adult Education

(Figures in 000's)

Sl.No.	STATE's/UTs	Primary(I-V Classes)		Upper Primary (VI-VIII Classes)		Elementary (I-VIII Classes)		Adult Education age 15-35 year
		Girls	Total	Girls	Total	Girls	Total	
1.	Andhra Pradesh	1475	2588	840	1400	2315	3988	7778
2.	Arunachal Pradesh	12	27	14	36	26	63	175
3.	Assam	244	500	384	800	628	1300	4500
4.	Bihar	4032	8400	1008	2100	5040	10500	9400
5.	Goa	3	6	5	9	8	15	100
6.	Gujarat	72	108	475	1100	547	1208	4300
7.	Haryana	173	275	180	300	353	575	5711
8.	Himachal Pradesh	58	125	29	66	87	191	800
9.	Jammu & Kashmir	62	150	85	227	147	377	600
10.	Karnataka	215	434	98	197	313	631	6000
11.	Kerala	129	252	42	80	171	332	980
12.	Madhya Pradesh	2310	3460	1796	2396	4106	5856	5500
13.	Maharashtra	600	1400	300	750	900	2150	9200
14.	Manipur	12	29	36.70	68.20	48.70	97.20	23
15.	Meghalaya	15	30	22	51	37	81	262
16.	Mizoram	12	25	12	29	24	54	32
17.	Nagaland	16	32	17.50	34	33.50	66	23
18.	Orissa	247	600	142	416	389	1016	130
19.	Punjab	80	190	54	127	134	317	5000
20.	Rajasthan	2180	2647	621	1565	2729	4212	11000
21.	Sikkim	5	11	7	16	12	27	4
22.	Tamil nadu	215	425	491	1142	706	1567	7800
23.	Tripura	13	25	36	89	49	114	400
24.	Uttar Pradesh	866	2480	530	1930	1396	4410	16700
25.	West Bengal	801	1638	1359	2788	2160	4426	8559
	Total-(States)	13775	25857	8584.20	17716.20	22359.20	43573.20	104977
26.	A & N Island	4.00	9.00	2.00	6.00	6.00	15.00	10
27.	Chandigarh	4.80	10.10	3.80	8.10	8.60	18.20	26
28.	D & N Haveli	0.05	0.11	0.03	0.13	0.08	0.24	15
29.	Damman & Diu	0.50	1.00	0.50	1.00	1.00	2.00	20
30.	Delhi	38.00	96.00	24.00	85.00	62.00	181.00	750
31.	Lakshadweep	0.05	0.20	0.05	0.10	0.10	0.30	12
32.	Pondicherry	3.00	6.00	1.80	4.00	4.80	10.00	30
	Total -(UTs)	50.40	122.41	32.18	104.33	82.58	226.74	863
Total- (States & UTs)		13825.40	25979.41	8616.38	17820.53	22441.78	43799.94	105840
Tab 11.2 (2000)		1.65	2.62	2.11	3.59	3.76	3.61	

Source: Plan document of States/UT's amd summary records of working groups as Education.

Annexure 11.7

Eighth Plan Outlay For Major Heads Of Education

(Rs. in crores)

Sl. No.	Major Head	Centr.	States	U.Ts.	Total
1	General Education	6619.00	9607.19	587.16	16813.35
2.	Technical Education	824.00	1804.66	157.72	2786.38
3.	(Total - 1 & 2)	7443.00	11411.85	744.88	19599.73
4.	Art & Culture	385.00	324.76	17.92	727.68
5.	Youth Affairs & Sports	350.00	509.06	30.54	889.60
	Grand Total (3 - 5)	8178.00	12245.67	793.34	21217.01

Annexure 11.8

State-wise Coverage Of World Bank Assisted Projects For Technician Education.(polytechnics.)

(Rs. in Crores)

States	Project Base Cost ***	No. of Schemes	Proposed No of Institutions to be covered	Annual Plan 90-91		Annual Plan 91-92		8th Plan (1992-97) Recommd. Outlay
				Budgeted Outlay	Actual Expdr.	Budgeted Outlay	Anticipated Expdr.	
	1.	2.	3.	4.	5.	6.	7.	8.	9.
Phase-I :								
Bihar	88.08	21	26	11.97	1.07	20.16	20.54	79.05
Gujarat	65.08	21	32	9.76	0.52	16.27	16.27 **	50.00
Karnataka	52.78	21	43	6.00	1.00	7.50	7.50 **	42.50
Kerala	34.10	21	24	5.20	0.58	10.60	10.60	36.67
Madhya Pradesh	100.13	21	49	10.29	8.56	16.90	16.90 **	74.50
Orissa	56.79	21	13	8.15	8.14	7.00	7.00	43.93
Rajasthan	44.61	21	23	3.80	2.88	8.17	8.17	41.10
Uttar Pradesh	200.00	21	86	6.58	0.65	45.00	45.00	188.00
Sub-Total	641.57	168	296	61.75	23.4	131.60	131.98	555.75
Phase-II								
Andhra Pradesh	79.55	21	59	-	-	9.70	5.90	74.04
Assam	30.00	21	9	-	-	2.86	1.00	29.00
Haryana	80.87	21	18	-	-	10.00	10.00	72.00
Himachal Pradesh	20.24	21	5	-	-	2.10	2.10	21.43
Maharashtra	122.68	21	54	-	-	30.00	0.30	120.00
Punjab	79.48	21	19	-	-	12.31	12.31 **	75.81
Tamil Nadu	68.00	21	55	-	-	19.96	2.00	76.00
West Bengal	86.16	21	34	-	-	6.00	6.00 **	80.00
UT of Delhi	23.60	21	9	-	-	3.20	3.20 **	23.60
Sub-Total	590.58	189	262	0	0	96.13	42.81	571.88
Total	1232.15	357.00	558.00	61.75	23.40	227.73	174.79	1127.63

Note:

1. Does not include 10 new Women's Wings to be converted Polytechnics in both phases.
2. Does not include the central component of Rs 40.00 Crores
3. Out of Rs. 1892 Crores.(US $ 745 million),the world Bank Assistance would be Rs. 1318 Crores (US$ 518.88 million).

** Represents budgeted outlay as anticipated expenditure not specified.

*** The Base Cost excludes the price escalation due to inflation & increase due to physical contingencies.

Source: Deptt. of Education, Govt. of India and Plan documents of States/UTs.

CHAPTER 12

HEALTH AND FAMILY WELFARE

12.1.1 Health of the people is not only a desirable goal but is also an essential investment in human resources. The National Health Policy (1983) reiterated India's commitment to attain "Health for All (HFA) by 2000 A.D". Primary health care has been accepted as the main instrument for achieving this goal. Accordingly, a vast network of institutions at primary, secondary and tertiary levels have been established. Control of communicable diseases through national programmes and development of trained health manpower have received special attention.

12.1.2 Many spectacular successes have been achieved in the country in the area of health. Small-pox stands eradicated and plague is no longer a problem. Morbidity and mortality on account of malaria, cholera and various other diseases have declined. The Crude Birth Rate and Infant Mortality Rate (IMR) have declined to 29.9 and 80 (1990 SRS data) as compared to 37 and 129 respectively in 1971. Life expectancy has risen from a mere 32 years in 1947 to 58 years in 1990. However, HFA is a long way off. Disease, disability and deaths on account of several communicable diseases are still unacceptably high. Meanwhile, several non-communicable diseases have emerged as new public health problems. Rural health services for delivery of primary health care are still not fully operationalised. Urban health services, particularly for urban slums, require urgent attention due to changing urban morphology.

Programme Thrusts in the Eighth Plan

12.2.1 It is towards human development that health and population control are listed as two of the six priority objectives of this Plan. Health facilities must reach the entire population by the end of the Eighth Plan. The Health for All (HFA) paradigm must take into account not only high risk vulnerable groups, i.e., mothers and children, but must also focus sharply on the underpriviledged segments within the vulnerable groups. Within the HFA strategy "Health for underpriviledged" will be promoted consciously and consistently. This can only be done through emphasising the community based systems reflected in our planning of infrastructure, with about 30,000 population as the basic unit for primary health care.

Minimum Needs Programme (MNP)

Rural Health Programme

12.2.2 Development and strengthening of rural health infrastructure through a three tier system of Sub-centres, Primary Health Centres (PHCs) and Community Health Centres (CHCs) for delivery of health and family welfare services to the rural community was continued during the Seventh Plan. But, lack of buildings, shortage of manpower and inadequate provision of drugs, supplies and equipments constituted major impediments to full operationalisation of these units.

12.2.3 The achievements and the present situation for health infrastructure under the MNP and availability of building and manpower are given in Annexures 12.1, 12.2 and 12.3.

12.2.4 The approach and strategy for rural health during the Eighth Plan would be:-

i) Consolidation and operationalisation, rather than major expansion, of the network of Sub-centres, PHCs and CHCs so that their performance is optimised. This would be achieved through -

(a) strengthening of physical facilities including completion of building of the centres and staff quarters;

(b) provision of essential equipments as per the standard list;

(c) filling up of all vacant posts within a defined time frame and in-service training of staff;

(d) ensuring supply of essential drugs, dressings and other material.

ii) To monitor the progress of implementation of MNP at the District, State and National

levels, a health information management system will be developed and used.

iii) The targets regarding setting up of Sub-centre, PHC and CHC on the basis of population norm are indicative only. The States will be given flexibility in establishing these units as per the local needs depending on geographical and population considerations, resources, manpower availability, etc. In opening new centres the needs of tribal population and communities living in difficult and inaccessible areas will be given first priority.

iv) The rural hospitals and dispensaries will be suitably modified, equipped and staffed to convert them into Sub-centres, PHC, CHC as the case may be, thereby integrating them into primary health care system.

v) The backlog of Sub-centres, PHCs and CHCs in many States is staggering and the resources required to meet the targets are astronomical and as such unachievable in near future. In view of this the entire policy of establishment of Sub-centre, PHC and CHC with the present norms will be reviewed and new policy options developed to make the primary health care accessible, acceptable and affordable to all. Re-organisation of the Indian Systems of Medicine and Homoeopathy (ISM&H) dispensaries/hospitals in rural areas to create ISM&H health centres is one such option. This would be in line with the Government's accepted policy of promoting ISM&H. Reorientation of existing personnel of these dispensaries/hospitals, provision of additional facilities and/or staff, redefining the roles and responsibilities would be some of the pre-requisites to put the concept of ISM&H Primary Health Centres and Sub-centres in an operational mode.

vi) Mechanism will be developed to make the rural health services responsive to the needs of the rural masses and accountable to the community. Panchayati Raj system would become an effective instrument for eliciting community participation in the health programme and providing supervision and support to primary health care infrastructure.

vii) Linkages will be developed with the sub-divisional and district hospital to provide referral back-up.

Urban Health Services

12.2.5 More than one quarter of the population in the country now lives in urban areas. In metropolitan and large cities about 40-50% of the urban dwellers are estimated to be living in slum areas where the health status of the people is as bad as, if not worse than, in rural areas. But infrastructure for primary health care in urban areas hardly exists. Serious attempts will be made to develop urban health services as per the recommendations of Krishnan Committee. Organic linkages will be forged with the urban development schemes including Urban Basic Services for a comprehensive development of health and welfare services. Local hospitals will be made responsible to run these centres and treat them as their extension counters for providing health services to the community. Voluntary organisations and local bodies would be encouraged to develop partnership and ultimately taking full responsibility for carrying out these programmes. Health system research to develop a model of urban primary health care services will be undertaken.

Secondary and Tertiary Care Services

12.2.6 Alongwith the emphasis on consolidation of primary health care, the strengthening of secondary care services and optimisation of tertiary care services would be the key objectives of the Eighth Plan.

12.2.7 The sub-divisional and district hospitals which are the secondary level medical care institutions, lack adequate manpower and facilities, to be able to discharge their responsibilities satisfactorily. In view of the resource constraints, there is need for raising resources to maintain the quality of care and meet rising expectations of the people. It is time that the concept of free medical care is reviewed and people are required to pay, even if partially for the services. The system can be so designed that the truly indigent population are able to get free/highly subsidised medical care. Innovative approaches/practices to this end and a sys-

tem of medical audit will be developed during the Plan. Maximum cost-effective utilisation of existing services will be another item on the agenda.

12.2.8 In accordance with the new policy of the Government to encourage private initiatives, private hospitals/clinics will be supported subject to maintenance of minimum standard and suitable returns for the tax incentives. Norms for minimal facilities and accredition of private hospitals/clinics would be developed to maintain quality of patient care.

12.2.9 The medical college hospitals and specialised hospitals have to be used exclusively as tertiary care centres and for health manpower development. Important pre-requisites for this would be improvement in the facilities and standards of care available at secondary care level and development of strong referral system.

12.2.10 A conscious decision has to be taken to enforce a balanced development of primary, secondary and tertiary care services in the country with priority for primary health care. Otherwise there is a distinct risk of the paradigm of primary health care as a tool for "Health for All" being overrun by the mechanism of "All for a few". This tendency and trend can be halted only with scientific arguments for which sound epidemiological, health management and health financing data is needed and hence the need for health systems research.

Health Man-power Development and Training

12.2.11 As much as approximately two thirds of the total expenditure on health services is spent on personnel. Yet, health manpower planning, production and management, which constitute key elements for effective implementation of health programme, have not received enough attention.

12.2.12 While the States have been more than anxious to start new medical colleges, their efforts to develop institutions for training of para medical staff have been entirely suboptimal. This has resulted in a considerable mismatch between the requirement and availability of health personnel of different categories. Ideally, the doctor- nurse ratio should be 1 : 3 but currently there are less than 3,00,000 registered nurses against 4,00,000 registered medical graduates. Similarly, there is a shortage of pharmacists, laboratory technicians, radiographers, dental surgeons, etc., in the country.

12.2.13 The National Health Policy affirmed that the effective delivery of health care services would depend very largely on the nature of education, training and appropriate orientation towards community health of all categories of medical and health personnel. It is, therefore, of crucial importance that the entire basis and approach towards manpower development in terms of national needs and priorities are reviewed and training programmes restructured accordingly. Besides there is an urgent need to asess appropriate health manpower mix to deliver health services at primary, secondary and tertiary level and for the purpose of training and research.

12.2.14 The approach and strategy for health manpower development during the Eighth Plan would be-

i) A National Policy on Education in Health Sciences which when formulated may form the basis of new initatives in manpower development.

ii) The existing situation regarding health manpower supply, demand and projection and facilities for training of different categories will be reviewed.

iii) Appropriate steps will be taken for bridging the critical gaps in the manpower requirement for primary health care and the higher levels and for training and research needs. Starting vocational courses as part of vocationalisation of general education at the + 2 level of the 10+2 system will be supported to expeditiously bridge the gap in the supply of paramedical personnel.

iv) The distortions created in the past on account of over-emphasis on training of doctors, often at the cost of other categories of personnel, and also the undue emphasis on specialisation/super specialisation will be checked.

v) Continuing education for all categories of staff will be given high priority. For this, district and regional level training institutions will be suitably strengthened. Medical colleges and other institutions including professional bodies like Indian Medical Association (IMA) will continue to play an important role, in coordination with the National Academy of Medical Sciences (NAMS), which has been identified as the nodal agency for this purpose.

vi) 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, therefore, be supported during the Eighth Plan. Instead, resources will be used to strengthen the hospitals, laboratories and libraries of the existing medical colleges so that the standards of training are maintained.

vii) For ensuring uniform standards of medical and paraprofessional education, need for establishment of universities of medical and health sciences at regional level has been recognised. Necessary support will be provided as and when a policy decision in the matter is taken.

viii) Statutory councils will be strengthened and new councils for para-professionals, where they are needed, will be created so that standards of training and education can be laid down and enforced. The proposed Education Commission in Health Sciences will promote and coordinate all educational activities for all categories of health manpower at all levels.

ix) Training facilities for epidemiology and health management, the two disciplines which contribute to the maximum extent to efficient functioning of health services including hospitals, will be augmented in medical colleges and created in specialised institutions where training of teachers can be undertaken.

x) Training of doctors of ISM&H will also be reviewed and re-oriented to make it congruent with the needs of national health programmes and primary health care.

xi) Efforts for re-orientation of medical education, started during the earlier plans, will be pursued vigorously with emphasis on faculty development through workshops for the teachers to make them conversant with the health needs of the country, national policies and programmes, advances in educational technology, and make them appreciate the need for re-direction and retargetting of medical education, relavent to contemporary and futuristic needs.

Programmes for Control of Communicable Diseases

12.2.15 A number of national programmes for eradication/control of communicable diseases have been initiated in the country since the early years of planning. Most of the control/eradication programmes for communicable diseases have been in operation since last several plans at huge financial cost. With a few exceptions, however, no national level comprehensive review/evaluation of these programmes have been undertaken. During the Eighth Plan the following strategies will be followed for control of communicable diseases -

i) National level review of the ongoing control/eradication programme to assess the current strategies and their impact on the disease status..

ii) Ensuring sufficient supplies and logistic support including mobility for carrying out the programmes.

iii) Establishment of epidemiological- cum - surveillance centres at district/regional levels and improvement of health management information system for continuous monitoring of the disease situation and taking appropriate and prompt action .

iv) Intersectoral coordination will be strengthened with departments of public health engineering, local bodies like municipalities, Ministries of Information and Broadcasting, Women and Child Welfare, Water

Resources, etc., for control of vector borne and other diseases.

v) The Information, Education and Communication (IEC) activities within each programme would be given special attention for enlisting community participation, which constitutes one of the weakest links, for carrying out the disease control programmes.

vi) Strategy of training of staff at horizontal level, both within the primary health care and higher level, is essential.

vii) Training in epidemiology is woefully inadequate in the country. Unless this situation is rectified decisions regarding control of communicable diseases and its implementation will be handled by the group of professionals and para-professionals who are not sufficiently equipped to do so with its attendant consequences. Specialised institutions/departments to carry out both pre-service and in-service training in epidemiology for different category of staff will be created and the existing ones strengthened.

Programme-wise strategies are briefly outlined hereunder -

Vector Borne Diseases

Malaria Eradication

12.2.16 As a result of introduction of modified plan of operation in 1976 the incidence of malaria has come down from about 6.5 million cases in 1976 to about 1.89 million cases in 1990. The problem of drug resistance of P. falciparum malaria in several States is a cause for concern. Several operational problems and non-availability of matching funds from States to this 50% Centrally Sponsored Scheme (CSS) has resulted in shortfalls in spray operations, decline in blood slide collections and incomplete treatment of cases. Irrigation projects without adequate strategies for management of water resources and floating labour population to cities and major project sites has also contributed to the increased incidence of malaria. Since 30% of all malaria cases and 60% of the more dangerous P.falciparum infections are in the tribal areas, a major intensification of efforts would be directed towards these areas.

Kala-azar and Japanese Encephalitis

12.2.17 Kala-azar and Japanese Encephalitis (JE) have emerged as major public health problems in recent years. For control of Kala-azar the twin approach of (i) vector control by insecticide spraying and (ii) case detection and treatment at PHC and referral hospitals was adopted. The reported cases and deaths due to JE in the affected States viz. Andhra Pradesh, West Bengal, U.P. Tamil Nadu and Assam have shown considerable decline during the Seventh Plan with the use of indigenously produced vaccine.

12.2.18 The existing guidelines for Vector-borne disease control include -

(i) Residual indoor spraying with appropriate insecticide in areas with population having API 2 and above in any of the last 3 years.

(ii) Spraying of BHC in districts reporting 100 or more cases of JE in any one of the years during the past decade.

(iii) DDT spraying in PHCs reporting 10 or more cases of Kala-azar in any one of the last three years.

(iv) Continuation of the anti-larval operations; and.

(v) Malathion fogging/ULV spraying to be undertaken as a contingency measure in out-break of JE and Malaria.

These conventional approaches of use of inceticides and chemicals would have to be supplemented or replaced, depending upon the local situation, by newer strategies such as biodegradable inceticides, biocides, bioenvironmental improvement and preventive measures like impregnated bed nets. Finally, the surveillance activities would need to be strenghened so as to improve case detection and case management,

resulting in a break in the chain of infection/ transmission.

Leprosy Eradication

12.2.19 The approach under this 100% Centrally Sponsored Scheme has been early case detection and domiciliary treatment and health education. Multi Drugs Therapy (MDT) has been introduced in all 201 endemic districts and 41 low endemic districts (till March 1991) for case treatment. The programme has shown steady progress in achieving its objectives during the Seventh Plan.

12.2.20 Within the Leprosy Eradication Programme the following activities will be pursued

(i) Creation of additional physical facilities in all the endemic districts.

(ii) Extention of MDT to remaining endemic districts and in low endemic districts in phases.

(iii) Training of the PHC staff in leprosy eradication activities, both in endemic and low endemic districts, with the aim of preparing them to take over the responsibility of leprosy eradication activities following reduction in the prevalance and incidence of the disease.

(iv) Creation of vocational and rehabilitation facilities for the patients declared cured in those districts which have been under MDT for more than 5 years.

Tuberculosis Control

12.2.21 Early case detection and treatment have formed the strategy for control of Tuberculosis (TB) under a CSS with 50% Central funding. A major achievement of the programme during the Seventh Plan was the successful introduction of short course chemo-therapy in 212 districts, thereby reducing the treatment duration from 18-24 months to 6-8 months. However, the programme has suffered from poor case holding leading to treatment default. Problem of drug resistance is yet another cause for concern.

12.2.22 During the Eighth Plan, the TB Control Programme will be further expanded and strengthened by opening District Tuberculosis Centres (DTCs) in those districts where these do not exist. Short course chemo-therapy will also be introduced, and supply of drugs ensured, in all the remaining districts of the country under the Programme. The DTCs will be strengthened by providing necessary equipments like X-ray machines and maintaining essential supplies like drugs, X-ray films etc.

Blindness Control Programme

12.2.23 This programme which was launched in 1976 as a 100% CSS aims at reducing blindness prevalence from 1.4% in 1980-81 to 0.3% by 2000 AD. Cataract is the cause of more than 80% of blindness. Demographic shift leading to larger old age population has increased the prevalence of cataract in recent decades. So far the main strategy has been to provide access to opthalmic services through eye camps and mobile units. While this has suceeded to some extent, it has fallen short of the requirements. Besides the inherent limitation of the camp approach, the magnitude of the problem demands creation of permanent eye care infrastructure, operational throughout the year and within easy reach of the people.

12.2.24 These initiatives will be combined with an intensification of efforts aimed at ophthalmic manpower developmemt with the ultimate objective of improving the outreach and quality of ophthalmic care at primary, intermediate and tertiary levels.

Guinea Worm Eradication

12.2.25 This programme was launched during 1983-84 with the objective of achieving zero incidence of guinea worm by 1990-91. Although the estimated number of cases has come down from 39,790 in 1983-84 to about 20,000 in 1990-91 the objective of "Zero Guinea worm" still remains unachieved. Total eradication of the disease through better surveillance system and improvement of drinking water supply in the endemic areas will be achieved during the Plan.

AIDS Control Programme

12.2.26 Acquired Immuno Deficiency Syndrome (AIDS) has emerged as a new public health problem in the country. The AIDS Control Programme was launched in 1986 as a

Central Sector Scheme. Establishment of surveillance centres, testing of cases for infection, training of personnel and mass health education formed the main activities within the programme. But, the incidence of the disease has shown an increase from 137 seropositives among 41,000 tested up to May 1987 to 7272 seropositives among 13.49 lakhs persons tested by April 1, 1992. Inadequate surveillance system and absence of facilities for examination of blood and blood products and the growing menace of intravenous drug abuse contributed to this upsurge in infection.

12.2.27 For the prevention and the control of AIDS a national programme will be launched during the Eighth Plan. The strategy to be adopted for AIDS control would comprise of -

i) Surveillance of the population with special emphasis on high risk behaviour groups for detection of infection;

ii) Strengthening of the blood banks and blood safety measures with priorities on special areas and metropolitan and large cities to start with;

iii) Area specific strategy for mounting control of infection and target specific IEC activities based on epidemiological data;

iv) Integration of the control programme with the activities of the departments like Social Welfare, Youth & Sports, etc. and other Government and non-government organisations; and

v) Strenghening of STD Programme and training of staff.

Diarrhoeal Disease

12.2.28 Diarrhoeal Disease Control Programme which was initiated during the Sixth Plan was strengthened and included as a part of maternal and child health activities in the Seventh Plan. Under the programme, a large number of professionals and para-professionals were trained for the programme implementation and support besides intensifying IEC efforts. Oral rehydration salt for prevention and treatment of dehydration was made available through the existing health infrastructure. Diarrhoeal diseases control would be continued during Eighth Plan as part of the child survival and safe motherhood programme.

Programme for Non-communicable Diseases Control

12.2.29 The increase in life expectancy and the changing life style of the people, have brought in the problem of non-communicable diseases which have added to the already heavy burden of morbidity and mortality due to communicable diseases in the country. Development of models of care and control programmes for non-communicable diseases, therefore, are no longer a luxury but an essentiality.

12.2.30 The strategies for the control of non-communicable diseases have to be based on sound consideration of epidemiology and demography. They must be integrated with the existing health infrastructure to make them cost-effective. Development of appropriate technology and its transfer to the general health services should be an important component of the strategy. Since the life style and high risk behaviour are important variables associated with the rising incidence of most of these diseases, they lend themselves to prevention by health education. Therefore, mobilising community health action through well structured IEC system including mass media will form an important intervention strategy for the control of non-communicable diseases. Development of appropriate learning resource materials for education and training of manpower will be an essential activity. The strategies for the control of specific non-communicable diseases will be as follows -

Cancer Control

12.2.31 Prevalance of cancer in the country is estimated to be 1.5 to 2.0 millions. The Cancer Control Programme, initiated during 1975-76, was converted into a national programme in 1985 with the objective of i) primary prevention of tobacco- related cancer; ii) secondary prevention of cancer of uterine cervix; and iii) extension and strengthening of treatment facilities on a national scale. The last one was the focus of emphasis during the Seventh Plan.

12.2.32 During the Eighth Plan the diagnostic and treatment facilities for cancer would be further strengthened at the medical colleges and other major hospitals. Primary prevention , par-

ticularly for tobacco related cancer and uterine cervix cancer, will form the sheet anchor of the Cancer Control Programme. It will be carried through IEC activities and early case detection approach, mounted on the primary and secondary health care infrastructure and through mass media.

Iodine Deficiency Disorder

12.2.33 The National Goitre Control Programme which was operated during the Seventh Plan as a "Mission" programme, is a purely Central scheme under the Central health sector. According to the present estimates, about 45 million people suffer from goitre and another 6 to 8 millions from other iodine deficiency disorders. Universal iodization of salt and IEC activities are the main strategies of the programme.

12.2.34 Iodine Deficiency Disorder Control Programme would have continued thrust during the Eighth Plan. The basic approach of the programme being universal iodization of salt, proper coordination with major departments concerned with production and distribution of iodised salt namely, the Department of Industry and Railways, will be brought about . Iodized salt will be made available through the public distribution system. To prevent the losses of iodine in the salt due to long-distance transportation under adverse conditions, iodization of salt on small scales in the States far away from the present production centres will be considered and operationalised. Double fortification of the salt with iodine and iron will also be explored to combat the wide- spread problem of anaemia.

Diabetes Control

12.2.35 The National Diabetes Control Programme was launched in 1987 as a Central Sector health programme in the districts of Salem and South Arcot in Tamil Nadu and Jammu & Kashmir on a pilot basis. The main thrust during the Seventh Plan was to develop an appropriate model for care and control of diabetes mellitus at the district level. The major objectives include (i) prevention of diabetes through identification of high risk subjects and early intervention; and (ii) early diagnosis of disease and institution of management so as to prevent diabetes associated morbidity and mortality.

12.2.36 The programme has been reviewed and would be further extended to cover additional districts in different states during the Eighth Plan. The experience gained in the pilot districts will be used to develop the programme as an integrated model for diabetes, hypertension and heart disease. The learning resource materials, both print and non-print, developed and validated in the pilot districts, will be used for the training of nurses and primary health care workers.

Accidents

12.2.37 For the treatment and rehabilitation of accident victims, accident and trauma services will be started in major cities and also, on pilot scale along some of the high traffic density national highways.

Mental Health Services

12.2.38 The Seventh Plan document had suggested initiation of a National Mental Health Programme with emphasis on community based approaches. However, due to fund constraints the programme has not made satisfactory progress.

12.2.39 During the Eighth Plan mental health services will be given priority. The strategies for mental health programme will be community based utilising the existing primary health care and district hospital services. A psychiatric centre in each of the districts/divisions will be established. Also, every medical college will be encouraged to start a separate Department of Psychiatry so that the required manpower, both medical and para-medical, can be trained.

Other Non-communicable Diseases Control Programmes

12.2.40 The programme for control of other non-communicable diseases will also be taken up on pilot basis. Resource constraints will not be allowed to come in the way of developing experience and appropriate technology for implementation of the control programme at a later date.

Medical Research

12.2.41 The Indian Council of Medical Research (ICMR) is the premier institution which is responsible for carrying out bio-medical and operational research in India. Important achievements of the ICMR during previous plans include: demonstration of improved vec-

tor control using bio-environmental techniques for control of malaria and filaria; establishment of National Cancer Registry; multi drug therapy and short course chemo therapy for leprosy and TB respectively and a national surveillance system for AIDS infection. Various other institutions under the Ministry of Health & Family Welfare and medical colleges have done notable work in the field of medical research.

12.2.42 Research and Development activities by Indian Council of Medical Research and other academic institutions will be pursued during the Eighth Plan through the following strategies -

i) Establishmnet of an integrated Bio-medical Research Complex to strengthen research activities and to optimise the utilisation of the available resources and facilities.

ii) Promotion of excellence by rationalising grants to promising scientists in medical colleges and strengthening of extramural centres for research under eminent scientific leadership.

iii) Establishment of a network of research units in medical colleges for multi-centric studies.

iv) Optimal utilisation of resources through coordination and development of proper linkages with sister agencies, commercial utilisation of research findings, constant review of the status of application of research findings by user agencies, continuing interaction with State authorities to determine area specific research needs, and through providing proper guidance and assistance as well as strengthening of research activities under the State Councils of Medical Research.

v) Development of a Centre for Epidemiological Intelligence.

vi) Augmentation of research activities in specific priority areas viz., integrated Vector Control Programme for Malaria, Filaria and Japanese Encephalitis, integrated control of non-communicable diseases and development of vaccines for communicable diseases as well as fertility regulation.

vii) Enhancement of Research and Development on Family Planning and Maternal & Child Health.

viii) Collaboration with international agencies for transfer of appropriate technology to the Indian scientists.

Indian Systems of Medicine and Homoeopathy

12.2.43 Teaching and training programmes in ISM & H were promoted during the Seventh Plan. Clinical research on drugs of various systems, collection, cultivation and propagation of medicinal plants and standardisation of drugs were encouraged. The Central Councils dealing with these systems of medicine have been strengthened to provide support for training and research in their respective area.

12.2.44 The National Health Policy assigned an important role to ISM&H in the delivery of health services. There are about 5.25 lakhs institutionally trained practitioners of ISM & H. These practitioners are close to the community not only in geographical proximity but also in terms of cultural and social ethos and as such they can play significant role in primary health care delivery. The strategy for utilisation of ISM&H for health care delivery during the Eighth Plan would comprise of the following -

i) There are more than 200 colleges of ISM & H. One of the important tasks during the Eighth Plan would be to provide adequate facilities for training in these colleges so that the graduates emerging from these acquire the desired level of knowledge and skill necessary for patient care. Post-graduate training programmes also require strengthening for the purpose of manpower development for teaching and research in ISM & H.

ii) To integrate the practitioners of ISM & H in the mainstream of health care delivery system, the graduate curriculum of these systems will be suitably oriented to make them conversant with the national health problems, policies and programmes. Refresher courses will also be organised for the inservice practitioners of ISM & H towards the same objective.

iii) There are more than 5000 pharmaceutical units, engaged in the production of drugs of these systems of medicine. Suitable steps will be taken to enforce the provisions of Drugs & Cosmetics Act to maintain the quality of products of ISM & H produced in the country.

iv) Research and Development for the production and standardisation of drugs of ISM & H will be supported during the Plan. The existing research institutions will be strengthened for this purpose.

v) The cultivation, conservation and regeneration of medicinal plants will be supported in State/joint sector farms. There is great potential for internal sale and export of these plants, herbs and formulations.

vi) Separate departments, directorates and drug control organisations at the Central and State Government level will be established, wherever they are not existing currently.

vii) Central Councils for Research in ISM & H would continue to receive support during the Plan so that they can discharge their responsibilities efficiently.

Family Welfare Programme

12.3.1 High growth rate of the population continues to be one of the major problems facing the country. Although the 1991 Census recorded a marginal decline in the annual growth rate of population from 2.22% in 1971-81 to 2.11% in 1981-91 this would still mean an addition of 18 million people to the country's population annually.

12.3.2 The fast rate of population growth means that the economy has to grow faster to protect the already low level of per capita availability of food, clothing, housing, employment and social services.

12.3.3 The country is committed to social and economic justice to the millions of people living under conditions of poverty and deprivation. Failure to do so within a reasonable time-frame may generate social tensions and unrest. Besides this, the environmental degradation which is associated with unchecked growth of population carries the inherent risk of natural calamities and disasters.

12.3.4 In this context, population control assumes an overriding importance in the Eighth Plan.

Review of the Performance

12.4.1 The basic premises of the Family Welfare Programme till now have been -

i) Acceptance of the family welfare is voluntary.

ii) The Government's role is to create an environment for the people to adopt small family norm. This is done by spreading awareness, information and education by ensuring easy and convenient availability of family planning aids and services and by giving incentives for adopting family planning.

iii) The programme, which is a 100% Centrally Sponsored Scheme has integrated family planning and Mother and Child Health (MCH) services and is being implemented through countrywide network of primary health centres and supporting institutions.

12.4.2 In spite of massive efforts in the form of budgetary support and infrastructure development, the performance of family welfare programme has not been commensurate with the inputs. Right from the beginning the achievement of the set goals has been unsatisfactory, resulting in the resetting of targets, as indicated in Table 12.1.

Table 12.1

Year	Specified demo-graphic bjective (CBR)*	Year by which the goal was to be achieved	Actual achieve-ment
1962	25	1973	34.6
1966	25	as expeditiously	
1968	23	1978/79	33.3
1969	32	1974/75	34.5
Beginning of Plan	25	1979/81	33.8
1974	30	1979	33.7
Beginning of Plan	25	1984	33.8
April 1976	30	1978/79	33.3
I. Population (reduce the gap)	25	1983/84	33.7
April 1977	30	1978/79	33.3
II. Population Policy	25	1983/84	33.7
January 1978			
Central Coucil of Health	30	1982/83	33.8
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	

*CBR: Crude Birth Rate

Seventh Plan Performance

12.4.3 With the long-term objective of achieving the Net Reproduction Rate (NRR) of unity, the Seventh Plan had set the following demographic goals -

	Seventh Plan Target	Current Status
Couple Protection Rate (C.P.R.)	42.0%	44.1 (31.3.91)
Crude Birth Rate (BR)	29.1	29.9 (1990)*
Crude Death Rate (DR)	10.4	9.6 (1990)*
Infant Mortality Rate (IMR)	90	80 (1990)*

* Provisional (SRS Data)

While the Seventh Plan targets of achieving CPR of 42% was achieved, this was not matched by a commensurate decline in the birth rate, possibly because of improper selection of the cases.

12.4.4 The performance in terms of various methods of couple protection were not uniform. While the targets for Intra Uterine Device (IUD) were fully achieved and those for oral contraceptives and conventional contraceptives were exceeded, the targets for sterilisation operations fell short by about a quarter. The targets and performance of the Seventh Plan and the year-wise break up of performance are given in Tables 12.2 and 12.3.

12.4.5 State-wise analysis of performance of the programme reveals that Punjab, Kerala, Ma-

Table 12.2 Target and Performance of the Seventh Plan

(in million)

	Target	Achievement	%Achievement	Remarks
1..Sterilisation	31.00	23.70	76.50	There is a shortfall of 7.30 million sterilisations.
2.I.U.D.	21.25	21.28	100.14	Targets fully achieved.
3.CC & OP Users*	14.50	15.94	109.93	Achievement exceeds the targets

* Indicates terminal year targets and achievement.

Table 12.3 Yearwise Performance of the Seventh Plan

(Nos. in million)

	1985-86	1986-87	1987-88	1988-89	1989-90
Sterilisation	4.9	5.0	4.9	4.7	4.2
	(88)	(84)	(82)	(87)	(76)
IUD	3.3	3.9	4.4	4.8	4.9
	(101)	(105)	(103)	(97)	(93)
CC & OPUsers	10.7	11.6	13.4	14.3	15.9
	(103)	(100)	(104)	(94)	(99)

Note: The figures within brackets indicate percentage achievement.

harastra and Tamil Nadu have performed very well in achieving the targets while Assam, U.P., M.P., Bihar, Rajasthan and some North-Eastern States have performed poorly.

12.4.6 Under the Maternal and Child Health Programme, which is an integral part of family planning programme, targets for reducing Infant Mortality Rate to 90 per thousand live births and for reducing maternal mortality were fixed for the Seventh Plan. The Universal Immunisation Programme (UIP) launched in 1985 with the objective of providing universal coverage of immunisation to pregnant mothers and infants was a major initiative in this direction. Although all the districts in the country have been brought under UIP, the targets for immunisation could not be fully met due to problems of cold chain facilities, inadequate trained manpower, logistic problems, etc. Other programmes aimed at women and children viz., control of diarrhoeal diseases among the children, prophylaxis against anaemia and Vitamin A supplementation for prevention of nutritional blindness achieved varying degrees of success. Nevertheless these efforts were able to achieve a substatial reduction in IMR from 97 per thousand live births in 1985 to 80 in 1990.

Constraints

12.4.7 Containment of population growth is not merely a function of couple protection or contraception but is directly correlated with female literacy, age at marriage of the girls, status of women in the community, IMR, quality and outreach of health and family planning services and other socio-economic parameters. Table 12.4 illustrates this.

12.4.8 The Family Welfare Programme has essentially remained a uni-sector programme of the Ministry of Health and Family Welfare. It has yet to be recognised as a major national concern drawing priority attention and concommitant strong political, social and administrative commitment for the purpose of making it a significant part of our economic development strategy. A national consensus and strong public opinion in its favour, cutting across political, ethnic, religious and geographical boundaries is as yet lacking.

12.4.9 The family welfare programme has also suffered on account of centralised planning and target setting from the top. Regional variations and diversities have not been generally taken into consideration, with the result that similar set of approaches and policies and targets have been applied in States like UP, MP, Bihar and Rajasthan where the health infrastructure is weak and related social inputs are lacking and also for the States like Haryana and Andhra Pradesh where factors other than development of infrastructure contributed to poor performance. Monitoring mechanism under the programme has been reduced to a routine target reporting exercise incapable of identifying roadblocks and applying timely correctives.

12.4.10 Both pre-service and in-service training of programme personnel is poor because of lack of due emphasis at all levels on training pro-

Table 12.4 Selected Indicators

States	CBR (1990)	IMR (1990)	Female literacy rate (1991)	Female age at marriage(1981) in years	People below poverty line (1987-88)%
Bihar	32.9	75	23.1	16.5	40.8
Kerala	19.0	17	86.9	21.8	17.0
M.P.	36.9	111	28.4	16.5	36.7
Maharashtra	27.5	58	50.5	18.8	29.2
Rajasthan	33.1	83	20.8	16.1	24.4
Tamil Nadu	22.4	67	52.3	20.3	32.8
U.P.	35.7	98	26.0	17.8	35.1

grammes for family welfare. Absence of proper training, education and motivation of the programme personnel including supervisory staff has led to an ineffective, insensitive implementation of the programme.

12.4.11 The programme has remained a Government programme, the community's active involvement and participation being marginal. Due to inadequacy of Information, Education and Communication (IEC) activities the knowledge of the community about the contraceptives, their availability, safety, etc. are at a low level. Adoption of the small family norm and use of appropriate measures for birth control are matters of personal choice and decision. The IEC activities have to take this into account. However, till recently, the IEC activities have been directed more to national issues rather than personal issues. Undoubtedly, this incongruity of perception between the people and the providers of services has cost the programe dearly.

12.4.12 Family Planning Programme is being run as a 100% Centrally Sponsored Scheme. The entire outlay is included in the Plan with the result that a major portion (60-70%) of the outlay goes for meeting the expenditure of maintenance nature, leaving very little resources for further expansion, and strengthening of the programme or for any new initiatives. Further, the entire expenditure is borne by the Centre, although the implementing agency is the States Government.

12.4.13 Lot of incentives and awards have been built into the programme. The incentives and awards have not been unequivocally shown to be very effective in the promotion of small family norms. On the other hand , defects such as over-reporting, low quality acceptors and neglect of non-terminal methods of contraception and MCH activities have often been observed to creep into the programme. The element of disincentives is also missing from in programme.

12.4.14 The efforts for the containment of population growth have to be intensified simultaneously on several fronts. This calls for an integrated approach and concerted efforts through both the government and the non- government organisations, besides social and political commitment to make it a national movement.

Strategy for the Eighth Plan

12.5.1 Containing population growth has been accepted by the Government as one of the six most important objectives of the Eighth Plan, with the aim of reducing the birth rate from 29.9 per thousand in 1990 to 26 per thousand by 1997. The IMR will also be brought down from 80 per thousand live births in 1990 to 70 by 1997.

12.5.2 To give a major thrust in this priority area, which constitutes the pivotal point for the success of all developmental efforts, a National

Population Policy needs to be enunciated and adopted by the Parliament. Given the political commitment at all levels, it must generate a cascading effect to become a people's movement. Social determinants such as female literacy, age at marriage, employment opportunities for women, and their status in society are as important as achieving a reduction in infant mortality, improving health and nutrition of pre-school child and providing a comprehensive package of maternal health care services. Such an inter-sectoral interaction, supported by political commitment and a popular mass movement, will constitute the approach to strategic interventions during the plan period. A Committee of the National Development Council(NDC) on Population has been constituted in February, 1992 to consider these issues and based on its report, a concrete plan of action will be worked out.

12.5.3 Within the above mentioned broad guidelines, which have been enunciated in the Eighth Plan Directional Paper already accepted by the NDC the following strategies will be adopted for achieving the goals of family welfare during the Eighth Plan.

i) Convergence of services provided by various social services sectors, e.g., welfare, human resource development, nutrition, etc. Based on a holistic approach to social development and population control, integrated programmes for raising female literacy, female employment, status of women, nutrition and reduction of infant and maternal mortality will be evolved and implemented. The strategy will be (a) to pool the existing resources available for individual and fragmented schemes on these activities and provide additional resources required; (b) to restructure, redesign and integrate these under a common umbrella; and (c) to evolve proper mechanisms for planning, implementing and monitoring these programmes at various levels.

ii) Decentralised planning and implementation will be another strategy. Although there are likely to be commonalities of approach in the general contours of population policy, it is critical that the programme content relates to area-specific planning at the district, the sub-district and the panchayat level based on critical and indepth dissegregated analysis of a constellation of socio-biological indices and demographic determinants. Area specific strategies would mean flexibility of approach and fund utilisation. Targets, if any, will be determined, fixed and monitoried at the district level and the process will be from below upwards.

iii) As a natural corrolary to decentralised planning and implementation, Panchayati Raj institutions like Gram Panchayat and Zila Parishads, etc., will have to play significant role in planning, implementing and administering the programme. The role of the Centre will be limited to general policy planning and coordination, providing technological inputs where required, safeguarding critical areas and taking innovative leads.

iv) With greater involvement of the people in the population control and family planning programmes through the Panchayati Raj System as envisaged in the Constitution (Seventy-Second Amendment) Bill 1991, the programme will become one of "people's operation with government cooperation". The health planners and administrators must not only become sensitive and responsive to the felt needs of the people but must also adapt to the instrumentality of local self-government.

v) The younger couples, who are reproductively most active will be the focus of attention, with necessarily a greater emphasis on spacing methods, although the terminal methods would continue to remain the important means of birth control. Medical Termination of Pregnancy (MTP) will have to play an important role in the entire scheme of family planning in the Eighth Plan. The coming generation will have to be, therefore, prepared well to accept the small family as a social responsibility. Population education and family life education need to be made a part of general education in which school teachers' role, both as an educator as well as a role

model, becomes of paramount importance.

vi) The targetted reduction in the birth rate will be the basis of designing, implementing and monitoring the programme against the current method of couple protection rate. While broad guidelines may be prepared by the Centre, suitable parameters would be designed by the individual States for this purpose. Identification and registration of eligible couples, enforcement of civil registration scheme, registration of mothers and children for child survival and safe motherhood activities are areas requiring special monitoring.

vii) The outreach and quality of family welfare services will be improved. For this, the health services infrastructure will have to be made fully operational and efficient. This would involve -

(a) completion of infrastructural facilities initiated during the earlier plans like buildings for sub-centres, PHCs, CHCs, etc., and installation of necessary equipments;

(b) ensuring placement of adequate number of welltrained workers specially at the grassroot level;

(c) providing mobility to workers, specially the peripheral ones; and

(d) ensuring adequate drugs and other essential supplies at the Sub-centre and PHC by suitably increasing the funds for this purpose.

viii) The entire chain of CHC, PHC and Subcentres will be equipped to deliver general health and MCH services in an integrated manner with a strong referral suppport and linkage at the District level. For this, facilities for services for mothers and children including reservation of beds for them at different levels will be ensured. Setting up of Regional Maternal and Child Health Institutes will be part of the strengthening process of MCH infrastructure.

ix) Child survival and safe motherhood initiatives will be vigorously pursued. These initiatives will include (a) strengthening of Universal Immunisation Programme, (b) greater emphasis on Diarrhoea Control Programme and effective implementation of ORT programme, (c) Acute Respiratory Infections Control Programme, (d) Anaemia Management Programme and not just Anaemia prophylaxis, (e) Safe Motherhood Programme with high risk pregnancy approach and (f) intensified effort for training of birth attendants.

x) Any system is as good as the people who operate it. Therefore, major emphasis will be laid on health manpower planning along with a review of the education and training programmes of all categories of health care providers. Training will not only aim at providing requisite knowledge and skill, but also ensure development of such behavioural attributes that will be conducive to a closer interaction with the community. The methodology, the logistics and the content of training programme will be continuously reviewed. Special programmes would be chalked out for imparting preservice and inservice training in programme management and IEC activities. To meet the training needs, various training institutions will be strengthened or new ones established, by providing adequate funds, staff, equipments and mobility.

xi) The entire package of incentives and awards will be restructured to make it more purposeful. Individual cash incentives have not made any impact and hence will be phased out. The payment of compensation to the acceptors for the wages lost due to hospitalisation, etc., will be left to the discretion of the States, thus providing flexibility in approach to suit the local requirements. Community incentives in the form of priority consideration under IRDP programmes, e.g., opening of schools, provision of drinking water facilities, linkage by roads, etc., will be built up in the programme. The possibilities of introducing certain disincentives to the non-adoptors of family planning will also

be explored and introduced with due regard to the freedom and the fundamental rights of the people. The performance of the States in this vital sector of human and national concern will be recognised through additional resource allocation as a part of Central Plan assistance to those States which show better performance in terms of pre-determined demographic parameters.

xii) There is an urgent need to secure involvement and commitment of practitioners of all systems of medicine in the Population Control Programme. The practitioners of Indian System of Medicine and Homoeopathy, whose number is estimated to be more than half a million and who are the closest to the community both in terms of place of practice and the socio-cultural milieu of the community will be involved in the programme by -

a) providing well structured educational modules of instructions and training in population dynamics and family planning at the undergraduate level;

b) providing short-term re-orientation courses to the practising doctors;

c) providing incentives and recognition for exhibiting initiative and leadership in population control activities; and

d) promoting a sense of comraderie between these practitioners and the grassroot functionaries of the health and family welfare programme with a view to synergising and potentiating their mutual input. A similar approach is also needed to strengthen and secure deeper involvement of practitioners of modern system of medicine. Organisations such as Indian Medical Association (IMA) will be involved in a greater measure in this national task.

xiii) The role of voluntary organisation in a mass movement such as population control is critical for generation of momentum and accelerating the pace of progress. There is a need to incorporate family planning as a major objective of all voluntary organisations concerned with health and/or education-related activities. Substantially increassed amount of funds will be channelised through these agencies during the Eighth Plan. The establishment of an apex organisation to develop networking between all such voluntary organisations committed to the promotion of national efforts in this important area of human endeavour will be considered.

xiv) As an extrapolation of the concept of voluntary organisations, is the role and place of organised corporate sector which covers approximately 20 million workers and their families. Effective methods will be evolved to get the organised sector involved in the implementation of family welfare programme.

xv) Special efforts will be made to involve the community in the Family Planning Programme. The strategy will be to prepare the community to accept the responsibility, the ownership and the control of the programme fully in the long run. Panchayats, youth clubs, village committees, Nehru Yuvak Kendras, women organisations, etc., can play an important role in community motivation, organisation of camps and contraceptive distribution. Grassroot level functionaries, e.g., village dais, Village Health Guides (VHGs), Auxiliary Nurse Midwives (ANMs), Anganwadi workers, village extension workers, primary school teachers, Gram Panchayat staff etc.will play a facilitatory and supportive role to the community organisations for generating the necessary momentum for population control movement by the people. The village level local functionary will be the kingpin of these new initiatives.

xvi) The village/neighbourhood tea shops, pan shops, public distribution system shops, pharmacies, cooperatives, etc., will be utilised for community based contraceptive sale and distribution.

xvii) The social marketing programme, which was originally launched for Nirodh distri-

bution has demonstrated the significance and importance of involvement of the corporate sector to achieve the family planning objectives. This programme will be extended to the social marketing of oral pills as well as for market research and educational activities for which the Corporate Sector possesses special skill and sensitivity.

xviii) Information, Education and Communication, which are critical inputs will be further strengthened and expanded. The IEC activities of the health and the family welfare sector will be integrated. Greater use of the mass media will be made to disseminate the message of family planning to the remotest corner of the country. The entire system of pricing the media time vis-a-vis its social responsibility has to be given a fresh look, different from the commercial angle. Area specific IEC material will be developed and produced. At the viewers' level, efforts will be made to pool resources of various social sectors and to provide community TV/radio sets, besides maintaining them. The backbone of the IEC efforts will, however, remain the inter-personal communication for which the grass-root level female worker will have to be trained and effectively utilised.

xix) A new thrust in the research and development of methods aimed at regulation of fertility in the male, and of vaccines for fertility regulation, both in the male and female, will be given. Fertility regulation practices such as the use of special herbs by the community particularly in the tribal areas, will also be subjected to research. While intensification of bio-medical research is necessary, research in social and behavioural sciences to explore the human dimensions is vital. Health systems research to optimise operational framework, to improve the efficiency and effectiveness of the service provided and to evolve cost-effective interventions in various areas of family planning operation, will be given high priority.

xx) A continuous monitoring, review and evaluation is an essential component for the successful implementation of the programme. Development and strengthening of health management information system, with district and sub- district data bases of health and demographic parameters and linkages aimed at concurrent evaluation of family planning programme will be developed. This will provide critical inputs at the district and sub- district level and the much needed data for area-specific planning and time-bound implementation.

xxi) The family planning programme has a multi-sectoral dimension. For the purpose of effective intersectoral coordination and to provide the programme appropriate focus and priority, a proper institutional set-up with the backing of the highest political and administrative authority is an essential requirement. The recommendations of the Committee on Population, constituted by the NDC, will be implemented.

12.5.4 To sum up, the base and the basis of the population control programme during the Eighth Plan will be decentralised, area-specific micro-planning, within the general directional framework of a national policy aimed at generating a people's movement with the total and committed involvement of community leaders, irrespective of their denominational affiliations and, linking population control with the programmes of female literacy, women's employment, social security, access to health services and mother and child care.

Outlays

12.5.5 The total outlay for the Central Health Sector is Rs. 1800 crores. The outlays for the Central, States and Union Territories Plans under the Health Sector are shown in Annexures 12.4 and 12.5.

12.5.6 The outlays for the Family Welfare Programme are Rs.6500 crores. Details are given in Annexure 12.6.

Annexure 12.1

Progres of Establishment-Minimum Need Programme

Scheme	No. as on 1.4.85	7th Plan Target	7th Plan Achievement	No. as on 1.4.90	1990-91 Act Ach.	1991-92 Anti. Achievement	Likely No. as 1.4.92	8th Plan Target (1992-97)	1992-93 Target
1	2	3	4	5	6	7	8	9	10
1.Sub-Centres	84263	54612	46937	131200	515	5968	137683	17030	4066
2 P.H.Cs*	9134	12392	10115	19249	1315	1241	21805	4450	759
3 C.H.Cs	813	1523	1261	2074	162	313	2549	1269	259

* : Excluding Subsidiary Health Centres, Mini Health Centres etc.

Source : Working Group Discussions for Annual Plan 1992-93, Planning Commission.

Annexure 12.2

Construction of Buildings for Sub-centres, PHCs & CHCs

Sl. No.	Health Institution	Number Functioning	No. of Bldg. constructed / functioning in Govt. / Panchayat Bldg.	No. of Bldg. under construction	No. of Bldg. yet to be constructed	Col. 6 as percentage of Col. 3
1.	2	3	4	5	6	7
1.	Sub-centres	131385	52267	7906	71212	54.2
2.	Primary Health Centres	22328	12685	1371	8272	37.0
3.	Community Health Centres	1955	1206	271	478	24.5

Source : Bulletin on Rural Haelth Statistics in India - December 1991 issued by the Directorate General of Health Services , Ministry of Health and Family Welfare , New Delhi.

Annexure 12.3

Health Manpower Working in Rural Areas

Sl. No.	Category	Sanctioned Posts	Number in position	Vacant Posts	Col.5 as percentage of col.3
1	2	3	4	5	6
1.	Specialists in Rural Areas	3523	2481	1042	29.6
2.	Doctors at Primary Health Centres	25671	22078	3593	14.0
3.	Block Extension Educators	6068	5513	555	9.2
4.	Health Assistants (Male)	24850	23266	1584	6.4
5.	Health Assistants (Female) /LHVs	25726	22999*	2794	10.9
6.	Health Workers (Male)	88182	80701	7481	8.5
7.	Health Workers (Female)/ANMs	130941	119906	11035	8.4
8.	Pharmacists	19225	17702	1523	7.9
9.	Radiographers	667	518	149	22.3
10.	Lab. Technicians	10516	8744	1772	16.9

Source : Bulletin on Rural Health Statistics in India - December 1991 issued by the Directorate General of Health Services , Ministry of Health and Family Welfare , New Delhi.

* Includes 67 posts in position in J & K for which corresponding sanctioned posts are not indicated.

Annexure 12.4

Eighth Plan Outlay - Health Sector

(Rs. Crores)

Sl. No.	Programme	States/UTs	Centrally Sponsored Programmes	Central Schemes	Total
1	2	3	4	5	6
1.	Minimum Needs Programme/Rural Health	2250.38	-	1.00	2251.38
2.	Control of Communicable Diseases		1031.00	14.75	
3.	Hospitals and Dispensaries		-	94.00	
4.	Control/ Containment of Non-communicable Diseases		-	85.00	
5.	Medical Education and Training	3525.54	-	267.00	5324.54
6.	ICMR		-	124.50	
7.	Indian System of Medicine and Homoeopathy		5.00	83.00	
8.	E.S.I.		-	-	
9.	Other Programmes		20.00	74.75	
	Total	5775.92	1056.00	744.00	7575.92

Annexure-12.5

Eighth Plan Outlays-Health Sector-Distribution by States/Union Territories.

(Rs Crores)

Sl. No.	State/UT	Outlay	MNP
	States		
1.	Andhra Pradesh	183.32	53.60
2.	Arunachal Pradesh	28.02	12.50
3.	Assam	159.49	81.00
4.	Bihar	676.87	337.22
5.	Goa	59.00	12.22
6.	Gujarat	242.00	117.87
7.	Haryana	176.11	67.68
8.	Himachal Pradesh	121.00	48.00
9.	Jammu & Kashmir	179.90	75.00
10.	Karnataka	342.00	130.50
11.	Kerala	120.00	22.97
12.	Madhya Pradesh	300.87	150.00
13.	Maharashtra	553.26	281.00
14.	Manipur	21.00	10.15
15.	Meghalaya	33.73	18.00
16.	Mizoram	25.50	15.00
17.	Nagaland	50.00	6.40
18.	Orissa	223.23	78.00
19.	Punjab	254.75	80.00
20.	Rajasthan	390.95	150.00
21.	Sikkim	52.20	13.45
22.	Tamil Nadu	266.00	65.00
23.	Tripura	50.00	20.00
24.	Uttar Pradesh	517.57	260.00
25.	West Bengal	281.00	121.78
	Total : States	5307.77	2227.34
	Union Territories		
1.	Andaman & Nicobar Islands	22.51	9.45
2.	Chandigarh	66.82	0.75
3.	Dadra & Nagar Haveli	2.80	1.04
4.	Daman & Diu	2.40	1.00
5.	Delhi	350.00	-
6.	Lakshadweep	3.62	1.80
7.	Pondicherry	20.00	9.00
	Total :UTs	468.15	23.04
	Grand Total :States & UTs	5775.92	2250.38

Annexure 12.6

Eighth Plan Outlay - Family Welfare Sector

(Rs. Crores)

Sl. No.	Programme	Outlays
1.	Services and Supplies	3086.00
2.	Training	59.00
3.	Information, Education and Communication	127.00
4.	Reserach and Evaluation	89.00
5.	Maternirnity and Child Health	1982.00
6.	Organisation	71.00
7.	Village Health Guide Scheme	140.00
8.	Area Projects	400.00
9.	Other Schemes	46.00
10.	Provision for Settlement of arrears payable to States	500.00
	TOTAL	6500.00

CHAPTER 13

URBAN DEVELOPMENT

Introduction

13.1.1 Urbanisation is a natural consequence of economic changes that take place as a country develops. At the same time, urbanisation helps to contribute to the growth process at large. This is manifest in the increasing contribution of urban sector to national income. For instance, in 1950-51 the contribution of urban sector to India's GDP was estimated at only 29 per cent, which increased to 47 per cent in 1980-81 and is likely to rise to 60 per cent by the turn of the century.

13.1.2 The positive role of urbanisation is often over-shadowed by the evident deterioration in the physical environment and quality of life in the urban areas caused by widening gap between demand and supply of essential services and infrastructure. This results from increasing population pressure on urban centres, most of which are financially and organisationally ill-equipped to respond to infrastructural needs. Public investment in urban infrastructure has also been less than adequate. The challenge of reorienting the urbanisation process, thus, lies in overcoming the infrastructural deficiencies and taking the best advantage of economic momentum inherent in urbanisation.

Urban Scene

13.2.1 The urban population of India according to the Population Census 1991 was 217.18 million spread over 3768 urban agglomerations/towns. The urban population has been growing at a much higher rate than the total and the rural population and as a result, its proportion in the total population has increased from around 11 percent in 1901 to about 26 percent in 1991. Also, the rate of growth of population has steadily risen from decade to decade except during 1981-91 when it was lower than the earlier decade.

13.2.2 There are wide variations amongst regions/States in the level of urbanisation (Table-2). The Union Territories of Delhi (92.73%) and Chandigarh (93.63%) are the most urbanised in the country and the urban proportion is the lowest (8.47%) in Dadra & Nagar Haveli. Among the major States, Maharashtra is the most urbanised with 38.73 per cent of its population living in urban areas, followed by Gujarat (34.40%) and Tamil Nadu (34.20%).

13.2.3 Inter-state variation in the annual rate of growth of urban population and urban-rural growth differential (URGD) is more revealing. Except in Kerala, Gujarat and Maharashtra, the URGD is lower in all other States during 1981-91 than in 1971-81 (Table-2). Conspicuous deceleration of urban growth during 1981-91 was noticed in Bihar, Orissa, Karnataka and Uttar Pradesh.

13.2.4 The urban areas in the country, excluding Assam, Jammu & Kashmir, consist of 300 Class I urban agglomerations/cities, 345 Class II urban agglomerations/towns, 947 Class III urban agglomerations/towns, 1,167 Class IV urban agglomerations /towns, 740 Class V urban agglomerations/towns and 197 Class VI urban agglomerations/towns, making in all 3,696 urban agglomerations/towns (Table-3). The distribution of urban units among States and Union Territories is quite uneven. A comparison of decadal growth rate of urban population by size classes suggests significantly higher growth rate (46.9%) in class I towns compared to negative growth rate in class V and VI towns. However, if adjustment is made for re-classification of towns in different size classes in 1981 and 1991 censuses the difference in the decadal growth rate among the different size classes of towns is less marked.

13.2.5 The Class I urban agglomerations/cities accounted for 65.20 percent of the urban population of the country in 1991. A further breakup of the population of cities indicates that a majority (50.5%) of the population of Class I urban agglomerations/cities lives in 23 metropolitan urban agglomerations/cities with a population of more than a million each. These cities account for roughly one-third of country's urban population. Furthermore, in India there are four mega cities namely Bombay, Calcutta, Delhi and Madras, with a population of more than five

Table-1 Growth of population in India : 1901-1991

CensusYear	Population(Million)		Percent Variation		No. of Towns	% contribution of urban population	
	Total	Urban	Rural	Urban		Class I Towns	Class II & III
1	2	3	4	5	6	7	8
1901	238.40	25.85 (10.84)	-	-	1916	26.0	26.9
1911	252.09	25.94 (10.29)	6.40	0.33	1908	27.5	27.9
1921	251.32	28.09 (11.17)	-1.29	8.27	2048	29.7	26.4
1931	278.98	33.46 (11.99)	9.98	19.12	2220	31.2	28.5
1941	318.66	44.15 (13.85)	11.81	31.97	2427	38.2	27.8
1951	361.09	62.44 (17.29)	8.79	41.43	3060	44.6	25.8
1961	439.24	78.94 (17.97)	20.49	26.41	2700	51.4	28.2
1971	548.16	109.11 (19.90)	21.86	38.23	3126	57.2	26.9
1981	683.33	159.46 (23.34)	19.68	46.39	4029*	60.4	26.0
1991**	844.32	217.18 (25.72)	19.71	36.19	4689	65.2	24.2

* Includes 80 provisional towns of Assam.

** Provisional Population Census of India 1991, Paper-2.

Source: Census of India 1981 and Provisional Population census of India 1991.

Note: (1) Figures in brackets are percentages.

(2)Decrease in the total number of towns in 1961 compared to 1951 was due to the application of uniform and rigid definition of urban areas adopted for the 1961 Census.

million each in 1991. Almost one-fourth of the population living in Class I urban agglomeration/cities in the country lives in mega cities.

13.2.6 The population in Class I urban agglomerations/cities has continued to increase at a faster rate (46.87 per cent) during 1981-91 than other towns. Considering the common set of towns, the decadal growth rate is 34.5%.

13.2.7 Growth of employment (main workers) in urban India during 1981-91 is recorded at 38.0% as against 26.1% in the country as a whole. The population growth in urban areas (36.2%) is close to that of employment growth. As the growth rate of labour force during the same period is expected to be higher than that of total population growth in urban areas, unemployment/ underemployment rate might have

Table-2 Level of Urbanisation, Average Annual Exponential Growth, URGD, Rank in Major States of India.

State	Level Of Urbanisation	Average Annual Exponential Growth (urban)		Urban Rural Growth Differential		Rank	
	1991 %	1971-81	1981-91	1971-81	1981-91	1981	1991
India	25.72	3.83	3.09	2.05	1.29	-	-
Andhra Pradesh	26.84	3.96	3.55	2.39	1.88	7	7
Assam	11.08	3.27	3.27	1.27(est)	1.29	16	16
Bihar	13.17	4.37	2.65	2.49	0.62	14	15
Gujarat	34.40	3.47	2.90	1.46	1.51	3	2
Haryana	24.79	4.67	3.58	2.67	1.73	8	9
Himachal Pradesh	8.70	2.98	3.11	0.92	1.46	17	17
Jammu & Kashmir	23.83	N.A.	N.A.	N.A.	N.A.	9	10(est)
Karnataka	30.91	4.10	2.55	2.35	0.97	4	4
Kerala	26.44	3.19	4.76	1.73	4.44	12	8
Madhya Pradesh	23.21	4.45	3.71	2.69	1.71	11	11
Maharashtra	38.73	3.36	3.27	1.74	2.92	1	1
Orissa	13.43	5.22	3.08	3.76	1.49	15	14
Punjab	29.72	3.68	2.56	2.07	1.00	5	5
Rajasthan	22.88	4.62	3.31	2.19	1.07	10	12
Tamilnadu	34.20	2.47	1.76	1.25	0.56	2	3
Uttar Pradesh	19.89	4.74	3.29	2.94	1.27	13	13
West Bengal	27.39	2.76	2.54	0.91	0.47	6	6

gone up. With regard to the composition of main workers for which only four broad categories (cultivator, agricultural labour, household industry and other workers) are available, there is no perceptible change between 1981 and 1991 as can be seen from Table 4. However, percentage employed in Household industry has increased to 5.6% from 4.9% in 1981.

Plan Performance Review

Thrust of Urban Development Policy

13.3.1 The Seventh Plan asserted that planning of urban development should essentially be supportive of the economic development in the country. It urged making use of industrial location policy to subserve regional and urban planning and suggested that a concerted effort should be made to channelise private industrial investment in the vicinity of small and medium towns to check migration of population to the metropolises. The identification of regional urban systems was suggested on the basis of regional characteristics and needs and functions of each town in its regional context. More explicitly, the needs of the poor were to be taken into account in all physical planning exercises. The following were identified as the major constituents of a comprehensive plan for urban development:

(i) Planned and integrated development of small and medium towns and cities along with slowing down of growth of the big metropolises; (ii) Revitalisation of civic bodies;

Table-3 Increase/Decrease of Population in each size Class during 1981-91 - INDIA*

Size Class	No.of UA/Towns in1991	Population increase/ decrease during 1981-91			Contribution to India's total urban population	
		Decadal growth				
		Absolute	Percent			
			a	b	1981	1991
1	2	3	4	5	6	7
All Classes	3696	56,447,569	36.09	32.81	100.00	100.00
I	300	44,298,200	46.87	34.49	60.42	65.20
II	345	5,119,439	28.14	31.60	11.63	10.95
III	947	5,670,186	25.30	29.57	14.33	13.19
IV	1167	1,600,797	10.72	28.41	9.54	7.77
V	740	-70,982	-1.27	30.02	3.58	2.60
VI	197	-170,071	-21.70	NA	0.50	0.29

* Excludes Assam and Jammu & Kashmir

a For all towns as recorded in 1991 census

b For those towns which are common both in 1981 & 1991 census

Table - 4 Percent Distribution of Main Workers by broad categories in All India - Urban (excluding J&K, Assam)

Year	Total Main Workers	Worker Participation Rate of population)	Cultivator	Agricultural HH Labour	Industry	Others
	(in million)	(%)	(%)	(%)	(%)	(%)
1981	45.72	29.23	5.13	6.05	4.94	83.88
1991	63.08	29.63	4.99	6.66	5.57	82.78

(iii) Thorough reforms of municipal tax systems and municipal administration in general;

(iv) Concentration on the improvement of slums and the provision of basic municipal services;

(v) Working out measures for regular devolution of funds from State Governments; and

(vi) Establishment of the necessary institutional framework for channeling capital funds for the improvement of urban infrastructure.

Programmes in the Seventh Plan

13.3.2 The Plan emphasised the following major programmes:-

(a) Environmental Improvement of Urban Slums (EIUS) Scheme has been in operation in the State sector since 1974. The scheme benefitted about 10 million slum dwellers during the Seventh Plan and another 3.3 million during two Annual Plans (1990-91 and 1991-92).

(b) A Centrally Sponsored Scheme known as Urban Basic Services was introduced in 1986, with the primary objective of enhancing the survival and development of women and children of urban low income families.During 1990-91, the scheme was revised to bring about functional integration with EIUS and came to be known as Urban Basic Services for the Poor (UBSP) with 100% Central funding.

(c) Scheme for Integrated Development of Small & Medium Towns (IDSMT) to provide complementary infrastructural support of critical significance was continued. During the Seventh Plan period 145 additional towns were covered.

(d) Development of National Capital Region around Delhi was aimed at providing infrastructural support to priority towns and the region as a whole.

(e) In the State sector, provisions were made for infrastructure facilities, civic amenities, and development of State capital projects.

(f) The Nehru Rojgar Yojana was launched in October, 1989. It is targeted towards persons living below the poverty line in urban areas. It has three components viz. Micro-enterprises, Wage employment and Shelter Upgradation.

13.3.3 A significant source of funding in the urban development sector during Seventh Plan and the Annual Plans 1990- 91, 1991-92 was external assistance. Total utilisation of external aid in 1990-91 alone was approximately Rs.280 crores.

An overview of Plan Outlay

13.3.4 Tables 5 and 6 indicate the approved outlays for Urban Development during the Seventh Plan and the Annual Plans, 1990-91 and 1991-92 for States and the Central Sector. Major features of the Plan outlay are summarised below:-

a) In financial terms the Annual Plans 1990-91 and 1991-92 showed a marked increase over the average expenditure per annum during the Seventh Plan, primarily due to introduction of NRY in 1989. However, the Annual Plan outlay in the central sector showed a decline in 1991-92.

b) EIUS continued to be the most significant programme in the urban sector with Seventh Plan outlay of Rs. 269.5 crores and Annual Plan outlay of Rs. 65.3 crores and Rs. 63.4 crores in 1990-91 and 1991-92 respectively.

Emerging Issues

13.3.5 The review of urban policy framework in historical perspective indicates that until the Sixth Plan (1980-85), the urban policies mainly addressed problems like housing, slum clearance, slum improvement and upgradation, preparation of Master Plans, development of small and medium towns, strengthening of municipal civic administration etc. The Seventh Plan made a new beginning by explicitly recognising the problems of urban poor which were

Table - 5 Approved Outlays - Urban Development State - Sector

(Rs. in Lakhs)

Sl. No.	STATES	1985-90 Seventh Plan	1990-91	1991-92
1	Andhra Pradesh	9000	3757	3540
2	Arunachal Pradesh	50	20	30
3	Assam	1200	363	378
4	Bihar	1900	1580	1734
5	Goa	665	144	200
6	Gujarat	13105	2295	3196
7	Haryana	2000	272	452
8	Himachal Pradesh	925	435	480
9	Jammu & Kashmir	3907	6791	6820
10	Karnataka	3000	1429	1786
11	Kerala	2500	529	989
12	Madhya Pradesh	7760	2826	3944
13	Maharashtra	16000	3600	7500
14	Manipur	755	540	141
15	Meghalaya	500	260	600
16	Mizoram	550	300	459
17	Nagaland	800	360	283
18	Orissa	650	1650	1710
19	Punjab	4075	4472	6866
20	Rajasthan	2371	815	1358
21	Sikkim	150	90	100
22	Tamil Nadu	16000	4296	4916
23	Tripura	700	327	350
24	Uttar Pradesh	24700	8350	6810
25	West Bengal	23220	8079	9360
Total - (States)		136483	53580	64002
26	A & N Islands	300	123	155
27	Chandigarh	6113	1550	1970.61
28	D & N Haveli	7	2	6.6
29	Daman & Diu	-	35.2	15
30	Delhi	19770	10925	11000
31	Lakshadweep	0	25.1	3.5
32	Pondicherry	655	184	224
Total - (UTs)		26845	12844.3	13374.71
Total - (States & UTs)		163328	66424.3	77376.71

seen to be linked with creation of employment opportunities. It is now being recognised that urban policies can directly contribute to achieve the goals of poverty reduction and removal of unemployment and under- employment. During the last decade, the growth rate of employment in the urban areas averaged around 3.3% per annum, while the employment growth rate in the rural areas dropped to about 1.6 per cent for males.

13.3.6 Thus, urban areas have to be enabled to absorb larger increments to the labour force. Further, promotion of non-agricultural activities, upgradation of skills and infrastructure development of smaller towns will need added impetus.

13.3.7 The most glaring problem has been the high incidence of marginal employment and urban poverty. It is estimated on the basis of NSS 43rd round (1987-88 data) that 41.8 million people are below the poverty line. It is recognised that the incidence of marginal and low income employment is mostly in the informal sector, which accounts for large share of total employment in large cities. What is needed is upgradation of informal sector occupations and their integration with the urban economy at large.

13.3.8 The gap between demand and supply of infrastructural services has been continuously widening. Increasing pressure of population, particularly concentration of urban population in large cities and metros and escalating per capita cost of providing urban services account for deterioration of infrastructure services and amenities. The worst sufferers are the poor, whose access to the basic services like drinking water, sanitation,education and basic health services is shrinking.

13.3.9 Unabated growth of urban population has made the problems of urban housing more severe. The accumulated backlog in the urban housing along with the housing needs for the additions to the urban population has aggravated the problem further, resulting in proliferation of slums and squatter settlements and decay of city environment.

13.3.10 Fast growth of urban population, spread of urban areas and spurt in secondary and terti-

Table - 6 Approved outlays on urban development: Central Sector

(Rs. in lakhs)

Sl. No.	Name of Scheme	Seventh Plan 1985-90	1990-91	1991-92
1	2	3	4	5
	URBAN DEVELOPMENT			
1.	I.D.S.M.T.	8800	2500	1500
2.	Equity Support to HUDCO (Infrastructure)	3500	200	450
3.	Contribution to NCR Planning Board	3500	1000	1400
4.	Research & Training in Urban & Regional Planning	200	-	40
5.	Development of Displaced Persons Colonies	150	32	10
6.	Urban Basic Services	500	2500	2300
7.	Urban Transport Consortium Fund	-	200	500
8.	Nehru Rozgar Yojana *	-	12000	11300
9.	Scheme for Educated Employment Generation in Urban Localities	-	-	200
10.	Grants to urban local Bodies through HUDCO/UD& UWS Financing Corporation	-	-	200
11.	Removal & Collection of cattle in Calcutta	150	-	-
	Total	16800	18432	17900

* Nehru Rozgar Yojana was started in 1989-90 and funds released in 1990-91.

ary activities have led to urban transport problems like severe traffic congestions, slowing down of vehicular movement, high air and noise pollution, longer journey hours, increasing costs of travel etc. Urban transport is an important service sector and plays a crucial role in the development of the urban economy and the time has come to take stock of the urban transport scenario.

13.3.11 In the context of the growing demand for urban services, the rationalisation and the augmentation of revenue system have not made commensurate progress resulting in increasing dependence of urban local bodies (ULB) on the financial assistance from the States and Central Government. Own revenues of the local bodies are not adequate even to meet operation and maintenance expenditure. In the case of smaller ULB's, the weak financial position is also combined with lack of organisational and technical capabilities.

13.3.12 The weak financial and organisational base of ULB's has, in turn, led to highly subsidised and inequitable supply of various urban services with critical dependence on State grants.

13.3.13 Much of the ills of urban housing and resource mobilisation in larger urban areas can be perhaps attributed to the problems inherent in the urban land market. While urban development programmes have to depend largely on a well coordinated land development programme, the existing legal and administrative machinery has impeded supply and development of serviced land. Also, very little efforts have been made to mop up the large appreciation in values of real estate particularly in metropolitan cities.

13.3.14 The role of ULBs has weakened progressively over the last two or three decades. In recent years, some of the functions per-

formed earlier by the ULBs have been transferred to State level bodies, including Urban Development Authority and Functional Bodies. This process needs to be reversed so as to foster stronger and more responsive local governments, reflecting local initiatives, perceptions and priorities.

13.3.15 A corollary to the above process is exploration of avenues through which private initiatives can find a greater role in urban development programme. The role of private sector needs to be expanded. The extent and the manner in which private developers can contribute to urban renewal and squatter settlements and peripheral areas in metropolitan regions (including residential and trunk infrastructure development) needs assessment.

13.3.16 Attention needs to be focussed not only on the growing challenges of urbanisation but on the relationship between urban and rural development. The rapid transformation in the country's urban scenario must be taken into account and provided for, in order that urban growth becomes compatible with healthy socio-economic development of the nation. It will be necessary to take note of the prevailing dichotomy in rural and urban development and evolve a mechanism for bringing about rural-urban cohesion in the management of growth. This can be achieved through the process of spatial planning, which is an integrating concept that makes it possible to achieve the composite development of human settlements while stimulating economic growth. Spatial development plans would need to be prepared keeping in view the "growth centre" concept. This will provide a framework for identification of "nuclei of development " and lower order centres" where investments could be attracted, depending upon their infrastructure level and growth potential.

The Perspective

13.3.17 Population projections made by the Expert Committee, indicate doubling of India's urban population in two decades i.e. 1981-2001. Growth rate of labour force in urban areas is expected to be even higher. However, the 1991 census recorded significantly lower urban population than that projected. Yet, it may not be prudent to be guided by this transitory trend. Population projections, have been made on the basis of a longer term trend of annual growth of urban population with base year population corrected on the basis of 1991 census. Estimates worked out are presented in Table-7. The overall level of urbanisation by the turn of the century is likely to be less than that projected earlier, but absolute addition will still be quite large (148 million during two decades). Moreover, a higher share of population in "million plus" cities imply proportionately higher burden of demand for urban services and also higher per capita cost in real terms.

TABLE-7 Urban population projection - 1991-2001

	Total Urban Population (in million)		% Urban population		% share of million plus cities to Urban population
	Committee of Experts	Now Projected			
	(A)	(B)	(A)	(B)	
1991	235	217	27.5	25.7	32.5(23)
1997	-	267	-	28.3	-
2001	332	307	33.0	30.5	35.8(40)

Figures in the bracket indicate Number of million plus cities.

Thrust areas in the Eighth Five Year Plan

13.4.1 In the light of experiences gained during the Seventh Plan and the two Annual Plans and also taking into consideration the emerging issues and perspective as indicated above and as elaborated in the Report of National Commission on Urbanisation (1988), the thrust areas for the Eighth Plan will consist mainly of more effective implementation of the strategies adopted during the Seventh Plan and partly in formulation of new strategies. The overall Seventh Plan strategy of urbanisation being supportive of economic development with appropriate location of industry and other employment generating activities will be continued. The programmes for the urban poor and for the small and medium towns will have the same focus, but the content and manner of implementation of these programmes will be made more comprehensive and compatible with the overall strategy at the State level. Resource mobilisation and programmes aimed at strengthening of institutions will be given a concrete shape. The distinctive features of the Plan are as follows:-

i) Spatial and economic dimension of planning for the urban sector needs to be consolidated and operationalised.

ii) Convergence of all related programmes to create the desired impact in small and medium towns beyond the threshold level is necessary.

iii) The key to success of urban development strategy lies in taking measures-legal, financial and organisational -- for enhanced and equitable supply of urban land.

iv) Private and public sectors have to act in tandem for urban infrastructure and housing. Innovations in funding pattern and role of private developers in specific areas need to be explored.

v) In view of the deteriorating environmental conditions caused by both natural and man-made factors, the conventional city plans should be modified to incorporate the measures needed for restoration of healthy environment.

vi) Programmes to deal with the problem of urban poverty should be developed in integrated manner emphasising both employment generation and access to basic services involving community level organisations.

13.4.2 Specific thrust areas of Eighth Five Year Plan

(a) Macro strategy for urban development with explicit recognition of rural-urban linkages has to be evolved. In particular, the benefits of accelerated pace of agricultural development should be taken advantage of through appropriate utilisation of backward and forward linkages. This, together with appropriate location policy for development of industry and other major employment generating non-agricultural activities, can provide an effective avenue for absorption of surplus rural labour force.

(b) As a corollary to the above macro level strategy, an integrated plan of hierarchy of rural and urban settlements needs to be evolved. This will imply introducing explicity spatial dimension.

(c) Particular emphasis will be placed on the development of small and medium (S&M) towns which serve as an important link between the village and the large cities. In order to realise the objective of more balanced distribution of urban growth both in terms of its distribution over space and also by size class of urban areas, the small and medium towns have to act as important centres of attraction, in terms of economic opportunities, to the potential migrants not only from villages but also from urban areas to large cities. To operationalise this planning approach, the integration of this strategy for development of small and medium towns in a spatial context with the existing district planning process may be attempted. The concept of GEMS as identified by the National Commission on Urbanisation will be kept in view for this purpose.

(d) The programme implementation approach has accordingly to undergo a change from

the present practice of implementing urban development programme in an ad-hoc and isolated manner. Not only the physical infrastructure but also the economic infrastructure should form part of urban development programme.The policy of locating industries in rural areas only at a short distance away from the metropolitan or large cities is only symbolic of dispersal policy. Instead, it will be worthwhile to promote industries in small and medium urban centres having the desired impact on decentralisation of urban growth. It would also be necessary to plan for more efficient land use and economic regeneration of old city areas in the metro region keeping in view the new Industrial Location Policy which aims at more flexible approach to location of industries in the metro region. Similarly, the programmes of the Ministries of Agriculture, Rural Development and Telecommunication need to be oriented to small towns which primarily serve as Rural Service Centres.

(e) In order to achieve better co-ordination of various related programmes within the Ministry of Urban Development, the programme of IDSMT, housing and infrastructural development programmes of HUDCO, and also employment generation scheme under NRY can be suitably integrated. Identification of towns and cities should be made on a selective and priority basis and the investment plan properly coordinated and placed above the threshold level to have the desired impact. Prioritization should be done in the first instance, with regard to primary economic functions (eg. rural growth centres, service towns, tourist towns, industrial towns, etc.) and later integrated with service level deficiency in the urban areas.

(f) Increasing reliance on institutional finance which needs to be dovetailed to an overall plan of infrastructure support in the urban areas is necessary.

(g) With regard to the problem of urban poverty and unemployment, the NRY can be made more effective by identification of potential and more appropriate activities, and by suitable organisation at the district/local level and people's participation.

(h) With regard to the access of the urban poor to basic services like water supply, sanitation, health and education, a combined package of UBSP and EIUS may provide effective means of overcoming the problems.

(i) Resource mobilisation measures of the metropolitan Governments, including rationalisation of existing tax and non-tax resources, and the need for devolution of funds from the State to the Local Governent need an urgent plan of action .

(j) Legal bottlenecks (for example, Urban Land Ceiling and Regulation, Transfer of Property, Land Acquisition and Rent Control Acts) need to be removed. This aspect has been examined in detail by the National Commission on Urbanisation and also incorporated in the draft National Housing Policy. A time bound action to effect necessary amendments to these Acts is now called for. Rationalisation of regulatory framework is also necessary as a complementary measure.

(k) A decentralised framework of urban Government with necessary participation of local communities and opinion leaders in planning, implementation and monitoring of urban development programmes is another prerequisite for the success of urban development strategy. In addition to the enactment of the Nagar Palika Bill, which is a necessary but not a sufficient condition for efficient urban development, other normal management improvement schemes, including national and local level training programmes and delegation of administrative functions and responsibilities, will help the process. In case of large city government, shift from one centralised authority to a system of smaller area-based committees may be more effective in delivery of urban services.

(l) In view of the large size and the complexity of urban development programmes, insti-

tutional support and delivery systems at town and area level (for large cities) need to be developed in the immediate future.

(m) It is necessary to examine the feasibility of developing appropriate specialised organisations at the Centre and State level to deal with financing and development of urban infrastructure.

Eighth Plan Programmes

13.5.1 Given the above thrust areas of the Eighth Plan, the Plan programmes, covering both the State and the Central sectors have been worked out in detail. While most of the programmes are extension of those of the Seventh Plan and 1990-91/91-92 Annual plans, the content, physical coverage and funding pattern have been revised in most cases in accordance with the thrust areas of Eighth Plan. The major/priority programmes are discussed in detail in the subsequent sections:

Integrated Development of Small and Medium Towns

13.5.2 The Integrated Development of Small and Medium Towns (IDSMT) scheme was initiated by the government in 1979-80 with a view to reducing the migration of population from rural areas to large cities, generating employment by creating resource generating ventures in the small and medium towns and providing sufficient infrastructure facilities in these towns. The scheme provided for Central assistance on matching (50:50) basis with a ceiling of Rs.40.00 lakhs, which assumed the form of a loan repayable in 25 years. Until March 31, 1991, a total of 457 towns had been covered under the scheme for which the loan assistance released was Rs.162.73 crores.

13.5.3 The scheme has broadly served its objective but it has not had the desired impact on the hinterland. Delays in land acquisition and development and inadequate counterpart funding by the States/UTs have been identified as major bottlenecks in the scheme.

13.5.4 Therefore, the Eighth Five Year Plan envisages a fresh approach to the development of the towns, dovetailing the activities under the employment generation programmes into the supportive infrastructure development programme with a view to:-

i) generating employment opportunities to reduce the rural-urban and urban-urban migration;

ii) developing growth centres for the betterment of rural hinterland adopting a regional approach;

iii) providing infrastructural facilities to support such employment generation activities; and

iv) evolving resource generating schemes for local bodies for meeting the expinditure on operation and maintenance of the infrastructural facilities so created. The IDSMT scheme is intended to cover objectives (ii), (iii) & (iv) and objective (i) forms part of larger framework of employment generation.

13.5.5 To overcome the financial constraints inherent in the original IDSMT, the reformulated approach envisages that the scheme should not depend solely on budgetary finance but should seek support from institutional finance. The budgetary provisions should be used mainly for the provision of seed capital to the State Corporation/local bodies for generation of funds and for critical infrastructure which does not have any direct return.

13.5.6 The coverage of the scheme will be in towns with population between 20,000 to 3 lakhs as follows:

Population	Categories
20,000 - 50,000	A
50,000 - 1,00,000	B
1,00,000 - 3,00,000	C
Less than 20,000	X

The guidelines for the scheme indicate the criteria and the order of priorities for selection of towns. The actual selection of the towns is, however, being left to the State Governments.

13.5.7 The scheme will make the towns with a population of 20,000 to 50,000 the prime target, while the inclusion of towns in 50,000 to 3,00,000 category and less than 20,000 category will be on a selective basis.

13.5.8 The schemes eligible for central assistance will depend on the category as well as special characteristics of the town. Central assistance will be available in general for the following activities:

i) Strengthening of link road facilities;

ii) Provision of bus terminals;

iii) Development of market yards;

iv) Industrial sheds;

v) Water supply;

vi) Construction/upgradation of road and side drains;

vii) Development of Shopping Centres;

viii) Provision of tourist facilities; and

ix) Localised drainage works.

13.5.9 Land acquisition and development have been a bottleneck. The modified scheme seeks to tackle this problem by excluding payment of land acquisition cost from the Central share and by stipulating that land for the scheme is to be made available within a year of approval. Access to institutional funds need not be limited to local bodies and urban development authorities. Moreover, the borrowers are expected to adopt a basket type approach so that the expenses incurred on the non-remunerative side and for the weaker sections are made up through adequate returns from the remunerative components. The projects under the scheme will have to be comprehensive covering all facets of development including social services and amenities, and be based on the long term Master Plan/Development Plan of the town within its district or regional context.

Financing Pattern

13.5.10 A summary of the financing pattern is presented in the following table:

(Rs.in lakhs)

Category	Maximum Project Cost Permissible	Central Assistance (loans)	State share	HUDCO loan/ other sources
A	200	72	48	80
B	500	120	80	300
C	1000	180	120	700
X	100	36	24	40

The HUDCO will examine the project reports submitted by the State/UTs and will assist by way of lending for the identified components. The scheme will be monitored by the Town and Country Planning Organisation. The assistance for the towns which have already been selected under the erstwhile IDSMT will be continued during the Eighth Plan.

The proposed coverage of additional towns during Eighth Plan under modified IDSMT is about 200.

Environmental Improvement of Urban Slums

13.5.11 The scheme was made an integral part of the Minimum Needs Programme in 1974 and transferred to the State Sector. The scheme is applicable to notified slums in all urban areas and aims at provision of basic amenities like water supply, services, storm water drains, community baths and latrines, widening and paving of existing lanes and pathways and street lighting. During the Seventh Plan, the scheme provided for a per capita expenditure of Rs.300/- Against the target of 76.91 lakh slum dwellers, 99.78 lakhs slum dwellers were covered during the Seventh Plan. During 1990-91, the targeted number of beneficiaries was 15.40 lakhs, against which the achievement was 19.35 lakhs. The per capita expenditure was enhanced to Rs.525/- from 1991-92. During the Eighth Plan, the scope of the EIUS is being widened to ensure that the EIUS, the Urban Basic Services Programme, the NRY and the Scheme of Liberation of Scavengers form a coordinated whole. Assurance of providing tenurial rights and evolving feasible cost recovery mechanism are important

pre-conditions for the success of the programme in a longer term context.

Urban Basic Services for the Poor

13.5.12 The Urban Basic Services Scheme(UBSS) was initiated on a pilot basis in 1986, with the involvement of UNICEF and the State Governments. The Programme aimed at child survival and development; provision of learning opportunities for women and children and community organisation for slum population. The services, meant to be delivered, included environmental sanitation, primary health care, pre-school learning, vocational training and convergence of other social services at the slum level.

13.5.13 The Urban Basic Services for the Poor (UBSP) is a revised scheme based on the experience of UBSS. The revised scheme includes assistance to mentally retarded and handicapped children, rehabilitation of alchoholics and drug addicts, and special programmes for street children. It also enables formation of registered societies/cooperatives of slum dwellers at the community level. The scheme is to operate on the principle of convergence of programmes aimed at the urban poor and limited to those slums covered by EIUS. The Central Government will give Rs.175/- per capita for provision of social services in the first year of a new project. In addition, the State Government will provide Rs.525/- per capita for physical amenities. From the second year onwards the per capita provision will be limited to the recurring component of Rs. 88/- per capita. This will be shared on matching basis between the Centre and the State. The scheme will also include provisions for strengthening of Urban Local Bodies, NGOS, some physical works, and creation of an organisation for monitoring and evaluation and organisation of marketing assistance.

Nehru Rozgar Yojana

13.5.14 The Nehru Rozgar Yojana was launched in October, 1989. It is targetted towards persons living below the poverty line in urban areas (i.e. households with an annual household income of Rs.11,850/- at 1991-92 prices). Within the target group of the urban poor the Scheduled Castes and the Scheduled Tribes will have special coverage through earmarking of funds for these sections. The NRY consists of the following three schemes:

i) The Scheme of Urban-Micro Enterprises (SUME)

The SUME is designed to encourage unemployed and under-employed youth to take-up self-employment ventures in all urban settlements. The scheme envisages that 30% of beneficiaries should be women. The scheme has loan-cum- subsidy component and the training and infrastructure component. Under the loan and subsidy component, 25% of the project cost is given as a subsidy, subject to a ceiling of Rs.5,000/- for SCs/STs and women and Rs.4,000/- for others. It is now proposed that loans upto Rs.30,000/- per unit may be given by banks. The training component is aimed at upgradation of technical and commercial skills of the beneficiaries. Infrastructural support in relation to common facility centres, job centres, design centres technology upgradation, marketing etc., is provided. Upto 30% of the funds earmarked for training and infrastructure support can be used for this purpose.

ii) The Scheme of Urban Wage Employment (SUWE)

This scheme is designed to provide employment to the urban poor through the creation of socially and economically useful assets in the low income neighbourhoods in towns with a population below one lakh. Works like community centres, common worksheds, common selling places for the poor, paving of lanes, low cost water supply, construction of drains and sewers, pay and use community baths cum latrines and childrens ponds could be included in the scheme. The material labour ratio is 60:40. While the unskilled labourers are to be paid statutory minimum wages, the skilled labourers would receive market wages. The beneficiaries of the scheme would be the urban poor. The works under the scheme have to be departmentally executed.

iii) The Scheme of Housing and Shelter Upgradation (SHASU)

The scheme aims at providing employment for persons involved in housing and building activities. The scheme has two components viz. training and subsidy cum-loan assistance. The training component is meant for skill upgradation of masons, carpenters, plumbers, sanitary workers, electricians and others engaged in construction trades as well as infrastructure support for common facilities to beneficiaries and ma-

chinery equipment to training institutions. The scheme is operative in urban settlements having a population between 1 lakh and 20 lakhs with relaxation in the population criteria for hilly states, UTs and new industrial townships. HUDCO is monitoring this component of NRY and also provides the requisite institutional finance.

Sharing of Expenditure and Operation

13.5.15 The training component of SUME and SHASU has been entirely provided for by the Central Government. The remaining expenditure under SUME and SHASU has been shared on 50:50 basis respectively between the Central Government and the State Governments. The SUWE expenditure has been shared on 80:20 basis between the Central Government and the State Governments. During Eighth Plan period, the expenditure under all the three schemes is proposed to be shared between the Central Government and the State Government uniformly on 60:40 basis. At the State level, a State Urban Development Agency will monitor the NRY. At the district level, the District Urban Development Agencies will be entrusted with the implementation of the scheme, while at the town level it will be entrusted to the Urban Local Bodies. The community structures created under Urban Basic Services for the poor will be mobilised for the NRY, as it will be implemented in convergence with other schemes.

Scheme for Educated Unemployed of Employment Generation in Urban Localities (SEEGUL)

13.5.16 This scheme (which is under review) in towns with a population above one lakh seeks to provide self employment opportunities for the educated unemployed. The scheme aims at providing training to beneficiaries for the enchancement of their technical skills. The scheme is targetted at all the unemployed persons who are matriculates, ITI diploma holders or have attended a Government sponsored technical training course of at least six months duration and whose family income does not exceed a specified level.

National Capital Region Planning Board (NCRPB)

13.5.17 The Regional Plan - 2001 for the National Capital Region approved by the National Capital Region Planning Board (NCRPB) has the following objectives:

i) reducing pressure of population in Delhi; and

ii) achieving a balanced and harmonious development of the National Capital Region.

13.5.18 The specific aims of the NCR Plan are:- (i) containing the growth of Delhi UT within a manageable population size of 112 lakhs by 2001 AD, (ii) moderate growth of Delhi Metropolitan Area (DMA), excluding Delhi UT, to accommodate a total population of 38 lakhs by 2001 AD, and (iii) induced growth of the rest of the region to hold 49 lakhs of urban population in towns/complexes identified for priority development i.e. 19 lakhs additional population in priority towns between 1990 and 2001 AD.

13.5.19 The main thrust areas during the Eighth Plan are as follows:-

i) Large scale employment generation in priority towns by making available developed land;

ii) Development of Regional infrastructure: Transport, and Telecommunications;

iii) Development of local infrastructure in priority and DMA towns; and

iv) Development of State highways and transmission and distribution system for power in the State grid.

13.5.20 The NCR Plan envisages that the State Governments will play a role in operationalising the programmes, conceiving appropriate schemes/projects, financing and implementing the programmes. The Central Government is expected to play a lead role in the implementation of the development programmes. A conducive financial and legal climate will be created to enlist the participation of the private sector. The HUDCO and other financial institutions are also expected to finance the infrastructure development programmes in the NCR sub-regions.

13.5.21 The activities proposed to be taken up during the Eighth Plan are as follows:

i) Land Acquisition and Development for residential use and economic activities;

ii) Development of Sub-Regional Centres;

iii) Development of Counter Magnet Areas;

iv) Institutional strengthening for Plan Implementation;

v) Upgradation of regional roads;

vi) Development of Power Transmission & Distribution; and

vii) Augmentation and Rehabilitation of Urban Infrastructure in DMA and Priority Towns.

13.5.22 The NCRPB is to be provided outlays, through the budget of Ministry of Urban Development, for extending loan assistance to States/Implementating Agencies. The States/Implementating Agencies will have to provide funds on a matching basis for land acquisition and development, development of regional centres and development of counter magnet areas while financial institutions such as HUDCO will be involved in local infrastructure schemes. In addition, schemes relating to National Highways, Expressways,

Railways, Telecommunications and Power are proposed for which funds may be provided by the Central Ministries.

Urban Mapping and Research and Training

13.5.23 There is presently no agency to compile and maintain the requisite data and maps for preparation of developmental plans of towns. In order to fill this gap, a three tier Urban and Regional Information System is proposed to be created at the national, the state and the local levels. Preparation of large scale base maps with the help of aerial photographs for about 50 fast growing towns is proposed. These maps may also be used for assessment and monitoring of property values in large cities.

13.5.24 Spatial Planning Approach, to achieve maximum coordination between the sectoral and spatial plans as well as total investment plan for the region is to be adopted during the Eighth Plan. This will require preparation of regional plans by States, in which endeavour the Central Government will extend necessary technical assistance for carrying out pilot studies in representative regions/districts and for drawing up an Implementation Plan linked with various programmes.

13.5.25 The planning units will also be strengthened to carry out this task of preparation of an Urban Development Strategy Paper for the State which will outline the developmental priorities of each town based on the economic function and role of the town within its district/regional context.

13.5.26 It is expected that during first three years of the Eighth Plan, exercises under the above two paras will provide the base for orienting future programmes of urban development sector to a long-term development plan of each priority town/city in a regional centre.

Urban Transport

13.5.27 The transport problems of urban areas, and specially those of the metropolises, have not received due attention in the past. Meanwhile, the traffic has cotinued to multiply with the result that the urban transport infrastructure in almost all large cities is on the verge of a breakdown. In the absence of reliable public transport, people are compelled to resort to private vehicles, which has aggravated congestion, pollution and energy intensity. There is no single agency to plan, coordinate or execute transport policies and programmes in urban areas.

13.5.28 It is in this context that the subject of planning and coordination of Urban Transport was entrusted to the Ministry of Urban Development in 1986 and in 1988-89 an Urban Transport Consortium Fund was created, which has since been employed to assist State Governments in taking up feasibility studies for Urban Transportation Systems. This appears to be a modest achievement because the objective of this was to involve the concerned Ministries of the Government of India, State Governments, financial institutions and local bodies in planning, coordination and execution of urban transport projects.

13.5.29 The Eighth Plan will continue the Consortium Approach initiated earlier. It may be

worthwhile to consider the creation of a financial institution for funding urban transport projects on soft terms as also to explore involvement of private/joint sector agencies in the development of transport systems. The research and development priorities during the Eighth Plan include - development of Urban Bus and introduction of energy efficient transit systems. The participation of the Ministry of Railways in developing mass rapid transport system in mega cities appears to be crucial. A comprehensive study of urban transport is also long overdue and is proposed to be undertaken during the Eighth Plan.

Eighth Plan Outlay

13.6.1 The outlays on urban development sector during the Eighth Plan reflect the reorientation of urban development strategy and thrust areas. Thus, the IDSMT for which actual expenditure during the Seventh Plan (1985-90) was Rs.80.03 crores, is being enhanced to Rs. 145 crores as central assistance in its modified form. This will be supplemented by larger loan assistance from HUDCO. A complimentary programme in the water supply sector for towns below 20,000 is also envisaged with Central assistance of Rs. 50 crores. For the scheme of UBSP, an amount of Rs. 100 crores has been earmarked. The outlay on NCRPB will be Rs. 200 crores as compared to Rs. 35 crores during the Seventh Plan. This Central assistance has to be matched by contribution from the State Governments in accordance with the investment plan prepared by the NCRPB. The outaly on urban development in the State sector is also being raised from Rs. 1633 crores in the Seventh Plan to Rs. 3984.88 crores during the Eighth Plan. Similarly, for the Central sector, the budgetary support is being raised from Rs. 168 crores in the Seventh Plan to Rs. 692.10 crores during the Eighth Plan.

13.6.2 The States and Central sector outlays on Urban Development are presented in the following Table:

Table - 8 Outlays on Urban Development for the Eighth Five Year Plan

(Rs.in crores)

S. No.	Description	Eighth Plan Total Outlay (1992-97) Budgetary Support	IEBR	Total
1.	States and UTs			3984.88
2.	Central Government			
	2.1 Integrated Development of Small and Medium Towns	145.00		
	2.2 Nehru Rozgar Yojna	227.00		
	2.3 Urban Basic Services for the Poor	100.00		
	2.4 Contribution to NCR Planning Board	200.00		
	2.5 Central Urban Infrastructure Support Scheme	10.00		
	2.6 Urban Transport Consortium Fund	4.60		
	2.7 Research in Urban and Regional Planning and Urban Mapping	5.50		
3.	Total (Central Sector)	692.10	600*	1292.10
4.	Grand Total (Centre, States and UTs)			5276.98

*Out of total IEBR of Rs. 1685 crores for Housing, Urban Development, Water Supply and Sanitation about Rs. 600 crores can be notionally allocated to Urban Development including Water Supply Schemes for small towns below 20,000.

CHAPTER 14

HOUSING, WATER SUPPLY AND SANITATION

Housing

Introduction

14.1.1 The dimensions and problems of housing need to be viewed in the overall environment of human settlement. The physical dwelling unit is not the sole element of housing; equally important is the provision of basic services like potable water, sanitation, drainage and electricity. Further, the type and location of housing is inextricably linked to the employment and affordability of the occupant.

14.1.2 Housing has been primarily self-help activity for the majority of the households. Increasing population pressure on land and infrastructure and associated high cost have made proper housing inaccessible to the poorer segments of the population, necessitating State intervention initially as a welfare activity and now recognised as a social and economic imperative. In a developing country like India, problems of urban housing have been more evident, both because of exponentially increasing land and construction cost and deteriorating quality of life in congested urban pockets. Sheer number of additional housing required to meet the needs of the growing urban population presents a formidable task. If we add to this the unserviceable housing stock in rural areas the task assumes frightening proportions. However, the facts that housing is one of the major employment generators and that motivation for ownership of housing is an important element in the mobilisation of domestic savings, make the task worth our endeavour. Housing is not to be treated as a marginal or welfare sector which is a drain on productive resources but to be recognised as a major economic sector.

14.1.3 In this context, the housing policies and programmes, while accepting that housing is essentially a private activity, have to recognise that State intervention is necessary to meet housing requirements of a majority of vulnerable sections as well as to create an enabling environment for accomplishing the goal of "Shelter for All" on a self-sustaining basis.

Housing Scene

14.2,1 Housing stock in urban areas was estimated at 14.1 million in 1961. This increased to 18.5 million in 1971 and further to 28.0 million by 1981. In the rural areas, housing stock grew from 65.2 million in 1961 to 74.5 million in 1971 and 88.7 million in 1981. The earlier projections of National Buildings Organisation (NBO) put the 1991 housing stock of rural and urban areas in 1991 at 106.2 million and 42.6 million respectively.

14.2.2 A comparison of housing condition in rural and urban areas over the last 10 years, as revealed from the different NSS rounds data, suggests that while proportion of pucca houses has increased over time, the service level has not improved. For example, between 38th and 44th round (1988-89) percentage of pucca house in rural areas has increased from 16.7% to 27.1% and in urban areas from 57.6% to 71.0 percent. In rural areas `no latrine' households have marginally decreased from 91.4% to 89.2 percent.

14.2.3 According to the National Buildings Organisation the total backlog of housing is estimated at 31 million in 1991, of which 10.4 million is in urban areas. Taking into account the revised figures available from 1991 census, the backlog of housing shortage in urban areas is going to be little lower. Absolutely houseless families were, however, only 6 lakhs in 1981 and are likely to be only a little higher in 1991. Table-1 presents rural/urban distribution of households and housing shortages for the year 1991 and likely gaps by 2001.

14.2.4 Service deficiency is equally alarming. In 1985, only 28 per cent of urban population had access to proper sanitation and 27 per cent of the urban population did not have a source of safe water within reasonable distance. Urban housing crisis has manifested itself in many ways of which the most significant is the growth of slums and squatter settlements. It is estimated that about 48.8 million persons are living in slums in 1990. About 40 per cent of this population will be in million plus cities.

Table - 1 Households, Usable Housing Stock and Housing Shortages/Gaps in 1991 and 2001.

(in million)

Particulars	Year 1991			Year 2001		
	Rural	Urban	Total	Rural	Urban	Total
1.Households	113.5	47.1	160.6	137.0	72.2	209.2
2. Usable Housing Stock	92.9	36.7	129.6	111.5	56.7	168.2
3. Housing Shortage	20.6	10.4	31.0	25.5	15.5	41.0
	(21.2)	(9.6)	(30.8)	(26.5)	(14.3)	(40.8)

Source: The Handbook of Housing Statistics Part-I 1990-NBO

Figures in bracket recomputed on the basis of 1991 census/projected population.

Table - 2 Public and Private Investment in Housing

Plan Period	Investment in Housing			%age of Housing Inv. to total inv. in economy
	Public	Private	Total	
1	2	3	4	5
1st	250	900	1150	34
2nd	300	1000	1300	19
3rd	425	1125	1550	15
4th	625	2175	2800	12
5th	796	3640	4436	9.3
6th	1491	18000	19491	12.5
7th	2458	29000	31458	9

Source: Prominent facts of Housing in India NBO & UN Regional Housing Centre for ESCAP,, 1990.

14.2.5 As against the above magnitude of shortage, it would be useful to understand the capital formation process in this sector and particularly the relative role of public and private sector in the creation of housing stock. Table-2 shows the investment in housing during the various Plan periods.

14.2.6 An attempt was made by the Sub-Group on Housing Finance (1990-95) to estimate the share of formal sector in total housing investment. The 'formal sector' includes direct budgetary allocations and also net financial assistance through financial agencies like GIC, LIC, UTI, Commercial Banks, Provident Fund and also HFIs like HDFC. This share was estimated at 16 per cent in 1987-88, which leaves a balance of 84 per cent to the 'informal sector' that includes households themselves and public and private sector employers extending housing loans to their employees.

Review of Seventh Plan and Annual Plans (1990-92)

14.3.1 Social housing programme in urban areas and rural housing programme for landless labourers and artisans under the Minimum Needs Programme (MNP) formed the thrust of the Seventh Plan. Role of institutional finance and promotion of building material technology was also given due priority in the Seventh Plan. However, the Plan outlay of the order of Rs. 2424.34 crores, comprising Rs.2168.34 crores in the State Sector and Rs. 256.00 crores in the Central sector, was only 1.1 per cent of total public sector Plan outlay. Including Indira Awas Yojana under rural development, the outlay works out to about 1.3 percent. Even within the social service sector, housing accounted for

Table - 3 Statement showing the Total Outlays on Housing (inluding MNP) under State Sector

(Rs.in lakhs)

S.No.	States	7th Plan(1985-90) Total Outlay	Of which M N P	1990-91 Outlay	Of which M N P	1991-92 Outlay	Of which M N P
1	Andhra Pradesh	25,740.00	21500	5150	4000	4514	3625
2	Arunachal Pradesh	1,100.00		550	50	721	100
3	Assam	5,000.00	1400	552	325	628	515
4	Bihar	8,860.00	1400	1200	200	1802	293
5	Goa	1,140.00	40	227	10	241	12
6	Gujarat	16,442.00	6300	3470	1050	3150	1305
7	Haryana	4,750.00	425	875	100	915	155
8	Himachal Pradesh	1,500.00		1150	5	435	20
9	Jammu & Kashmir	2,700.00	300	600		738	20
10	Karnataka	12,100.00	7500	2749	1500	4196	2060
11	Kerala	6,500.00	1200	1500	220	1445	270
12	Madhya Pradesh	10,749.00	4000	2074	800	2165	670
13	Maharastra	24,427.00	5000	8205	65	6645	451
14	Manipur	840.00		300		280	
I5	Meghalaya	1,040.00	5	661	33	286	25
16	Mizoram	900.00	10	310	16	510	58
17	Nagaland	1,650.00		295		709	
18	Orissa	4,080.00	1000	1267	235	1052	235
19	Punjab	7,174.00	300	3094	33	2875	53
20	Rajasthan	4,846.00	800	1900	225	1322	306
21	Sikkim	460.00		100	15	120	20
22	TamilNadu	16,500.00	3500	4386	450	5531	450
23	Tripura	1,300.00	200	326	121	389	77
24	Uttar Pradesh	26,158.00	2000	5166	3355	5130	1973
25	West Bengal	10,075.00	600	1695	84	1452	100
Total (States)		196,031.00	57480	47802	12892	47251	12793
Union Territories							
26	A & N Islands	702.00		133	20	198.00	10
27	Chandigarh	2,860.00		560		590.00	
28	D & N Haveli	182.75	10	18.20		46.20	
29	Daman & Diu		+	40	3	44.26	3
30	Delhi	15,320.00	50	3605	15	3700.00	15
31	Lakshadweep	413.00		90		91.58	
32	Pondicherry	1,325.00	150	333.90	35	387.00	70
Total (UTs)		20,802.75	210	4780.10	73	5057.04	98
Total(States & UTs)		216,833.75	57690	52582.10	12965	52308.04	12891

+ included in S. No. 5 above.

Table - 4 Scheme-wise Outlays on Housing - Central Sector

(Rs.in lakhs)

S.No. & Name of Scheme	7th Plan(1985-90)		1990-91		1991-92
	Outlay	Actual Expenditure	Outlay	Actual Expenditure	Outlay
1 General Pool Accomodation	13500	10627	2200	2220	3000
2 HUDCO (Equity for Housing)	6000	5777	2000	2000	2600
3 Hindustan Pre-fab Ltd. (Equity & Loan)	200	196	100	100	150
4 National Buildings Organisation and Management Information System	--	--	50	50	50
5 Building Materials & Technology Promotion Council - Support					
i) Grants-in-aid to Building Materials & Technology Promotion Council	--	--	100	93	300
ii)Science & Technology and Grants to Institutions and other Programmes (Building Centre Programmes)	300	188	100	100	100
6 Footpath Dwellers Rehabilitation Scheme (Pavement Dwellers Scheme)	5000	485	800	--	400
7 I.Y.S.H.(International Cooperation Activities)	200	71	--	14	10
8 Support to Co-operative & Regional Housing Finance Organisation - NCHF (Transferred from M/o Agriculture)	--	--	--	15	15
9 Central Government Employees Housing Welfare Organisation (Seed Capital)	400	194	200	200	500
10 Scheme for Urban Development,, Urban Housing and Urban Water and Sanitation Grants to Urban Local Bodies, through HUDCO	--	--	--	--	100
TOTAL	25600	17538	5550	4792*	7225

* Excluding scheme at S. No. 6

only 7.63 per cent of Plan outlay. During the two Annual Plans of 1990-91 and 1991-92, while the Central sector outlay was raised to Rs.128 crores, the State sector outlay remained at the same level. Tables 3 and 4 give the Statewise and the Central sector allocation of Plan outlays and expenditure respectively.

Rural Housing

14.3.2 The scheme of allotment of house sites and construction assistance to rural landless workers and artisans including SCs and STs was initiated in 1971 as a Central sector scheme which was later transferred to State sector in 1974. This scheme is a part of the Minimum Needs Programme. Under the MNP, higher priority was accorded to this scheme during the Seventh Plan, setting apart a sum of Rs.576.9 crores. As many as 43.2 lakhs house sites, as against the target of 29 lakhs, were allotted and construction assistance provided to 22.5 lakhs families. During 1990-91 and 1991-92 the outlay provided was Rs.129.65 crores and Rs.128.91 crores respectively. An estimated 7.74 lakhs additional beneficiaries got House-sites in 1990-91 and 4.24 lakhs received construction assistance.

Indira Awas Yojana

14.3.3 The Ministry of Rural Development is operating this fully subsidised rural housing scheme as part of rural employment programme for providing houses to the SCs/STs and freed bonded labour. It now forms a part of Jawahar Rozgar Yojana (JRY). The objective of this scheme is to develop a viable micro- habitat, provide housing and ensure a base for higher level of earning for the beneficiaries. A sum of Rs.12,700 per unit for plain areas and Rs.14,500 per unit for difficult hill areas is given as grant under this scheme to the State Governments for housing, sanitation and infrastructure. During the Seventh Plan, 6.87 lakh dwelling units were constructed at an estimated expenditure of Rs.699.58 crores and for the year 1990-91 the target achieved was 1.71 lakhs, at an anticipated expenditure of Rs.187.96 crores.

14.3.4 Housing and Urban Development Corporation (HUDCO) has been financing several rural housing schemes by earmarking 15% of its resource allocation to such schemes. Till June 30, 1991, 2.15 million houses entailing project cost of Rs. 1247.80 crores were sanctioned under these schemes. The loan releases worked out to Rs. 503.17 crores. About 1.6 million units were completed which accounted for 46% of the total units funded by HUDCO. In addition, HUDCO is financing other shelter options like village abadi improvement and building materials.

Urban Housing

14.3.5 Housing schemes in the urban areas were as under:

a) Social housing schemes for different income groups, operated by the States and city level agencies with budgetary support and loans from HUDCO, LIC and other financing agencies;

b) Housing and shelter upgradation scheme for the urban poor, as part of Nehru Rozgar Yojana (NRY) introduced in November, 1989 in cities with population between 1 and 20 lakhs;

c) Footpath Dwellers Night Shelter Scheme introduced in 1988-89 to provide shelter, and later on also sanitation facility, to the pavement dwellers in cities;

d) Scheme taken up by the cooperatives for different income groups with the help of Apex Federations and loans from LIC, HUDCO and scheduled banks;

e) Various other schemes including ownership housing scheme for Central Government employees, working women scheme, environmental improvement of urban slums and home improvement schemes, rental housing schemes for employees of public sector undertakings, sites and services schemes operated by various State Governments.

14.3.6 The EWS housing was the most significant component of social housing scheme, as part of the 20-Point Programme during the Seventh Plan. It was contemplated that the public sector would provide sites and services to the beneficiaries. In addition, the beneficiaries would be provided a loan of Rs.5,000 per unit repayable in a period of 20-25 years at a concessional rate of interest. In practice, however, the scheme operated in a different manner - State

agencies either promoted housing units on HUDCO norms or plots plus cost loan up to HUDCO prescribed ceiling. During the Seventh Plan, 7.14 lakh EWS and 1.67 lakh LIG units have been constructed under the 20-point programme.

14.3.7 Achievement under NRY has also been quite significant. Total subsidy and loan through HUDCO under this component are estimated at Rs.196 crores for the period 1989-90 to October 1990 covering 5.73 lakh units. The impact of Night Shelter Scheme has so far been limited with an estimated outlay of only Rs.2.27 crores during the last two years benefitting 26,200 pavement dwellers.

14.3.8 During the Seventh Plan, 2.3 lakhs dwelling units have been completed under cooperative housing schemes with a total investment of Rs.1087 crores.

14.3.9 It has been estimated that under the various programmes in Public Sector about 10 lakhs houses have been constructed/upgraded each year during Seventh Plan.

New Initiatives in Housing Finance

14.3.10 There has been a marked growth in the flow of credit from the financial institutions and banks to the housing sector during Seventh Plan period. The contribution of LIC increased from Rs.185 crores in 1984-85 to Rs.825 crores in 1990-91, Provident fund advances from Rs.153 crores to Rs.478 crores during the same period and banking sector's contribution from Rs.186 crores in 1986-87 to Rs.387 crores in 1990-91. The most important development in strengthening the housing finance in recent years has been the setting up of an apex institution - the National Housing Bank (NHB) - as a subsidiary of the RBI under the NHB Act, 1987. The important activities of the NHB are:

i) establishing Home Loan Account System - a contractual deposit scheme linked to guaranteed loan from scheduled banks. Till December 1991, 5.5 lakhs accounts have been opened in various commercial banks and housing finance institutions;

ii) liberalised lending guidelines and increased funding from banks;

iii) refinance at less than commercial rates of interest of HUDCO and bank's scheme as well as land development and shelter programme of public and private agencies; and

iv) guidelines for regulation of housing finance.

During 1990-91 total refinance of HFIs was put at Rs.478.39 crores including Rs.161.10 crores for rural housing.

14.3.11 Larger flow of institutional finance has been most evident in relation to the phenomenal growth in HUDCO's operations during the Seventh Plan as well as two Annual Plans. During the Seventh Plan, HUDCO's sanctions for various shelter related schemes totalled Rs.2834.18 crores and loan release Rs.1796.85 crores, facilitating construction of about 20 lakh dwelling units. Loan operations of HUDCO registered a growth of 133.5 per cent compared to previous Plan.

14.3.12 The Life Insurance Corporation of India (LIC) has also emerged as an important contributor to the housing finance. The contributions by LIC comprising of direct lending, bulk loans and assistance to State Governent apex bodies and loans to its own housing finance subsidiary totalled around Rs. 1570 crores during the Seventh Plan. The contribution was as high as Rs. 825 crores during 1990-91.

14.3.13 A number of specialised housing finance subsidiaries have been floated by the scheduled commercial banks. There has also been spurt in the number of housing finance companies operating in the private sector.

Building Materials, Technology Promotion and Extension

14.3.14 Efforts to effect savings in construction cost through promotion of low-cost and innovative building materials and technology are important as building materials account for a major part of the total cost of construction. Some of the efforts made during the Seventh Plan and two Annual Plans in this direction were:

i) setting up of Building Materials and Technology Promotion Council (BMTPC) to provide an appropriate platform for technology transfer and

application in the shelter sector and promoting commercial production of innovative materials, with use of industrial wastes like flyash, red-mud, phospho-gypsum as well as agricultural wastes;

ii) conducting experimental housing projects in different geo-climatic regions by NBO and developing appropriate design and safety measures in zones prone to land slides;

iii) setting up a network of building centres as a Centrally Sponsored Scheme, under which over 200 Building Centres have been identified out of which 77 are operational; and

iv) increasing involvement of non Governmental organisations in supplementing Governmental efforts in the field of technology transfer.

National Housing Policy

14.4.1 The Global Shelter Strategy adopted by the United Nations in November, 1988 calls upon different Governments to take steps for the formulation of a National Housing Policy (NHP) to achieve its goals. The Ministry of Urban Development prepared a draft NHP which was tabled in both Houses of Parliament in 1988. Subsequently, another draft was prepared and widely circulated and discussed and broadly endorsed by Urban Development and Housing Ministers' Conference held in Delhi in October, 1990. The objectives of draft NHP and the major components are described below:-

Objectives

14.4.2 The basic objectives of the policy are:

- to assist all people and in particular the houseless, the inadequately housed and the vulnerable sections, to secure for themselves affordable shelter through access to developed land, building materials, finance and technology;

- to create an enabling environment for housing activity by eliminating constraints and by developing an efficient system for the delivery of housing inputs;

- to expand infrastructure facilities in rural and urban areas in order to improve the environment of human settlements, increase the access of poorer households to basic services and to increase the supply of developed land for housing;

- to undertake, within the overall context of policies for poverty alleviation and employment, steps for improving the housing situation of the poorest sections and vulnerable groups by direct initiatives and financial support of the State;

- to help mobilise resources and facilitate expansion of investment in housing in order to meet the needs of housing construction and upgradation and augmentation of infrastructure; and

- to promote a more equal distribution of land and houses in urban and rural areas and to curb speculation in land and housing in consonance with macro-economic policies for efficient and equitable growth.

14.4.3 In the following sections the critical areas under the NHP relating to (i) supply and management of land; (ii) rural housing; (iii) legal and regulatory framework and (iv) housing finance are discussed.

Supply and Management of Land

14.4.4 Inadequate and inequitable supply of serviced land particularly in urban areas has been the most significant bottleneck for the promotion of housing activities and urban development at large. The aspect of supply and management of land needs to be viewed both from a larger dimension of regional development and city/town level growth. It would imply that all development in city/region should take place within the framework of a comprehensive development plan with spatial linkages and with planned provision of basic services. At the local level, an appropriate policy package incorporating the following is envisaged: (i) control of unregulated peripheral development on agricultural lands; (ii) optimising overall land use; and (iii) appropriate urban redevelopment policy.

Rural Housing

14.4.5 The two central measures with regard to rural housing are:

a) Promoting use of local building materials and technologies suited to different geoclimatic regions and preventing indiscriminate and commercial exploitation of such materials;

b) Creating an enabling environment for primarily self-help housing including new construction, additions and upgradation by the rural people through enactment and effective implementation of laws for conferment of homestead rights and provision of house sites with minimum infrastructure.

A few other specific measures suggested as a part of NHP are :

i)Prevention of alienation of homestead on tribal lands;

ii) Avoidance of unnecessary displacement of rural settlements due to developmental projects;

iii) Rehabilitation of households affected by natural calamities;

iv) Rural housing/development agencies for supply of credit and materials on flexible terms suitable to local requirements;

v) Giving special attention to the needs of Scheduled Castes, Tribes and other disadvantaged groups;

vi) Linking Rural housing with the programmes of IRDP and JRY for accentuating the pace of rural housing and also other related programmes of asset creation and employment generation; and

vii) Setting up of a suitable institutional structure for strengthening existing rural development agencies at State, district and local level to meet the needs of the housing sector.

Legal and Regulatory Framework

14.4.6 Creation of appropriate legal and regulatory framework is perhaps the most important contributing factor for enhancing supply of land and housing. The NHP has taken cognizance of it while specifying measures under each component (eg. Rural Housing, Supply and Management of Land). Specified measures suggested in draft NHP are:-

i) Provision in the land reforms and other relevant acts for conferment of homestead rights to the occupants, and ensuring proper rehabilitation of those dehoused;

ii) Review of slum improvement laws to provide for conferment of occupancy rights;

iii) Revision of Master Plan standards, building byelaws, laws and infrastructural standards to reduce cost of land and construction and promote low cost materials and technology;

iv) Amendments to the Land Acquisition Act for quick acquisition of land in public interest and negotiated compensation to the landowners, delinking provision of land from determination of compensation;

v) Amendments to Urban Land (Ceiling and Regulation) Act, to remove inhibiting effects of legislation on enhancing supply of land without diluting its social purpose and also as a specific measure, imposing vacant land tax;

vi) Amendments to Rent Control Laws to promote investment in rental housing; and

vii) Procedural simplification measures including building approval procedure, flexible collateral requirements, amendments to NHB Act to provide for speedy foreclosure of mortgages of HFIs refinanced by NHB and introduction of a secondary mortgage system.

Housing Finance

14.4.7 The measures to be taken with regard to housing finance are as under:

a) Evolving, over a period of time, a non-subsidised housing finance system recognising the integral linkages of the housing sector with the rest of the economy.

b) Targetting of the available capital and interest subsidies to rural and urban poor.

c) Introduction of innovative savings and lending instruments to help integrate the housing finance system into the capital markets, by enabling HFIs'access to the funds on a competitive basis with other financial institutions.

d) Creating innovative banking/institutional arrangements to cater to the housing credit needs of low income groups in the informal sector through community based system.

e) Creation of a suitable environment for developing a secondary mortgage market in order to attract funds from a wide range of investors, including insurance and provident/pension funds and to integrate housing finance with the overall financial system.

The Perspective

14.5.1 According to the estimates made by the Sub-Group on the "Magnitude of Housing Problems" 64.4 million new houses will be needed by 2001. Besides in 1981, there were 14 million units needing upgradation, 1.23 million requiring renovation and 7.5 million needing extension/expansion. To achieve the goal of elimination of houselessness by the turn of the century, it would be imperative to step up investment, public and private in housing.

14.5.2 Taking into account the availability of physical inputs, the Sub-Group had concluded that it would be feasible to construct 21.77 million units with an investment of Rs.77,590 crores at 1989-90 prices during 1990-95. For the same number of units assumed for 1992-97, the investment requirement would be of the order of Rs. 97,530 crores at 1991-92 prices. Table-5 gives the break-up of the physical target for upgradation of existing stock and creation of new stock in rural and urban areas alongwith the

Table - 5 Physical Projections and Financial Requirements (According to Sub-Group on Magnitude of Housing Problem)

(units in million,, Amount in Rs. Crores)

	Rural		Urban		Metro		Total	
	No.of Units	Amount	No.of Units	Amount	No.of Units	Amount	No.of Units	Amount
I Upgradation	4.07	1,970	1.75	1,130			5.82	3,100
II New Stock								
EWS	6.45	6,765	2.17	5,245	1.18	3,810	9.80	15,820
LIG	1.34	4,340	1.90	6,150	1.04	5,020	4.28	15,510
MIG	0.25	2,445	0.58	5,580	0.31	5,060	1.14	13,085
HIG	0.10	4,280	0.40	16,305	0.22	8,880	0.72	29,465
Total	8.15	17,835	5.05	33,280	2.75	22,770	15.95	73,885
I & II	12.22	19,800	6.80	34,410	2.75	22,770	21.77	76,980
Houseless						610		
Total (1989-90 prices)						77,590		
Total (1991-92 prices)						97,530		

corresponding financial requiremnts. If adjustment for 1991 actual population and projected urban population for the year 2001 is made, the target for urban areas will require to be marginally reduced with corresponding increase in rural areas. The requirement of investment in housing (public and private) works out at 12.2 percent of the total outlay during Eighth Plan.

14.5.3 As against the projected requirement of Rs.77,590 crores for housing during 1990-95, the overall flow from the formal sector as per existing norms is estimated at around 16 per cent and the Sub-Group on Housing Finance had recommended that the credit support may be increased to at least 20 per cent. It is expected that a large part of the credit flow from the formal sector would come from LIC followed by the commercial banks and provident funds. The total flow of credit from the formal sector during the Eighth Plan is projected in the range of Rs. 20,000 to Rs. 25,000 crores (at 1991-92 prices).

Core Strategy of Eighth Plan

14.6.1 In line with the National Housing Policy which is a statement of the long term objective, the core strategy of the Eighth Plan consists of creating an enabling environment for housing activity, viewed as an important component of the national economy, by eliminating various constraints and providing direct assistance to the specially disadvantaged groups including rural and urban poor households, SC/ST, physically handicapped, widows and single women. The first objective is intended to be achieved through a set of sub-tasks or instruments as specified below:-

a) Expand the provision of basic infrastructure facilities in rural and urban areas in order to improve the overall environment of habitat and enable appropriate conditions for the majority of the households to have access to housing;

b) Remove major legal constraints to increase supply of serviced land as well as rental housing by way of substantially amending the existing statutes like Urban Land (Geiling and Regulation) Act, Land Acquisition Act, Transfer of Property Act and Rent Control Act;

c) Provide stimulus and support for housing on expanded scale through enhancing the flow of credit both by way of mobilisation of additional resources for housing by tapping capital markets and additional savings and by directed credit from public financial institutions. The Planning Commission had set up a Working Group on Finance for Housing sector for the Eighth Five Year Plan (1992-97) to consider ways and means to step-up flow of institutional finance to the housing sector. The group has made a number of recommendations in its report including projection of flow of credit from various financial institutions and HFIs and greater acess of EWS rural households to the institutional credit. Fiscal incentives, procedural simplification and setting up of a wider network of HFIs particularly in remote areas will act as enabling factors to achieve the objective.

d) Role of private developers in fringe area development of metropolitan region/large cities, while keeping safeguards including environmental standards for the majority of present residents, not only in housing but also in trunk infrastructure needs to be explored;

e) Promote use of low cost building materials and cost effective technologies intended for both saving in use of scarce resources like brick, cement and steel and provision of affordable housing to poor segments of population;

f) Promote self-help housing as well as shelter upgradation, which is as important as creation of new housing stock, by providing better access to finance, land, materials and technology through appropriate delivery systems to the poorer segment of the rural population;

g) Establish links between formal and informal credit network including community level association and voluntary agencies operating in the housing sector;

h) Provide financial and institutional support, through both formal and informal systems

to environmental improvement and in-situ upgradation programme in the slum areas and other low income congested pockets in urban areas; and

i) Establish an effective Management Information System for housing and urban infrastructure accessible to both private and public development agencies With regard to the second objective of direct assistance to disadvantaged groups;

j) Evolve special assistance programme in the form of subsidy preferably in kind, differential rate of interest and delivery support system for specially disadvantaged groups including vulnerable sections of SCs/STs, widowed women of poorer sections of the society and also those affected by natural calamities. Such assistance should include both in-situ upgradation and new sites and house construction.

Eighth Plan Priorities And Programmes

14.7.1 The most significant aspect of the Eighth Plan, compared to the Seventh Plan, in respect of housing sector is that it is set against a definite National Housing Policy. Thus, the priorities and programmes of the Eighth Plan are to be viewed as a sub-set of the long-term policy document. Two other related dimensions that need to be taken into account are: the focus on liberalisation of the economy in the recently announced macro economic policy and directed attention to rural housing.

14.7.2 With the above mentioned thrust areas, the important programmes in the housing sector are described in the following sections. Some of the programmes overlapping with urban development and water supply and sanitation sectors, e.g. NRY, Environmental Improvement of Urban Slums (EIUS), Low Cost Sanitation Programme need to be cross referenced.

Rural Housing

House Sites and Construction Assistance

14.7.3 The scheme was included in the State Sector as a part of MNP and formed the core of the rural housing programme during Seventh Plan. This scheme has two components - provision of free House Sites and construction assistance with varying proportion of subsidy and loan in different States. Construction assistance is planned to benefit 3.5 million families directly as part of MNP. This is exclusive of other special rural housing programmes intended for specific beneficiary groups.

14.7.4 While the scheme will be continued in the Eighth Plan, it would be appropriate to take up fresh surveys and enumeration of the landless families to assess the need for continuing the scheme in the light of the fact that at the beginning of the Seventh Plan, as against the balance of 13.67 lakhs identified (in 1971) landless labourers and rural artisans, the coverage during Seventh Plan was much higher at 43.21 lakhs. However, construction assistance programme of the component seems to be lagging behind and thus needs stepping up. There is also a need to revise the cost norms of dwellings, the subsidy and beneficiary component of the most of the rural housing schemes of the State Government so as to bring an element of uniformity and achieving the intended coverage of rural households. The following specific measures are suggested during the Eighth Plan:-

a) Construction assistance (subsidy component) to the poorest section of the rural poor should preferably be given in kind supported by an appropriate delivery system covering all regions of the country;

b) All schemes should have loan and beneficiary contribution to promote self-help;

c) This programme should be tied with that of building centres so as to promote low-cost housing and locally available material/appropriate material and technology. Training of masons and other construction workers should be an integral part of this scheme;

d) Innovative housing finance system should be set up in rural areas and more difficult regions like North Eastern States not only for facilitating supply of credit but also to mobilise the rural savings.

Indira Awas Yojana (IAY)

14.7.5 The Indira Awas Yojana was introduced in the Central Sector in 1985-86 as part of the Rural Landless Employment Guarantee

Programme and has continued as part of JRY. The objective was to enable the construction of houses for SCs/STs and freed bonded labourers based on the wage-employment programme.

14.7.6 The endeavour during the Eighth Five Year Plan period will be towards evolving an approach to rural housing which leads to setting up of truly integrated micro-habitats and address this scheme to specially disadvantaged group including the poorest segment of SC/STs and freed bonded labour.

Housing and Urban Development Corporation (HUDCO)

14.7.7 HUDCO was incorporated in 1970, with the mandate to ameliorate the housing conditions of low income and weaker sections. HUDCO finance is available to institutions like State Housing Boards, Development Authorities, Improvement Trusts, Cooperative Societies etc. HUDCO is earmarking 55% of its sanctions for EWS and LIG housing projects and balance 45% for MIG, HIG, rental and commercial housing projects. HUDCO is the only national agency with predominant consideration for EWS both in terms of loan operations and design/technology adoption.

14.7.8 HUDCO is supporting the State Plan programme in housing and urban infrastructure sector through the following broad components:

a) Rural housing;

b) Urban housing;

c) Slum upgradation; and

d) Urban infrastructure schemes.

14.7.9 HUDCO has been getting equity support from the Government of India. Upto the end of Seventh Plan period, the equity support to HUDCO by the Government totalled Rs. 457.77 crores and another Rs.46 crores during 1990-91 and 1991-92. The subscribed capital upto November'91 was Rs.165 crores. HUDCO has also built up reserves and surpluses. In addition to this, HUDCO has been getting funds from LIC, GIC, UTI, and NHB. HUDCO has been permitted to raise funds through tax free bonds from time to time.

14.7.10 From 1989-90, HUDCO is undertaking lending for the following Plan schemes:

a)Shelter Upgradation Component of Nehru Rozgar Yojna.

b)Low Cost Sanitation Scheme for Liberation of Scavengers.

c) Night Shelter Scheme for Pavement Dwellers.

The subsidy component in case of the above mentioned schemes is also being routed through HUDCO, so that loan releases can be linked with the release of subsidy. The total amount sanctioned for the schemes between 1989-90 to 1991-92 (upto October 1991) are given below:

Table - 6

Name of Scheme	Loan Sanctioned (Rs.in crores)
a)Shelter Upgradation component of NRY	196.00
b)Pavement Dweller/Night Shelter Scheme	2.27
c)Low Cost Sanitation Scheme	155.79

14.7.11 **Eighth Plan Perspective for HUDCO:** With the public sector going in for less and less of direct house construction activity and with emphasis on its role as facilitator and enabler, the lending activities of HUDCO during the Eighth Plan are expected to concentrate more on land and infrastructure development and direct support to EWS schemes in rural and urban areas. After taking into account the repayments of loan receivable during Eighth Plan and also internal reserves, equity support to HUDCO and its access to Internal and Extra Budgetary resources (IEBR) would need a step-up during the Eighth Plan.

14.7.12 With manifold step-up in loan operations for urban infrastructure including low-cost sanitation, there is a need for adopting a specialised approach to this activity. It has been pro-

posed to strengthen the infrastructure wing of HUDCO, create a specialised technical and management group and eventually set up a separate organistaion in near future.

Income Norms and Ceiling Costs

14.7.13 The income limits for eligibility and the existing cost of construction have been revised for various housing schemes for the Eighth Plan as compared to those in the Seventh Plan. The details are indicated in Table 7.

Cost Reduction Measares

14.7.14 Scarcity of conventional building materials like cement, brick and steel and the high energy intensity of the modern construction activity have pushed up construction cost. Thus, the average cost of construction at 1990-91 prices of the lowest design housing in urban areas using the traditional building materials is estimated at Rs.15,000 and Rs.30,000 for EWS and LIG category respectively, which may be well beyond the means of the poorer segment of this group of population. Therefore, it is imperative to change over to appropriate and cost-effective technologies which bring down the costs.

14.7.15 Large scale application of low-cost technologies has been hindered by lack of inter-

Table - 7 Income Norms and Ceiling Costs for various Housing Schemes

(In Rupees)

Sl. No.	Scheme	Seventh Five Year Plan Norms and Ceilings			Eighth Five Year Plan (1992-97) Norms and Ceilings		
		Income Eligibility	Ceiling Cost of Construction	Ceiling of Govt. loan/assistance	Category	Monthly Household income	Cost ceiling including cost of land
1.	EWS	Upto 700	5000 (Sites & Services) 10000 (Rural)** 15000 (Urban)**	5000	EWS	Upto 1250	a) 12,700 Sites & Services in Rural Areas b) 22,000 Dwelling Units in Rural/Urban Areas c) 2,000 Village Abadi/repairs in Rural Areas d) 11,000 Repairs in Urban Areas
2.	LIG	701-1500	30000	23500	LIG	1251-2650	50,000 25,000 (Repairs/Additions)
3.	MIG	1501-2500	75000	40000	MIG	2651-4450	1,75,000

** for EWS (Rural, Urban) during the Seventh Five Year Plan for complete dwelling units, there were no cost ceilings. There figures are of HUDCO.

The above norms would be reviewed after two years.

The loan ceiling/assistance and the rate of interest and repayment period would be decided by the Empowered Committee.

face between developers of technology and users, lack of standardisation, and lack of an incentive structure.

Building Centres

14.7.16 The question of S and T activities in the housing sector has assumed crucial importance in view of scarcity of building materials, high energy intensity of construction activity and rising cost of development of land. While research endeavour in previous plans has helped in the evolution of appropriate design and development of innovative building materials, the technology has not been accepted due to lack of interface between users and innovators and an incentive mechanism. To foster the technology transfer to the grass root level, a centrally sponsored scheme for establishment of Building Centres was initiated in 1988. The Building Centres are intended to promote the use of new alternate materials and construction techniques through demonstration, production and training in different rural/urban regions. About 213 Building Centres have been established so far out of which 77 are fully operational. An outlay of Rs.1 crore each during 1990-91 and 1991-92 was provided for the scheme. The Ministry of Urban Development has constituted an Expert Committee to review this scheme.

Building Materials & Technology Promotion Council

14.7.17 To bridge the gap between laboratory development and large scale field application of innovative materials and technologies, facilitate mass production on commercial scale and develop an integrated system for technology transfer and delivery, the Government of India set up in 1990 the Building Materials & Technology Promotion Council (BMTPC). This Council is an inter-ministerial and apex institution. The Council is coordinating with Central and State agencies to evaluate, validate and adopt new technologies to scale up proven ones and to facilitate the setting up of production units. During the Eighth Plan, the Council will focus on technology transfer and promotion of building materials, venture capital and other support to entrepreneurs in innovative materials, sponsoring of R and D studies, taking up prefabrication technology and dissemination of technology.

Eighth Plan Thrust Areas

14.7.18 The following are major thrust areas during the Eighth Plan:

i) Strengthening of Building Centres to provide effective means of propogating low cost building materials and construction technologies at grass root level with at least one building centre in each district and in addition there could be specialised rural/regional building centres;

ii) Promotion of large scale production of building materials based on industrial and agricultural wastes through an appropriate incentive structure and by achieving target utilisation of wastes like flyash, phopshogypsum, agricultural residues and natural fibres;

iii) Increasing use of locally available building materials in rural housing programmes;

iv) Development of planning and design norms and codes of practices to promote low-cost energy-efficient technologies and to reduce the cost of housing; and

v) Promotion of cost-effective industrialised construction systems to the extent of 10 to 15 per cent dwellings to be set up by public housing agencies.

Strengthening Management Information System

14.7.19 The Draft National Housing Policy has stressed the need for the setting up of an appropriate management information system at various levels for housing and urban services in order to support policy formulation, monitor implementation of various schemes and periodically evaluate their impact. A Sub-Group on Housing Statistics set up by the Planning Commission had identified various gaps in the data collected at present and had suggested strengthening of the present system of data collection. The Sub-group proposed a Housing Census by the Registrar General of India (RGI) and periodic surveys on important indicators of housing conditions, access to service, expenditure and savings pattern and residential pattern and land prices etc. It is proposed that the RGI will take

up the census in 1995 in urban areas.

14.7.20 For effective flow of data from all the areas in a State, it has been proposed to strengthen the present three tier system operated by NBO starting at city level which involves additional technical support at central and state level, data processing facilities and incentives at local levels for data reporting. It is proposed to identify the responsibilities of different data collecting agencies in the sector in the Central Government, Reserve Bank etc. and coordinate their efforts through the strengthened set-up for MIS in the Ministry.

Eighth Plan Outlay And Physical Target

14.8.1 Key physical targets during Eighth Five Year Plan are given in Table-8. An attempt has been made to indicate the contribution of formal sector as defined in an earlier para. The contribution of formal sector is estimated to be about 10 lakhs new units annually during the Seventh Plan. This is expected to increase to 13 lakhs annually during Eighth Plan. This includes loan assistance through State and Central Plan, HUDCO and other HFIs (Public Sector) as well as fully subsidised Indira Awas Yojana (IAY). Share of the rural sector in terms of units, mostly contributed through state sector programme, is estimated at 51 per cent which is higher than that of the Seventh Five Year Plan. The proportion of EWS Housing is derived from the existing norms of HUDCO. In case of upgradation, the projected units include kucha and semi-structures only with rural sector receiving greater thrust during Eighth Plan. The projected number of building centres implies that there will be at least one centre in each district.

Table-8 Key Physical Targets during the Eighth Plan

Item	Unit	Cumulative Target (1992-97)
1.New Housing Stock (All sectors)		
i)Rural	Lakh	81.5
ii)Urban	Lakh	78.0
2.Shelter Upgradation		
i)Rural	Lakh	40.7
ii)Urban	Lakh	17.5
3.Allotment of Village House Sites (MNP)	Lakh	40.0
4.Formal Sector Contribution in part or full to new Housing Stock		
i)Rural	Lakh	35.0
ii)Urban	Lakh	30.0
5.EWS New Housing (All sectors)		
i)Rural	Lakh	68.0
ii)Urban	Lakh	30.0
6.Building Centre (District Level)	No.	250

14.8.2 The Plan outlay is estimated at Rs 6377.02 crores of which as much as Rs 3581.67 crores will be in State Sectors. Emphasis during the Eighth Plan will be to promote and provide housing through institutional finance and other instruments. Accordingly, in the central sector, equity support to HUDCO will be about Rs 155 crores and Internal Extra Budgetary Resources (IEBR) will be around Rs 860 crores. A new scheme of Rural Housing aimed at supplementing the efforts of State Governments in provision/upgradation of housing units, has been proposed by the Ministry of Rural Development for implementation during Eight Plan. The support provided will be in the nature of equity/financial assistance to HUDCO as also State organisations and for improvement of supply of dilivery system. A provision of Rs. 350.00 crores has been made during 1992-97. A summary of Plan Outlay on housing in States and Central sector during Eighth Plan is given in Table-9.

Table - 9 Plan outlay on Housing in States and Central Sector (1992-97)

(Rs.in crores)

1.States Sector - Total	3581.67
2.Central Sector	
2.1Ministry of Rural Development	1454.00
2.1.1indira Awas Yojana	1104.00*
2.1.2Centrally Sponsered Scheme of Rural Housing	350.00
2.2.Ministry of Urban Development	1341.35
2.2.1of which IEBR	860.00+
2.2.2Budgetary Support	481.35
(i)General Pool Accomodation	140.00
(ii)HUDCO(Equity Support)	155.00#
(iii)Housing Census, Periodic Survey & MIS through NBO	13.00
(iv)Science & Technology and Grants to Institute and other programmes including Building Centres	5.00
(v)Night Shelter Scheme	6.50
(vi)Contribution to Central Govt. Employees Housing Welfare Organisation	10.00
(vii)Building Material & Technology Promotion Council	12.50
(viii)Counterpart Fund for External Aid to HUDCO from KFW]	]138.00
(ix)Counterpart Fund for External Assistance to HDFC(Loan from KFW)]	]
(x)IYSH Activities/Conferences	0.50
(xi)Grants in Aid to NCHF	0.75
(xii)Hindusthan Pre -Fab Ltd. (Equity and loan)	0.10

\+ Notional Allocation.

* Included under the Rural Development Programme of JRY

\# Including Urban Development

WATER SUPPLY AND SANITATION

Introduction

14.9.1 Safe drinking water supply and basic sanitation are vital human needs for health and efficiency. Disease and death, particularly of children, every year and drudgery of women are directly attributable to lack of these essentials.

14.9.2 The requirement of drinking water is at present only 7 to 10 per cent of water available on the surface and 4 to 5 per cent of the ground water potential. The National Water Policy announced in 1987 gives the highest priority to drinking water supply. Since substantial quantities of water are consumed by several other users, it is necessary that the competing demands for water such as for irrigation, industry and domestic use etc. are balanced and fully taken into account while drawing up a comprehensive plan for water management.

14.9.3 Sanitation, both in urban and rural areas, continues to remain neglected. Funds availability has been a constraint in the urban areas, while schemes for rural sanitation were not able to evoke response. These, therefore, require restructuring based on the lessons learnt from the good work done in certain places in Gujarat, Tamil Nadu, West Bengal, Bihar, Uttar Pradesh, Andhra Pradesh, Rajasthan, Madhya Pradesh and Maharashtra.

Review of Performance

14.10.1 Drinking water supply and sanitation are State subjects. The Ministry of Urban Development (MUD) was the nodal agency for this sector at the beginning of the Seventh Plan. Subsequently, rural water supply and sanitation have been transferred to the Department of Rural Development (DRD), while the administration of urban water supply and sanitation has been retained with the MUD. Rural water supply was an important constituent of the State sector MNP during the Seventh Plan. In 1986, the National Drinking Water Mission (NDWM), popularly known as the "Technology Mission" was launched in order to provide scientific and cost-effective content to the Centrally Sponsored Accelerated Rural Water Supply Programme (ARWSP). In 1986, it was decided that a portion of the funds, made available under the rural employment programme and the Indira Awas Yojana, should also be utilised for rural sanita-

tion. Rural sanitation programme was also added to the State sector MNP from 1987-88. In November 1986, a new Centrally Sponsored Rural Sanitation Programme(CRSP) was launched. In the later half of the Seventh Plan, the UNICEF also came forward to support Government efforts for provision of rural sanitation in Andhra Pradesh, Uttar Pradesh, Rajasthan, West Bengal, Gujarat, Madhya Pradesh, Tamil Nadu and Maharashtra.

14.10.2 The pattern of Plan outlay and expenditure on the Water Supply and Sanitation sector in the aggregate (States/UTs and Centre) during the Seventh Plan, which formed practically half of the International Drinking Water Supply and Sanitation Decade (1981-91), was as follows:

Table-10 Seventh Plan (1985-90)-Outlay/Expenditure-Water Supply and Sanitation Sector

(Rs.in crores)

Sl. No.	Plan Outlay/Expenditure	Total Public Sector	Water Supply & Sanitation Sector					
			Rural		Urban		Total	
			Amount	%+	Amount	%+	Amount	%+
1	2	3	4	5	6	7	8	9
1 State/UT Plans								
	Outlay	84466.00*	2350.00	2.78	2935.64	3.47	5285.64	6.25
					(3008.17)$	(3.56)	(5358.17)$	(6.34)
	Expdr.	91509.66*	2620.76	2.86	2551.04	2.79	5171.80	5.65
2 Central Plan								
	Outlay	95534.00	1206.72	1.26	30.11	0.03	1236.83	1.29
	Expdr.	127519.57	1914.56	1.50	6.77	0.0053	1921.33	1.51
Grand Total								
	Outlay	180000.00	3556.72	1.97	2965.75	1.65	6522.47	3.62
					(3038.29)$	(1.69)	(6595.00)$	(3.66)
	Expdr.	219029.23	4535.32	2.07	2557.81	1.17	7093.13	3.24

$As revised subsequently.

*Including special Area Programme like HADP/TSP/NEC/BADP

+With respect to Column 3.

14.10.3 The pattern of plan outlay and anticipated expenditure on Water Supply and Sanitation Sector during two annual plans (1990-92) was as indicated in Table 11.

14.10.4 The physical achievements upto the Seventh Plan and two annual plans (1990-92) vis-a-vis the position at the end of the Sixth Plan, based on the information made available by the State/UT Governments to the nodal Ministries, are given in Table 12.

14.10.5 An analysis of the performance revealed that:

a) Based on the available indicators, performance of the Centrally Sponsored Accelerated Rural Water Supply Programme and National Drinking Water Mission appears to be satisfactory;

b) Concept of "total environmental sanitation" was absent. Linkage of rural sanitation programme with primary health care, water availability, removal of illiteracy and women welfare needed attention. Sanitation Programme should have been taken as a package of service rather than mere construction of latrines;

c) In actual implementation of water supply schemes, the needs of backward and poorer classes of population were often neglected;

d) There was a wide gap between provision for safe disposal of waste water and drinking water supply in urban areas;

e) Pricing of water, implementation of billing and collection mechanism for water tariff, etc. needed considerable improvement;

f) Wastage and leakage of water was substantial and needed corrective action;

g) There was need for greater cost-effectiveness in the existing programmes and its possible integration with similar programmes.

14.10.6 Arising from the analysis, the following issues emerge as areas of concern:

a) Operations and maintenance of water supply and sanitation installations in the country is badly neglected. A huge backlog of maintenance is building up at a time when resources are scarce;

b) Due to inadequate sewerage and lack of waste treatment facilities, pollutants which enter ground water, rivers and other water sources contribute to increased incidence of water-borne diseases. It is necessary to take timely steps to prevent further pollution and at the same time provide for progressively cleaning of existing rivers and water resources;

c) Water supply and sanitation needs of small towns, particularly in the range of population upto 20,000, received inadequate attention. These towns have a poor financial base and can, therefore, not execute and maintain appropriate water supply and sanitation schemes. The endeavour would, therefore, be to ensure that water supply is provided in all towns, including small towns which are essentially over- grown villages and potential urban nodal centres for the rural hinterland surrounding them;

d) It has been recognised that the earlier efforts to discourage manual scavenging and liberate families engaged in this inhuman task have not borne satisfactory results. Therefore, it is suggested that ongoing programme for liberation/rehabilitation of scavengers should be streamlined to cover legislation, involvement of NGOs and adequate funding;

e) There are a number of externally aided projects, mainly based on IDA credit and bilateral assistance for undertaking water supply and sanitation projects. Very often the projects are delayed due to inadequacy of counterpart rupee funding and also due to the projects being poorly implemented. It would, therefore, be quite desirable, that before any such new project is taken up , its funding requirement vis-a-vis resources position and committed li-

Table - 11 Two Annual Plans (1990-92)-Outlay/Expenditure
Water Supply and Sanitation Sector

(Rs in crores)

Sl .No.	Plan Outlay/ Expenditure	Total Public Sector	Water Supply & Sanitation Sector					
			Rural		Urban		Total	
			Amount	% *	Amount	% *	Amount	% *
1	2	3	4	5	6	7	8	9
1 State/U.T. Plans								
	Outlay	54,735.54	1,467.33	2.68	1,651.89	3.02	3,119.22	5.70
	Expdr.	52813.77	1481.47$	2.81	1623.71$	3.07	3105.18$	5.88
2 Central Plan								
	Outlay	82,298.01	1,238.59	1.51	69.48	0.08	1,308.07	1.59
	Expdr.	81021.08	1216.82	1.50	69.48	0.09	1286.30	1.58
Grand Total								
	Outlay	137,033.55	2,705.92	1.97	1,721.37	1.26	4,427.29	3.23
	Expdr.	133834.85	2698.29	2.02	1693.19	1.27	4391.48	3.28

* with respect to col. 3.

$ Including revised outlay for Punjab for 1990-91 reflected under head , 'General Economic Services' against District Sector Schemes.

Table - 12 Physical Achievement at the End of the Seventh Plan (1985-90) and Two Annual Plans (1990-92)

(Population in Million)

Sl. No.	Sub-Sector	Population covered as on 31.3.1985		Population covered as on 31.3.1990		Anticipated population coverage as on 31.3.92	
		Population	% $	Population	% $	Population	% $
1	2	3	4	5	6	7	8
1	Rural Water Supply	313.86	56.26	444.65	73.87	486.11	78.40
2	Rural Sanitation	4.03	0.72	14.79	2.45	16.96	2.73
3	Urban Water Supply	127.20	72.90	182.00	83.80	185.67	84.90
4	Urban Sanitation	49.60	28.40	99.70	45.93	104.76	47.90

$ Percentage is with respect to total Rural/Urban population on the date.

abilities of the State Government and local bodies are examined in depth.

Eighth Plan Approach

14.11.1 The approach to the Water Supply and Sanitation Sector will take into account the following guidelines given in the New Delhi Declaration, which was adopted by the U.N. General Assembly in December 1990:

a)Protection of the environment and safeguarding of health through the integrated management of water resources and liquid and solid wastes;

b)Organisational reforms, promoting an integrated approach and including changes in procedures, attitudes and behaviour and the full participation of women at all levels;

c)Community management of services, backed by measures to strengthen local institutions in implementing and sustaining water and sanitation programmes;

d)Sound financial practices, achieved through better management of existing assets and extensive use of appropriate technologies.

Objectives

14.11.2 Based on the perceptions gained from an analysis of the performance of the water supply and sanitation sector in the past and the overall approach and strategies adopted in New-Delhi Declaration, the following objectives have been visualised for the next five years:

Rural

i) Highest priority to be given to ensure that the remaining about 3000 `No-Source' hard-core problem villages in some states are provided with sustainable and stipulated supply of drinking water by March 1993;

ii) Equally important would be to ensure that all the partially covered villages having a supply level of less than 40 liters per capita per day (lpcd) numbring about 1.5 lakh including hamlets, are fully covered with safe drinking water facilities by the end of the Eighth Plan on sustainable basis;

iii) Ensure that SC/ST population and other poor/weaker sections are covered fully on a priority basis;

iv) The stipulated norms of supply would be 40 lpcd of safe drinking water within a walking distance of 1.6 kms or elevation difference of 100 metres in hilly areas, to be relaxed as per field conditions applicable to arid, semi-arid and hilly areas. At least one hand-pump/spot-source for every 250 persons to be provided. Additional 30 lpcd in DDP/DPAP areas for cattle to be provided;

v) Achieve zero incidence of Guineaworm disease by 1993 and total eradication by 1995, besides progressively finding solutions for other bacteriological and chemical problems like excess fluorides, salinity and iron in water sources;

vi) Achieve coverage of about 5 per cent of rural population (cumulative) with their full involvement with sanitation facilities by the end of Eighth Plan. Information, Education and Communication(IEC)should be an integral part of rural sanitation programme. In this context, it is desirable to adopt a concept of 'total environmental sanitation' and provide guidelines to the rural population in regard to proper environmental sanitation practices, including disposal of refuse, garbage and wastewater through the mechanism of local village leaders and community organisations and construct bio-gas plants adjacent to the sanitary complexes.

vii) Convert all existing dry latrines into low-cost sanitary latrines.

Urban

i) Extend safe drinking water facilities to the remaining urban population, so as to achieve the goal of 100% coverage of population by turn of the Century with the following norms and standards:

-125 lpcd for urban areas where piped water supply and underground sewerage system are available.

-70 lpcd for urban areas provided with piped water supply but without underground sewerage system.

-40 lpcd for towns with spot-sources/standposts. One source for 20 families within a maximum walking distance of 100 metres.

ii) Provide a special thrust to drinking water supply in small towns with population upto 20,000 and evolve scheme with appropriate financial support to initiate efforts towards the goal of 100% coverage of population by turn of the century.

iii) (a) Convert all dry latrines into low-cost sanitary latrines, so that the present scavenging system is completely eliminated in urban areas.

(b) Cover the outskirts and fringe areas of big cities with low-cost sanitation facilities either on individual household basis or community basis with "pay and use" system, as appropriate.

iv) Evolve and execute financially viable sewerage schemes in big cities, State capitals, important pilgrim/ tourist centres with cost-recovery from beneficiaries to create waste treatment facilities, with adequate thrust on recycling of treated effluents for horticulture, irrigation and other non-domestic purposes.

v) In major metropolitan cities, take steps to evolve and create a scientific and effective mechanism for the collection, transportation and disposal of solid waste and in the process, convert as much of the bio-degradable material as possible into organic manure. During the Eighth Plan, a few cities having population more than 5 lakh each (as per 1991 census) would be covered with the restructured schemes.

Thrust And Strategies

14.12.1 Based on the experience gained in the recent years and taking note of the issues which have emerged, strategies and Plan thrusts have been evolved to cope with the challenges.

14.12.2 With regard to operation and maintenance, the following aspects need to be emphasised:

i) Water has to be managed as a commodity in exactly the same way as any other resource;

ii) 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;

iii) To ensure that in urban areas, Municipalities/local bodies are free to levy and raise appropriate user- charges for drinking water and sanitation facilities in order to strengthen the financial position of the urban local bodies/Municipalities whreby at least the operation and maintenance costs, if not further development, become self-sustaining;

iv) In rural areas, water-tariff may not be feasible in all places. However, wherever house- service connections are given, it is suggested that appropriate water-tariff is levied and realised whereby operation and maintenance becomes self-sustaining to the extent possible;

v) Private Sector efforts for construction and maintenance of drinking water projects should be encouraged and mobilised to the maximum extent feasible;

vi) Local bodies, whether in rural or urban areas, should be made responsible for the operation and maintenance of the system installed, with technical guidance from government agencies;

vii) Appropriate links should be forged between water supply and environmental sanitation (solid and liquid waste management) in the planning of new programmes.

14.12.3 Development has, in its wake, led to increasing pollution of water resources. It is, therefore, suggested that in the Eighth Plan, it should be ensured that the pollution, which is presently taking place, is progressively elimi-

nated through provision of industrial waste and sewage treatment facilities. At the same time, preventive measures will have to be taken to see that new physical assets created as a part of the planning process or otherwise do not add to the problem of water pollution.

14.12.4 The concept of "total sanitation" - covering primary health care, water availability, women's welfare, immunization and provision of sanitation facilities, all linked to cleanliness as a basic human need - will be emphasised. Every effort will be made to adopt a low-cost approach, employing technical and scientific knowhow and the experience already gained by several non-Governmental organisations in this regard.

14.12.5 In order to reduce costs, it is desirable that the programmes of drinking water supply and sanitation, both in rural and urban areas, are implemented in a more decentralised manner with the involvement of the people and local institutions at all stages --- planning, project formulation, execution, operation and maintenance and monitoring and evaluation. It is also desirable that the district planning machinery is used to provide the necessary technical support to the local bodies for creation and maintenance of installations. While emphasising on efficient exploitation of available water for various uses, it is necessary to take timely steps to see that the sources are recharged and rejuvenated. It will, at the same time, be necessary to ensure appropriate linkage between soil-conservation and land/water management and drinking water supply schemes in order to provide for sustained supply.

14.12.6 While the ARWSP has been operative for almost 15 years now, no detailed evaluation of the programme has yet been carried out. It is desirable that the Programme Evaluation Organisation or some similar body undertakes an evaluation in order to identify changes, if any, required in the concept, the content or the manner of implementation of the programme including the schemes undertaken under Mini-Mission and Sub-Mission Projects of National Drinking Water Mission.

14.12.7 In order to ensure effective operation and maintenance of assets created as in the Seventh Plan, a maximum of 10% of funds under MNP and ARWSP each could be utilised for operation and maintenance. Most States face resource problems and, therefore, tend to neglect maintenance. It is necessary to evolve an effective mechanism for ensuring proper operation and maintenance of existing assets. "Village-water-committees" should be actively involved in the maintenance of drinking water supply schemes and a system of beneficiary participation introduced. Participation of village women and NGOs/voluntary organisations should also be encouraged. The mechanism and the funds available under TRYSEM should be used to impart training, so that trained manpower can be locally mobilised for the maintenance of the assets.

14.12.8 After a careful consideration of the situation as regards rural sanitation, it is suggested that the Rural Sanitation Programme be restructured providing for the following elements:

(a) all activities under this programme will be undertaken through local body/ village panchayat and with beneficiary participation.

(b) wherever feasible, NGOs will be involved in the implementation of the programme.

(c) women will be actively associated with the implementation of the programme.

(d) some contribution should be solicited from the beneficiaries, at least in the form of physical labour, in order to engender among them the realisation that the assets created belong to the local community.

14.12.9 Rural water supply and rural sanitation facilities are essential ingredients in the total programme for rural development. There are many other allied elements which go into the total process of rural development. These include infrastructural aspects like land management, soil conservation, afforestation etc. and social aspects like primary health care, removal of illiteracy, women's welfare, child nutrition, immunisation etc. It is desirable that the thrust and implementation of as many of these programmes as possible get converged, in order to provide for integrated rural development with

'village' as one unit on the one hand, and `area' comprising of several adjacent villages together, on the other.

14.12.10 Urban water supply and sanitation schemes form part of the State Sector Plan. There has been no direct Central funding during the Seventh Plan. The MUD started dealing with installation of low-cost sanitary latrine and conversion of dry latrines into sanitary latrines under a Centrally sponsored scheme since 1990-91. This programme will be a major thrust in the Eighth Plan. The strategy to be adopted will include:-

i) change in the municipal bye-laws, wherever necessary, to prevent construction of dry latrines in future.

ii) conversion of all existing dry latrines into low- cost sanitary latrines by the end of the Eighth Plan.

iii) introduction of legislative measures, whereby employment of manual scavengers becomes an offence beyond a specified date, well before the end of the Eighth Plan.

iv) A suitable coordination mechanism will be evolved to ensure that the programme is executed in an integrated and effective manner. The Ministry of Urban Development would involve financial institutions like the HUDCO and would be responsible in overseeing all aspects of implementation of the programme of replacement of dry latrines and construction of new sanitary latrines, where they do not exist. The Ministry of Welfare would oversee the programme of liberation/rehabilitation of scavengers and their families.

14.12.11 Provision of drinking water and sanitation including solid and liquid waste management facilities in urban areas has been inadequate. A major problem in this regard is the lack of resources with urban local bodies, not only to finance creation of the facilities, but also to operate and maintain them. Almost all urban areas continue to enjoy highly subsidised water, whether it is for domestic use, commercial use or industrial use. The billing and collection mechanism is also weak and faulty and needs considerable improvement. It is necessary to adopt appropriate tariff- structures, as applicable to different strata of population. Cost-recovery should be built in the municipal financial structures and subsidies, where inevitable, kept explicit. Operation and maintenance costs should be fully recovered through adoption of cross-subsidy measures, so that smaller local bodies become self-sustaining, while metropolitan and other big cities are able to meet, in addition, the costs of further developments.

14.12.12 In order to improve efficiency, accountability and public awareness in the management of urban water supply and sanitation, it is desirable to separate the budget for water supply and sanitation from the general municipal budget. The future projects on urban water supply and sanitation should increasingly rely on institutional finance. Cost-recovery through appropriate user-charges under separate budget head, as already tried out in certain municipalities, and strict adherence to time and cost schedule are preconditions for successful implementation of the programme.

14.12.13 In urban areas, apart from strengthening the enforcement machinery to stop theft and pilferage, it is very important to take preventive maintenance measures and ensure that transmission and distribution losses through leakage, are avoided.

14.12.14 It has been felt necessary to evolve and implement a cost-effective special scheme of drinking water supply to small towns with a population upto 20,000 persons with some financial support from Centre on a matching basis under a Centrally sponsored scheme. The details of the scheme and the financing pattern will be worked out by the Ministry of Urban Development in consultation with the Planning Commission, Ministry of Finance and State Govts./U.T.Admns. The MUD will also oversee the management of the scheme.

14.12.15 The Central Plan support to supplement the State efforts in the field of training, research and technology development, management information system, computerised monitoring of rigs as appropriate in rural and urban sub- sectors will need to be continued. Programmes aimed at upgrading the skills of per-

sonnel dealing with public health/environmental health engineering activities, transfer of technology from the laboratory to the field, both in regard to material and equipment as well as preventive health, water quality monitoring and surveillance etc., will need to be encouraged. In addition, it will be necessary, particularly in the context of the envisaged large-scale low-cost sanitation programme for elimination of scavenging, to integrate such training with Information, Education and Communication (IEC) support.

14.12.16 Some of the important topics, proposed under the water supply, relate to: community participation, behavioural pattern and technology transfer aspects of water supply; evaluation and assessment of the rural water supply system etc. Studies would be undertaken on the preventive maintenance of water distribution system with reference to leakages and carrying capacities of the mains; leak detection measures; hydraulic analysis and optimum design of the water distribution systems; extension of rapid bacteriological techniques; development of springs for water supplies; development of natural and inorganic coagulants etc. Use of solar energy in the rural water supply; hydraulic rams for the rural water supply in hilly areas; development of package water treatment plants etc. would be given a major thrust. Focus would also be given to R&D on the conversion of brackish water and sea water to drinking water. In sanitation, the areas for research and development relate to: sanitary latrines; integrated bio- gas system for the treatment of excreata and animal wastes and the utilisation of gas; low-cost waste water collection, treatment and recycling for non domestic uses or safe disposal system etc.

Envisaged Physical Achievements

14.12.17 Physical coverage expected to be achieved by the end of the Eighth Plan is shown in the table 13.

Outlays

14.13.1 Keeping in view the constraint of resources and other competing demands, the Eighth Plan provides an outlay of Rs. 16711.03 crores, of which Rs. 10743.03 crores will be under State/UT Plans and Rs. 5968.00 crores under Central Plan for Water Supply and Sanitation Programme. This works out to 3.85% of the total public sector outlays. This includes loan assistance from LIC as well as external assistance from World Bank and bilateral agencies. It is envisaged that sizeable amount of funds will be mobilised outside Plan from the local bodies, the beneficiaries, NGOs, financing institutions like HUDCO etc., particularly for urban subsector, in order to achieve the Eighth Plan target. Scheme-wise outlays are indicated in statement - 14.1.

Table -13 Physical achievement envisaged at the end of the Eighth Plan.

(Population In Million)

S. No.	Sub-Sector	Envisaged Coverage as on 31.3.92		Expected Coverage during 8th Plan	Expected cumulative coverage at the end of Eighth Plan	
		Population	% $	Population+	Population	% $
1	2	3	4	5	6	7
1.	RuralWater Supply	486.11	78.40	188.69	674.80	100.00
2.	Rural Sanitation	16.96	2.73	16.80	33.76	5.00
3.	Urban Water Supply	185.67	84.90	65.00	250.67	94.03
4.	Urban Sanitation	104.76	47.90	80.00	184.76	69.31

($) Percentage is with respect to total projected rural/urban population on the date.

(+) Including augmentation/improvement of services, as appropriate.

N.B. : As the norms of water supply in urban and rural areas are different, the percentage achievement is not exactly comparable.

Statement - 14.1

Schemewise Outlay/anticipated Expenditure During Seventh Plan (1985-90) And Two Annual Plans (1990-92) And Outlay For Eighth Plan (1992-97) - Water Supply And Sanitation Sector

(Rs. in Crores)

S/No.	Scheme	Seventh Plan (1985-90)		Annual Plans (1990-92)		Eighth Plan (1992-97)-
		Outlay	Actual Exp.	Outlay	Anti. Exp.	Budgetary-Support
1.	2.	3.	4.	5.	6.	7.
	I.State/U.T. Plans					
	A.Rural					
1.	Rural Water Supply (MNP)	2253.25	2571.54	1412.50	1424.89	4954.52
2.	Rural Sanitation (MNP)	96.75	49.22	54.83	56.58	294.23
	Total - A (1+2)	**2350.00**	**2620.76**	**1467.33**	**1481.47**	**5248.75**
	B.Urban					
1.	Urban Water Supply					
2.	Urban Sewerage and Sewage treatment					
3.	Urban Waste Management	2935.64	2551.04	1651.89	1623.71	5494.28
4.	Urban Low-cost Sanitation	(3008.17)*				
	Total - B (1 to 4)	**2935.64** (3008.17)*	**2551.04**	**1651.89**	**1623.71**	**5494.28**
	Total - I (A+B)	**5285.64** (5358.17)*	**5171.80**	**3119.22**	**3105.18**	**10743.03**
	II.Central Plan					
	A.Rural					
1.	Centrally Sponsored Accelerated Rural Water Supply Programme (ARWSP) including National Drinking Water mission	1202.52# (1.30)	1898.87# (0.70)	1181.00	1161.23	5100.00
2.	Centrally Sponsored Rural Sanitation Programme (CRSP)	4.20$ (0.20)	16.58$ (0.14)	57.59	55.59	380.00
	Total - A (1+2)	**1206.72**	**1915.45**	**1238.59**	**1216.82**	**5480.00**
	B.Urban					
1.	Centrally Sponsored Low-Cost Sanitation for Liberation/ Rebabilitation of Scavengers	0.00	1.82	50.50	50.50	150.00

Statement - 14.1(contd.)

Schemewise Outlay/anticipated Expenditure During Seventh Plan (1985-90) And Two Annual Plans (1990-92) And Outlay For Eighth Plan (1992-97) - Water Supply And Sanitation Sector

(Rs. in Crores)

S/No.	Scheme	Seventh Plan (1985-90)		Annual Plans (1990-92)		Eighth Plan (1992-97)
		Outlay	Actual Exp.	Outlay	Anti. Exp.	Budgetary Support
1.	2.	3.	4.	5.	6.	7.
2.	Drinking Water Supply to Small Towns upto 20,000 population	+	0.00	+	0.00	50.00
3.	Urban Waste Disposal(Project Management Cell)	0.11	0.07	0.08	0.08	
4.	Support Programmes					
	a) Public Health Engineering Training Programme	4.00	1.56	1.70	1.70	
	b) Research and Development including Water quality surveillance and Laboratory Services	5.00	0.41	1.70	1.70	8.00
	c) Monitoring & MIS	1.00	0.02	0.50	0.50	
5.	Central Assistance for UWS and Sanitation including Solid Waste Management Scheme	0.00	0.00	8.00	8.00	10.00
6.	Equity to Urban Development and UWS Finance Corp./HUDCO	20.00	2.00	7.00	7.00	45.00
	Total - B (1 to 6)	**30.11**	**5.88**	**69.48**	**69.48**	**263.00**
	Total - II (A+B)	**1236.83**	**1921.33**	**1308.07**	**1286.30**	**5743.00**
	Total (I+II)	**6522.47** (6595.00)*	**7093.13**	**4427.29**	**4391.48**	**16486.03**
	IEBR (Urban)					225.00
	Grand Total					16711.03

*As revised subsequently

Includes Central Scheme of "UNICEF assisted rig Programme(Handling Charges)", amount for which has been shown in bracket separately. This scheme was merged with ARWSP from 1990-91.

$ Includes Central schemes of "feasibility study on Rural Sanitation", amount for which has been shown in bracket separately. This scheme was completed in the year 1986-87

+ After 1987 drought, ARWSP was extended to small towns upto 20,000 population (1981 Census). Outlay of Rs. 0.01 cr. for 1989-90 and Rs. 1.00 cr. for 1990-91 were included under ARWSP, but no expenditure was incurred. This scheme will now be a separate Centrally Sponsored Scheme with the Ministry of Urban Development.

CHAPTER 15

SOCIAL WELFARE

15.1.1 Human resource development plays a critical role in the socio-economic development of a country. It is an investment towards improving the quality of human life. Although development brings economic gains to society in general, specific measures become necessary to ensure that they reach the disadvantaged and the weaker sections of the population such as women, children, the disabled, the elderly, and the destitute. The welfare and development of these weaker sections of the society largely depend upon suitable policy directions executed through appropriate programmes and strategies.

DEVELOPMENT OF WOMEN

15.2.1 The need to bring women into the mainstream of development has been a national concern since Independence. Article 15 of the Constitution prohibits any discrimination on grounds of religion, race, caste, sex etc. Article 15(3), however, clarifies that this provision will not prevent the State from making any special provisions for women and children.

15.2.2 In the earlier phase of Indian planning, women's development concerns had a low profile. There were, however, some significant beginnings. A major initiative was the establishment of the Central Social Welfare Board in 1953 to promote and assist voluntary organisations in the field of women welfare, child welfare and welfare of the handicapped. Under the community development programme, Mahila Mandals were promoted and supported since the Second Plan. Some legislative measures were also undertaken to protect the interests of women as, for instance, the Suppression of Immoral Traffic in Women and Girls Act, 1956, the Hindu Succession Act, 1956, the Dowry Prohibition Act, 1961 and the Maternity Benefit Act, 1961. The Third and the Fourth Plans accorded a high priority to education of women. Measures to improve maternal and child health services, supplementary feeding for children and nursing and expectant mothers were introduced. The Fifth Plan supported economic development, employment and training for women as the principal focus for their socio-economic development. The main approach in these Plans was generally to view women as the beneficiaries of social services rather than as contributors to development.

15.2.3 The seventies brought women to the forefront of development concerns with the publication of the Report of the Committee on Status of Women in India, the observance of the International Women's Year in 1975 and the preparation of a National Plan of Action for Women. This decade also saw the enactment of important specific legislations like the Equal Remuneration Act, 1976. The creation of a separate Bureau of Women's Development and the setting up of a national committee with the Prime Minister as President were intended to provide strong administrative support to women's development. During the Sixth Plan, a multi-sectoral approach was adopted for women's development and, for the first time, a coordinated picture was presented in the Plan. A separate Department of Women's Welfare was carved out at the Centre in 1985 from the then existing Ministry of Social and Women's Welfare to give a separate identity and to provide a nodal point on matters relating to women's development. Legislative measures were taken to provide protection to women against discrimination, exploitation, atrocities and violence. Various labour legislations were amended to safeguard the interests of women and provide for their welfare.

Review of the Seventh Plan and the Annual Plans 1990-92

15.3.1 The Seventh Plan continued this strategy. The National Perspective Plan for Women (1988-2000) provides directions for all-round development of women. The National Commission on Self-Employed Women and Women in Informal Sector submitted a comprehensive report titled "Shramshakti", analysing the problems affecting large number of women in the informal sector and the steps needed to give them a better deal.

15.3.2 A significant step taken in the Seventh Plan towards improving women's status was the identification of a number of beneficiary-oriented programmes under various sectors of de-

velopment. These programmes were regularly monitored by the concerned Ministries/Departments and coordinated at the Centre by the Department of Women and Child Development.

15.3.3 The number of women beneficiaries assisted under the Integrated Rural Development Programme was 34.33 lakhs in the Seventh Plan. The percentage of women beneficiaries increased from 9.9 in 1985-86 to 25.6 in 1989-90. Under TRYSEM, 4.59 lakh women were trained for self-employment in the Seventh Plan. Under both the programmes, the minimum percentage of women beneficiaries has now been raised to 40. Under Jawahar Rozgar Yojana, 30 per cent employment opportunities are reserved for women. In 1990-91, the share of women in employment generation under JRY was about 24 per cent. Development of Women and Children in Rural Areas (DWCRA), launched in 1982-83, to increase rural women's access to employment, skills, training, credit and other support services, covered 187 districts in 1990-91. The programme follows a group approach. Over 28,000 women's groups were formed in the Seventh Plan.

15.3.4 Efforts were also made in the Seventh Plan to enhance women's skills in agricultural operations. Agricultural extension services under the Training and Visit System organised gender sensitisation training camps, enrolled women contact farmers and made special efforts to disseminate knowledge to women farmers. Operation Flood II and III involved rural women in dairy development on cooperative lines by training them in various activities relating to milk production. In 1989, out of 68.85 lakh members of dairy cooperative societies, 14 per cent were women. In Gujarat and Andhra Pradesh, milk and dairy women's cooperatives were formed. Some women's cooperative societies were set up in fisheries sector also. Short term training courses for women were organised in fish processing, preservation etc. Nearly 52,000 women are expected to have benefited under the special livestock breeding programme, where a target of 10 per cent was earmarked for women beneficiaries. Krishi Vigyan Kendras and "Lab to Land" programme also benefitted women in agriculture and allied sectors.

15.3.5 The Khadi and Village Industries sector took up measures to improve employment and earnings of women. The sponsorship of ancillary industries by public sector undertakings in collaboration with State level agencies dealing with development programmes for women, has helped to increase their employment opportunities. A separate entrepreneurs' cell has been set up in the office of the Development Commissioner, Small Scale Industries to provide counselling to women entrepreneurs. Development of entrepreneurship among women is also being encouraged by Small Industries Development Organisation by organising entrepreneurs' development programmes exclusively for women. Women are given preference in schemes of self-employment among educated unemployed youth introduced in 1983-84. A large number of women are not only rendering assistance in family industrial enterprises or business but are also entering business and industry on their own.

15.3.6 Educational training in selected trades with high employment potential was provided to women in six regional vocational training institutes. A national training Institute for Women was set up at NOIDA. A new scheme was taken up by the Ministry of Labour for providing grant-in-aid to State Goverments setting up women's ITIs/wings. Seats for about 21,500 women were provided under the scheme. Steps have been taken to expand training in new skills in non-traditional areas. The Department of Science and Technology is implementing a programme for providing opportunities for gainful employment to women specially in rural areas to reduce drudgery in their lives and to improve sanitary and environmental conditions.

15.3.7 The number of women employed in the organised sector increased from 13.7 lakhs in 1962 to 35.7 lakhs in 1989. This represented an increase in women's share in employment in the organised sector from 11.3% in 1962 to 13.7% in 1989. However, the percentage of women holding gazetted posts in 1988 was only 4.9 in the Central Government. The percentage of women in 1987 in the Indian Administrative Service was only 7.4, in the Indian Foreign Service 9.9 and in the Indian Economic Service 12.9. The percentages in 1972 were 6.1, 4.9 and 4.9 respectively.

15.3.8 For educational development of women, apart from a vigorous drive for univer-

salisation of elementary education, retention of the girl child in school, reduction in drop out, and promotion of adult literacy, a number of special initiatives were taken. The enrolment ratio for girls in the age group 6-11 years rose from 24.61 in 1950-51 to 83.60 in 1989-90. For girls in the age group 11-14 years, the enrolment ratio rose from 4.5 in 1950-51 to 44.58 in 1989-90.

15.3.9 In secondary schools, girls numbered 19.61 lakhs in 1989-90 constituting 31.72 per cent of the total enrolment. In 1950-51, the proportion of girls at this level was only 16.7 per cent.

15.3.10 In the higher educational courses, girls constituted more than 37 per cent of the students enrolled in 1989-90. The number of girls in science courses constituted about 36.5 per cent of all students enrolled in 1989-90. During the same year, 34.48 per cent of the total students enrolled in MBBS were girls. In Engineering and Architecture courses, girls constituted 36.5 per cent. The most popular professional course for girls is teachers training, wherein they constitute nearly 44 per cent of those enrolled.

15.3.11 School text books were reviewed to remove gender bias. School teachers were given re-orientation to present gender equality. The scheme of nonformal education which was introduced in the Sixth Plan for implementation in educationally backward States, was modified during the Seventh Plan to cover urban slums, hilly and tribal areas and working children. About 65,000 centres were set up by the end of 1988-89 benefitting 16 lakhs girls. Special cells were set up in the Directorate of Adult Education and Resource Centres to plan and administer women's education programmes and to encourage their participation. The scheme of Mahila Samakhya was launched in three States to mobilise rural women for education.

15.3.12 The Sports Authority of India conducted National Sports Festival for women. Scholarships under sports talent search scheme were awarded to women.

15.3.13 Women's Development Centres were set up in 22 universities and colleges to bring about social awareness of women's issues and focus efforts on the development of rural women.

15.3.14 For improving the health and nutrition status of women, maternal and child health services were strengthened. Under the scheme of prophylaxis against nutritional anaemia, pregnant and nursing mothers were given a daily dose of iron and folic acid for 100 days. Camps were organised for women to create health conciousness among them. Training of untrained dais was continued to ensure safe delivery. As part of ante-natal care, the coverage of women by vaccination against tetanus has improved substantially. The Universal Immunisation Programme, which aims at universal coverage of pregnant women and infants, was extended to all the districts in the country. Special centres were set up to impart nutrition education to mothers through home visits by multipurpose workers. Mass education and media activities were geared up to promote and create awareness against early marriage. The message of family planning, the desirability of delayed motherhood, and spacing of births was promoted vigorously.

15.3.15 For tackling the problem of violence against women, including domestic violence, amendments to existing laws were carried out. The cruelty on woman, inflicted by her husband or his relatives was made a legal offence. The legislative provisions relating to rape were amended to accord better protection to women victims. The Commission of Sati (Prevention) Act, 1987 was passed to prevent the pernicious practice of commission of sati and its glorification.

15.3.16 A number of schemes, supplemental to the general development programmes, were implemented by the Department of Women and Child Development. The important role of voluntary organisations in women's development was recognised. Grants were given to them to promote and support women's development and encourage them to participate in problem areas. Under the scheme of condensed courses of education of the Central Social Welfare Board, 1,100 courses were sanctioned in 1990-91 to benefit about 27,500 women. This brought the cumulative total of courses sanctioned since its inception in 1958 to 16,330. To provide safe accommodation at reasonable rents to working women, construction of 597 hostels with a ca-

pacity of 38,127 seats for working women was sanctioned between 1972-73 and March 1991. In 1986-87, a scheme to provide support to training and employment of women (STEP) was launched. Women's Development Corporations were set up in 11 States and one Union Territory to promote economic activities, organise training and generate employment. The Central Social Welfare Board continued the scheme of assisting voluntary organisations to set up production units, thereby providing work and wage to poor women. More than 10,000 such units have been sanctioned between 1958 and March 1991. Programmes for educating women of their rights were organised. To increase women's participation in development and to help them to organise themselves, awareness generation camps were conducted.

Situation Analysis

15.4.1 The efforts made during the various development plans have brought about perceptible improvement in the general socio-economic situation of women. Significant gains in respect of women's health status have been achieved. The expectancy of life at birth for females which was 31.6 years in 1951 was estimated to have risen to 59.1 years in 1986-91. The number of females for every 1,000 males consistently declined from 972 in 1901 to 930 in 1971. However, it increased slightly in 1981 to 934 but has dipped again to 929 in 1991. The infant mortality rate declined from 129 per 1000 live births in 1970 to 91 in 1989. More importantly, the sex differential which was quite high in the seventies has now been bridged. However, the 0-4 age specific mortality rate, which had significantly declined from 53.0 in 1970 to 33.3 in 1988, continues to show higher female mortality. The maternal mortality rate continues to be uncomfortably high. Age specific death rates for 1988 indicate higher death rate for females upto the age of 35 years. This differential is indicative of the continued neglect of the female child's health and nutrition needs, her early marriage, high fertility, poverty and inadequate access to health care.

15.4.2 Though there has been an increase in the age at marriage of girls, the proportion of married girls in the age group 15-19 is still very high according to the 1981 census. Teenage mothers face higher risks in pregnancy and related health problems compared to those above 20 years of age. The marital fertility rate in the age group 20-29 years is very high, adversely affecting the woman's health and nutrition status. Most pregnant women from the poorer sections of society continue to suffer from anaemia. Underweight, toxaemia, bleeding during pregnancy, puerperal sepsis and under-nourishment are widely prevalent. Birth of low-weight babies and high infant and maternal mortality are consequences of these factors.

15.4.3 In the field of education, the position is still not satisfactory. The 1991 Census data show that for the population aged 7 years and above, the percentage of female literates is only 39.42 compared to 29.75 in 1981. There is also considerable inter-State variation. Kerala, for instance, had a literacy rate of 86.93 per cent in 1991 of females above seven, as compared to 20.84 per cent in Rajasthan, 23.10 per cent in Bihar, 26.02 per cent in Uttar Pradesh and 28.39 per cent in Madhya Pradesh. While the higher decadal growth rate of female literacy (66 per cent) as compared to male literacy (43 per cent) provides some consolation, the large demographic base has resulted in 197 million illiterate among females in the 7+ age group -- an indication of the massive dimension of the problem of female illiteracy. This limits their achievements in the field of employment, training, utilisation of health facilities and exercise of their legal rights and is a cause of their continuing exploitation. Illiteracy among women is also negatively related to fertility rates and infant and child mortality rates.

15.4.4 The unemployment rate for females, according to the criterion of "usual principal status", was 3.52 per cent in rural areas and 8.77 per cent in urban areas in 1987-88 as compared to 1.41 per cent and 6.90 per cent respectively in 1983. The trend of increase in the incidence of open unemployment was stronger in the case of women than of men. Also, the differences between the "usual status" and the "daily status" unemployment rates are much larger in the case of women than of men, implying that under-employment constitutes a much higher proportion of the overall unemployment in the case of women. The estimated backlog of unemployment among women in 1990 by the criterion of "usual status" is 3.96 million.

15.4.5 The 1991 census reported 91.397 million female workers (excluding Jammu and Kashmir), of whom 66.189 million were reported as main workers and 25.208 million as marginal workers. The percentage of female main workers to total main workers was 23.19 per cent. It was much lower in the urban areas. During the decade 1981-91, female workers in India increased by 42.26 per cent. The female work force participation rate was 22.69 in 1991 as compared to 19.77 in 1981. There is considerable inter-State variation in female work participation rate, Sikkim reporting 52.74 per cent as compared to only 6.78 per cent by Punjab. The work participation rate for females is higher in the rural areas (27.20%) than in the urban areas (9.74%). The distribution of rural female main workers shows that 38.58 per cent were cultivators, 48.83 per cent agricultural labourers and 12.59 per cent other workers.

15.4.6 The 1991 census took special care to ensure that women's participation in work is not left out and women-headed households are not under-enumerated. It is difficult to say to what extent the increase in work force participation rate is a reflection of these endeavours. The contribution of women to the economy continues to remain grossly under-reported due to certain conceptual, methodological and perception problems, reflecting a gender bias since economic value is not assigned to unpaid household work and various kinds of subsistence activities. Home-based production activities and unpaid family work also tend to be grossly under-reported, specially if this is of an intermittent character.

15.4.7 The overwhelming majority of women are engaged in the informal sector, which not only provides low returns but is also characterised by virtual inaccessibility to credit, technology, training and other facilities. Women have still not been recognised as producers in their own right. A large number of women employed as casual labourers in construction and other industries do not get the prescribed minimum wages, nor are the stipulated minimum hours of work adhered to. The traditional economic activities, which provide employment to women, have suffered in competition with the more advanced technologies. Home-based women workers hardly ever get the protective coverage of labour laws. The present crisis of fuel and water has increased further the burden on women. There are about 30 per cent rural households headed by women who bear all the burden of earning and caring for the families and suffer on account of lack of access to means of production and ownership of land and other property.

15.4.8 Despite the constitutional guarantees and specific legislations to protect the interests of women, they continue to suffer because of ignorance of their legal rights, strong social resistance to giving women their due share, lack of legal aid facilities and near-absence of strong women's groups in rural areas which can protect their interests. Socio-cultural traditions continue to assign a subordinate role to women, particularly in rural areas, subjecting the girl child to discrimination of various kinds, including the killing of unborn female foetus after prenatal sex determination tests. The menace of dowry continues unabated, despite the legislation prohibiting dowry and prescribing stringent measures for violating the law. Violence against women, including that in the domestic sphere, continues to brutalise their existence as evident from rape and dowry-related cruelty and murder cases. For instance, out of 9,752 rape cases reported in 1989, the victims were below 10 years of age in 369 cases. There were 4,205 reported cases of dowry related deaths.

Strategy for the Eighth Plan

15.5.1 The strategy in the Eighth Plan will be to ensure that the benefits of development from different sectors do not bypass women and special programmes are implemented to complement the general development programmes. The latter, in turn, should reflect greater gender senstivity. The flow of benefits to women in education, health and employment need to be monitored. Women must be enabled to function as equal partners and participants in development and not merely as beneficiaries of various schemes. Extending the reach of services to women, both quantitatively and qualitatively, will be an important objective of the Eighth Plan. Socio-cultural and administrative constraints to the realisation of women's full potential need to be removed and there has to be greater societal awareness of their contribution to national well-being. The media, both mass and folk, will be assigned an important role. Voluntary agencies will be supported in their advocacy and social

activism programmes for gender equality and prevention of atrocities on women. Panchayati Raj institutions will be involved in the designing and implementation of women's programmes.

15.5.2 A more holistic view of women's role in the family and society would be conceived as opposed to the perception of a restricted role of motherhood and home maker. The issues relating to women will be integrated in the total development endeavours. The different Ministries would allocate resources in a manner that the benefits flow to women.

15.5.3 A major thrust in the strategy for women's development will be on the formation and strengthening of grassroot level women's groups, which will articulate local women's needs and play an important role in decentralised planning and implementation of programmes. Services for women under various programmes of employment, education, health care, family welfare, drinking water and nutrition would be made available at the grassroot level in the form of a package through convergence and integration.

15.5.4 Adolescent girls, out of the school system, have been a neglected category in the matter of reach of social services. Their developmental needs will require special attention in order to prepare them for adult roles. Special programmes would be developed for adolescent and young girls as these groups have generally suffered on account of poor nutrition, lack of health care, education and training and restrictive social customs and practices.

15.5.5 The existing legal safeguards for women against injustice and atrocities need to be reviewed, loopholes removed and their implementation monitored. One of the basic requirements for improving the status of women is to bring about changes in the laws relating to inheritance of property to fully protect the interests of women and enable them to get an equal share in the parental property, whether inherited or self-acquired. Social legislations for women will be effectively enforced with the help of women's groups. A National Commission on Women has recently been set up to act as a watch dog body on matters concerning women. A Commissioner of Women's Rights will be appointed.

15.5.6 It is equally important to usher in changes in societal attitudes and perceptions in regard to the role of women in different spheres of life. This will be facilitated by the empowerment of women and will imply adjustments in traditional gender specific performance of tasks. Mass media and inter-personal communication techniques will be extensively utilised to achieve these ends.

Employment

15.5.7 Women, who form nearly half of the population, will be recognised as a target group in the promotion of employment. The employment strategy for women will be integrated with the respective sectoral planning. It will be based on promotion of opportunities for self-employment and creation of wage employment. A better deal for the women work force in the unorganised sector would require encouragement to the formation of producers' groups and cooperatives. This would help improve their bargaining power and access to inputs. Special, condensed, job-oriented courses will be organised for women. District federations and associations of women's groups will be encouraged to train village women and help them secure technical support, credit and marketing facilities.

15.5.8 Attempts would be made to expand women's employment in the household sector by providing adequate support in the areas of technology upgradation, training, credit, raw materials, and marketing. A decentralised approach for providing these facilities will help considerably in the expansion of women's employment in these sectors.

15.5.9 The existing poverty alleviation programmes like IRDP, TRYSEM and Jawahar Rozgar Yojana would ensure that the target set for women beneficiaries is reached. The scheme of Development of Women and Children in Rural Areas (DWCRA) would be strengthened. Greater flexibility will be provided in the areas of training inputs for organisational and managerial skills and support for raw materials, marketing and services from the departments concerned.

15.5.10 The programmes of training women in soil conservation, dairy development, social forestry and other occupations allied to agricul-

ture like sericulture, dairying, horticulture and poultry will be expanded. The existing syllabi will be reviewed to make the training more relevant to the needs of women. Extension services will be modified and strengthened, keeping in mind women's role as producer. Special efforts will be made to cover a larger number of women under extension services. The number of women extension workers will be increased. They would actively assist rural women to take advantage of the schemes and training programmes and help in the formation of cooperatives and Mahila Mandals.

15.5.11 In the programmes of agricultural production, emphasis would have be laid on implementation of land reforms, restructuring of agrarian institutions and promotion of rural industries. In this context, the role of women in agricultural production has to be given due recognition. Women's control over economic resources and services will have to be encouraged as a large number of women are heading rural households. Measures would be necessary to distribute surplus land to women-headed households as well and titles granted to women in the allotment of house sites as also in respect of other productive assets. For married women, joint titles would be desirable for productive assets, houses and house sites.

15.5.12 Vocational training of women will be a special thrust area. The training programmes for women in the ITIs and other training institutions will be diversified and expanded. New areas with a high employment potential will be identified. Part-time and short-term courses will be organised as per the local needs of industries. Women will be encouraged in new expanding areas of technical education such as electronics, computer systems, bio-engineering, communications and media.

15.5.13 Women in rural areas spend a large part of the day in procuring fuel, fodder, food and water for the family. Measures will be taken to reduce the element of drudgery through improved sanitary and environmental conditions, smokeless chullahs, bio-gas plants, solar cookers and other low cost technologies.

Nutrition

15.5.14 Deprived of proper nourishment and health care since childhood, women in our country remain underweight and suffer from nutritional anaemia. Efforts would be made to bring about a change in the discriminatory attitude of the society with regard to the food intake of females within the family and in the traditional beliefs and practices, wherever prevalent, with regard to the nutritional needs of women. It would be necessary to facilitate women's access to, and control over income and use of locally available foods so as to ensure adequate nutrition, particularly iron and iodine intake. Nutrition programmes will lay emphasis on nutrition education, particularly increasing the awareness about the nutritional needs of women especially during infancy, adolescence, pregnancy and breastfeeding of the newborn.

15.5.15 Mass media would play a major role in spreading the messages regarding women's nutrition. Documentary films, video tapes and audio-cassettes will be produced and transmitted through television, radio, cinema and other communication channels. Booklets and pamphlets will be produced on a large scale for the community. Exhibitions on the theme `Women's Nutrition and Health' will be organised in rural, tribal and urban slum areas. Camps and short-term nutrition training programmes will be arranged for women, adolescent girls, women's organisations and school girls by trained ICDS workers, ANMs, teachers, members of mahila mandals and informal channels. For effective implementation of training programmes, educational material will be produced in local languages.

15.5.16 Local women's organisations and adolescent girls would be encouraged to promote participation of women in the monitoring of nutrition care and social support measures for them. Nutrition education programme would be linked with other programmes like family planning, environmental sanitation, potable water supply, ecological balance, horticulture, kitchen garden, education and training for income generation.

Education

15.5.17 Education of women is a critical input for improving nutrition levels, raising the age at marriage, acceptance of family planning, improvement in self image, and their empowerment. Experience of voluntary organisations and some of the innovative Government pro-

grammes have shown that a group of motivated women can be effective instruments for mobilising the community for women's education. Emphasis will be laid in the Eighth Plan on creation of conditions which would enable women to participate in the educational process in a more meaningful way.

15.5.18 Retention of girls in school upto elementary stage will be pursued as an important objective. Universalisation of education would comprise not merely universal enrolment but also universal participation. Provision of school uniforms and other incentives would improve the enrolment of girls in rural areas, particularly in educationally backward States. Since girls find it difficult to go long distances to attend schools, it is necessary to have schools in the vicinity of the villages.Non-formal centres for girls' education, flexible timings and literacy programmes will involve women's groups. Flexible modules for education and condensed courses would be designed for rural girls and women. Women's access to science education has to be improved and this would require careful planning to generate a pool of trained mathematics and science teachers. Institutional mechanisms will be developed so that the teachers are made to feel responsible to the community. Adult female education will be promoted, a process which will also help in the enrolment and retention of young girls and children in the school system.

15.5.19 Appointment of female teachers would be of great help in improving the attendance of girls in schools. Although the proportion of female teachers, according to the Fifth All India Educational Survey, has reached 30 per cent, their number is still inadequate in rural areas. In order to induct local women as teachers, relaxation in educational qualifications may have to be made in some areas.

15.5.20 At the secondary and higher stages of education, it will be necessary to provide diversified courses in technical fields such as agriculture, health services, food production activities like dairy, food preservation, poultry etc. Correspondence courses and self-study programmes for girls and open school system would be expanded.

Science and Technology

15.5.21 Application of science and technology is vital for the advancement of women. Technology should reduce household drudgery and provide better working conditions for women, particularly in rural areas. Science and technology should aim at improvement of the environment and quality of life of women at an affordable cost. At present, although women are represented in science and medical courses to an appreciable degree, the number engaged in scientific professions is perceptibly low at the higher levels of research and management. This may be because such professions make a heavy demand on time and energy, which women may find difficult to devote on account of their responsibilities at home. Efforts would be made to encourage part-time employment for women. Relaxations which will permit married women to leave the work force and seek re-entry at a later date would be necessary so that she can fulfil her child caring responsibilities and also her career ambitions.

Welfare

15.5.22 A number of programmes for self-employment would be supported under social welfare sector. High priority will be given to improve the incomes of women and skill formation. The existing scheme of "Support to Training-cum- Employment Programmes" (STEP) for implementation of projects seeking to provide training and employment to women in agriculture and allied activities will be strengthened. The Central Social Welfare Board's scheme of assisting voluntary organisations to provide work and wages to poor women will be continued. The scheme "Employment-cum- Income Generating Training-cum-Production Centres", with the assistance of NORAD, will be consolidated. The activities of women development corporations as guarantors and promoters of credit to poor women or groups of women will continue. The corporations will also provide marketing and managerial facilities to participating women. To meet the credit needs of women producers, special institutional arrangements will be made by streamlining the existing lending procedures of banks and cooperative societies, removing bottlenecks for women borrowers and setting up a national credit fund for women.

15.5.23 Condensed courses of education and vocational training will be strengthened to bene-

fit women and girls in rural and backward areas in a large way. Hostel facilities for working women with creche facilities will be increased for women migrating to towns, cities and metropolitan areas for employment. Relaxations will be made in the income ceiling and duration of stay of working women in hostels.

15.5.24 Priority will be given to generation of awareness about the need for improving women's status. Mass communication and folk media will be effectively geared to this end. Programmes will be produced highlighting women's issues. The positive role models of women as cultivators, enterpreneurs and managers will be projected. Women's colleges and universities and women's study centres will be encouraged to take up awareness generation activities through publication of women's journals and research on women's issues.

15.5.25 Programmes will be designed for destitute women and women in distress by providing the necessary rehabilitation measures to make them economically self-sufficient. Special projects will be developed for economic rehabilitation of socially disadvantaged groups of women like devadasis and prostitutes.

15.5.26 Awareness and knowledge about the legal provisions and infrastructure for availing these are extremely important. Programmes for generation of legal awareness would, therefore, be initiated. Legal aid will be extended. In order to ensure effective implementaion of legal provisions, orientation and training of personnel will be given due importance.

15.5.27 Voluntary organisations will be promoted and supported to accelerate the process of women's development. Areas will be identified where the voluntary sector is weak. Efforts will be made to promote and stimulate agencies to work in such areas. Grants-in-aid procedures will be streamlined to reduce delays in releasing grants. Voluntary organisations will be involved in the designing of programmes as well as their implementation. Policy research and evaluation will be supported and the findings widely disseminated so that the improvements needed in policies and programmes can be more clearly articulated.

CHILD DEVELOPMENT

15.6.1 Children constitute the nation's future human resource. Investment in child development is thus an investment in the country's future and in improving the nation's quality of life. The early years are a very delicate period and require well-designed programmes for the child's survival, growth and development. Deficiencies during this stage can lead to permanent retardation in physical and mental growth. The fact that children have neither a voice nor a political constituency assigns a greater resonsibility to adults to plan for child development.

15.6.2 The Indian Constitution contains several provisions for protection, development and welfare of children. Article 24 prohibits the employment of children in any factory or mine or in any other hazardous occupation. 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, children are given opportunities and facilities to develop in a healthy manner and childhood is protected against exploitation and against moral and material abandonment.

15.6.3 The population of children below 15 years as per the 1981 census was 263 million with 75 per cent living in rural areas. The Expert Committee on Population Projections (1989) projected 301 million persons of less than 15 years in 1990 (36.40 per cent of the population) of which 22.5 million (2.72 per cent) are less than 1 year (infants), 44.2 million (5.34 per cent) are in the age group 1-2 years (toddlers) and 63.7 million (7.70 per cent) are in the age group 3-5 years (pre-school). These numbers, when seen in the context of about 30 per cent of population below the poverty line as per 1987-88 estimates, give an indication of the magnitude of the tasks that lie ahead.

15.6.4 The earlier plans perceived child development mainly in the frame of child welfare. The First Plan laid the major responsibility of developing child care services on voluntary organisations. The Central Social Welfare Board established in 1953 was assigned a leading role in promoting and assisting the voluntary effort. In the Second, Third and Fourth Plans, child welfare services were added in different sectors of the Plan. The Fifth Plan ushered in a new era with a shift in focus from child welfare to child development and emphasis on integration and

coordination of services. The National Policy on Children adopted in 1974 provided a framework for the development of services to chidren. The programme of Integrated Child Development Services (ICDS) with a package of services comprising immunisation, health check-up, referral, supplementary nutrition, pre-school education, and nutrition and health education, was launched in 1975 in 33 blocks in the country on an experimental basis. A school health programme was also started. Maternal and child health services in rural areas were strengthened. The national programme of minimum needs included some services which directly benefited children.

15.6.5 The Sixth Plan saw consolidation and expansion of the programmes started earlier. It also witnessed expansion of the programme of ICDS, with the sanction of 1037 projects. Implementation of the programme of universalisation of elementary education was accelerated. Non-formal education programmes were promoted. Vocationalisation of education was given priority. Pre-school education centres were supported in the educationally backward States through grants to voluntary organisations. The national policy statement on health adopted in 1983 set the goals and the targets for health by the year 2000 AD.

Review of Seventh Plan and Annual Plans 1990-92

15.7.1 The Seventh Plan continued the strategy of promoting early childhood survival and development through programmes in different sectors, important among these being ICDS, universal immunisation, maternal and child care services, nutrition, pre-school education, protected drinking water, environmental sanitation and hygiene, and family planning.

15.7.2 The ICDS continued to be the main integrated national programme for early childhood survival and development. In 1991, the number of sanctioned ICDS projects was 2,594, of which 1,656 were in rural areas, 711 in tribal areas and 227 in urban slums. By the end of December, 1991, about 129 lakh children below 6 years of age and more than 27 lakh pregnant and nursing mothers were getting supplementary nutrition under ICDS. About 67 lakh children of 3-5 age group were getting pre-school education services. The feedback on the impact of ICDS reported a faster decline in the incidence of infant and early childhood mortality in ICDS project areas. There was also better utilisation of vitamin 'A', iron-folic acid, and immunisation services in the ICDS projects compared to non-ICDS areas. Programme implementation in several States, however, suffered from a number of deficiencies including inadequacy in the cold chain for vaccines, irregular supply of nutrition supplements, inappropriate food, low coverage of "under-three-year olds", and weak coordination between the health and welfare departments at the field level. Nutrition and health education of mothers and community participation were also weak.

15.7.3 Under the maternal and child health services of the Ministry of Health and Family Welfare, the universal immunisation programme to protect children from six major diseases which affect early childhood mortality and morbidity, viz., diptheria, whooping cough, tetanus, polio, measles and childhood tuberculosis was strengthened and expanded to provide universal coverage. In 1989-90, more than 82 per cent coverage was reported for DPT, OPV, BCG, and about 70 per cent for measles and TT (PW). Surveillance systems to monitor the incidence of these diseases were set up which reported a decline in the incidence of reported cases of these diseases. Prophylaxis programme against nutritional anaemia of mothers and children through a daily dose of iron and folic acid for a period of 100 days was expanded. A prophylaxis programme against blindness due to vitamin A deficiency was also implemented. Pre-school and school feeding programmes were continued in the States, with priority accorded to children below 6 years. To prevent and control diarrhoea and diarrhoea- related diseases which account for about 1.5 million deaths every year, the oral rehydration therapy was launched, which now covers all the districts. During 1990, an acute respiratory infection control programme was started in 15 districts. The primary health care set-up of rural areas was strengthened. In urban slums, the urban basic services programme included services for children and mothers. The programme of health posts for meeting maternal and child health needs in urban slums was strengthened. A massive programme for providing safe drinking water facilities in the rural areas launched in the Sixth Plan was accelerated in the Seventh Plan.

15.7.4 Since the age of the mother at the time of birth of her child, her health and nutrition status and birth order are important factors which affect child survival and development, the strategy for raising the age at marriage of girls, adoption of the two-child norm and spacing of births was vigorously promoted in the Seventh Plan to project family planning basically as a programme for the well being of the mother and her child. In March 1990, an overall couple protection rate of 43.3 per cent was reached. There was also a modest decline in the age of acceptors of various birth control devices.

15.7.5 For pre-school educational development, in addition to ICDS, 4,365 early childhood education centres were assisted through grants-in-aid to voluntary organisations. The National Policy on Education (1986) emphasised universal enrolment and universal retention of the child at the elementary school stage and a substantial improvement in the quality of education. In 1988-89, about 127 million children were enrolled in classes I to VIII. Of these, 96 million were in classes I to V and 31 million in classes VI to VIII. The enrolment ratio in 1988-89 was 99.6 per cent in classes I to V (age group 6-11 years) and 56.9 per cent in classes VI to VIII (age group 11-14 years). The scheme of non-formal education, introduced in the Sixth Plan as an alternative stream to impart education to children who for various reasons could not attend formal schools, was continued.

15.7.6 Creche services to children of poor working women in the unorganised sector were substantially expanded. By the end of 1990-91, there were about 12,500 creches. Training of creche workers was also organised. However, the creche facilities fell far short of the requirements.

15.7.7 The Government of India enacted the Child Labour Prohibition and Regulation Act, 1986. In 1987, the National Policy on Child Labour was formulated. Projects were sanctioned to voluntary organisations for the welfare of working children to provide non-formal education, supplementary nutrition, health care and skill training.

15.7.8 For children in need of care and protection, grants were given to voluntary organisations through the State Governments. By the end of the Seventh Plan, 47,600 children were benefited. The programme, however, was heavily weighed in favour of institutional services. Adoption services were promoted and a concerted effort made to promote in-country adoption.

15.7.9 The Juvenile Justice Act (JJA) was enacted in 1986, repealing the then existing Children Act, to deal effectively with the problem of neglected or juvenile delinquents and provide for a standardised framework for the handling of such children. To provide financial support to State Governments for establishing the institutional infrastructure and to standardise the minimum services as envisaged under the Act, a scheme of prevention and control of social maladjustment was started in 1986-87. However, many States and Union Territories are yet to set up suitable administrative machinery with appropriate professional expertise to implement the provisions of the Act.

Status of Children

15.7.10 The measures undertaken in the earlier Plans have undoubtedly improved the situation of children. The infant mortality rate (IMR) declined from 129 per 1000 live births in 1971 to 91 in 1989. There are, however, considerable inter-State variations in IMR, the highest being 123 in Orissa and the lowest 17 in Kerala. IMR is also high in Madhya Pradesh (111) and Uttar Pradesh (98). The rural-urban differential in IMR continues to be very high. It was 58 in urban areas as compared to 98 in rural areas in 1989. Although the age specific death rate of children 0-4 years declined from 53.0 in 1970 to 33.3 in 1988, the inter State variation continued to be large, the lowest being 7.7 in Kerala and the highest 51.0 in Madhya Pradesh. The rural-urban differential is also high -- 35.7 in rural areas and 18.7 in urban areas. Deaths among children 0-4 years accounted for two-fifths of the total number of deaths in 1989. The common causes of high death rate among pre-school children are diarrhoeal diseases, respiratory infection, communicable diseases, and causes peculiar to infancy.

15.7.11 Malnutrition among children is an important cause of high mortality and morbidity. Its incidence is quite high among the disadvantaged segments of the population. It is, by and large, the result of insufficient calorie in-

take; unbalanced diets lacking in adequate quantities of vitamins, minerals and other nutrients; susceptibility to diseases due to poor environmental sanitation and hygiene and consumption of polluted water. The poor nutrition status during pregnancy and ignorance of health ad nutrition needs are also contributory factors.

15.7.12 While there have been gains in the education of children, particularly of girls, the age specific literacy rate available for 1981 indicates that only 34.7 per cent boys and 25.6 per cent girls in the age group of 5-9 years were literate. In the age group 10-14 years, the literacy rates were 66.7 per cent for boys and 44.8 per cent for girls. There were also considerable inter-State and rural urban variations. The age specific literacy rates for 1991 are not yet available but given the difference of only 9.7 per cent in the female literacy rate for the age group of 7+ between 1981 and 1991, the slow pace educational development is a cause for concern, specially if one sees the large inter-State variation in the age specific literacy rates and the situation in the educationally backward States. The drop-out rates, particularly for girls, continues to be high. For instance, in 1986-87, the drop out rate in the case of girls was 51.2 at classes I-V stage and 70.2 in classes I to VIII.

15.7.13 The problem of child labour still persists particularly in the unorganised sectors of industry. The 1981 census

reported about 13.6 million child workers, who constituted 1.96 per cent of the total population, 5.57 per cent of the total work force and 5.17 per cent of total child population. The main factors for the prevalence of child workers are poverty, dropping out from school and the interest of employers in getting docile workers at a cheap rate. Putting children to work deprives them of the opportunities of education and training. In certain industries, children are subjected to long hours, poor working conditions, low wages, insecurity of employment and occupational hazards which affect them rather adversely.

15.7.14 The decline in social obligations by extended family members towards children who become orphaned, the breakdown of familes and the absence of support to single-parent woman-headed households has increased the problem of child neglect and child abuse. Although there is no reliable data about the magnitude of the problem, its increasing visibility, specially in urban areas in the form of street children, beggary and vagrancy, is a pointer. Problems of delinquency are also on the rise. In 1989, the number of juvenile crimes under IPC was 18,457, representing 1.2 per cent of all crimes. The number of cases under local and specific laws was 18,537. Drug abuse is a new problem which is becoming a growing menace affecting children from all segments of society.

Strategy for Eighth Plan

15.8.1 Since human development will be the main focus of the Eighth Plan, policies and programmes relating to child survival and development will receive high priority. While it is true that successful implementation of programmes of poverty alleviation, reforms in existing social and economic structures, institutional changes and female education will help in raising the standard of living of the under-privileged segments of society and have a favourable impact on child survival and development, specific programmes and services directed at children will also be necessary.

15.8.2 The World Declaration on the Survival, Protection and Development of Children in 1990 indicated the challenges and the tasks and stressed the need for political action at the highest level for the well-being of children. A Plan of Action intended as a guide to Governments has also been prepared for implementing the Declaration in the 1990s. Major goals and targets for child survival, their protection and development in the 1990s have been set out. It would be necessary to undertake national and disaggregated State level exercises both for rural and urban areas in the light of these goals and targets, the national policy statements on health (1983), education (1986) and child labour (1987), and the Directive Principles of State Policy. A multi-tier system for monitoring progress will also need to be developed.

15.8.3 Child development programmes in the Eighth Plan will give high priority to preventive services, which are family and community based to be able to combat effectively high infant and early childhood mortality and morbidity. Special attention will be paid to those States where childhood morbidity and mortality are

high. Children belonging to the poor and the under-privileged sections of population will be covered by basic mimumum child development services. Emphasis will be placed on integration and convergence of services. Better coordination among health, family planning, education, social welfare, nutrition, water supply and sanitation programmes will be effected at all levels. The basic strategy for organising services for children will be to design area and beneficiary-specific schemes, utilising local resources and institutions. The efficiency and cost effectiveness of different services will be closely monitored. The capabilities of the families, specially of mothers, to look after the basic health, nutritional and emotional needs of children in the age-group 0-6, will be enhanced through non-formal modes of learning. Social discrimination against the girl child will be effectively countered, through a massive campaign, to ensure equal treatment and equal opportunities for their growth and development.

Programmes

15.8.4 The national programme of ICDS will continue to be the basic strategy for child survival and early childhood development with special focus on areas predominantly inhabited by the tribal people, scheduled castes, drought-prone regions and urban slums. In the location of new projects, preference will be given to areas having high levels of infant mortality and morbidity. The quality of services will be improved by removing the existing constraints in immunisation, delivery of supplementary nutrition and pre-school education inputs. Nutrition and health education of mothers and community participation in running the anganwadi, which were hitherto neglected, will receive special attention. The quality of pre-school education services will be improved. The ICDS infrastructure at the village and supervisory level would be used for early detection and identification of physical handicaps in children under 6 years of age and for support to the family welfare programme. The programme will be backed by convergence of environmental sanitation and hygiene and safe drinking water supply. The training of ICDS functionaries will be augmented. A system for decentralised monitoring and qualitative feedback will be developed for ICDS. Paper work by anganwadi worker (AWW) will be reduced to the minimum. The AWW and the Child Development Project Officer (CDPO) will be trained to use the data generated from the records kept by the anganwadi worker to monitor both inputs and outputs.

15.8.5 The universal programme of immunisation will be expanded and strengthened further to increase the effective levels of coverage. Bottlenecks in the supply line of vaccines and also the time-gap in the posting of personnel will be reduced. Greater awareness will be created about the need and importance of immunisation through mass media and non-formal channels. A child survival and safe motherhood project will be implemented to provide an integrated package of services in six States with high birth and mortality rates. The Maternity and Child Health Programme (MCH) will be considerably strengthened with special attention on immunisation of pregnant women and of infants and the control of communicable diseases. Other measures to be promoted are: greater access for mothers to pre-natal care; training of midwives so that a larger percentage of births are assisted by trained attendants; and creation of awareness in families of the special health and nutrition needs of pregnant women. Programmes for the control of diarrhoea and acute respiratory infections will be strengthened. The merits of breast feeding and low cost weaning foods will be communicated in a big way through mass, folk and non-formal media.

15.8.6 The accelerated implementation of the family planning programme by affording choice to woman in the planning of births will be an effective and inexpensive way of ensuring better chances of survival of the child, by reducing the incidence of high risk babies. The coverage of problem villages and urban slums with protected water supply will ensure accessibility and use of safe drinking water, thereby reducing the incidence of water borne diseases. The environmental sanitation and hygiene programme and the urban basic services programme will help bring down the incidence of early childhood morbidity and mortality.

15.8.7 Early childhood education programmes will be strengthened. Emphasis will be laid on improving retention of children in schools at the elementary stage so that the goal of universalisation of elementary education by 1995 can be achieved. The elementary school system will be improved both in terms of physi-

cal facilities and quality of learning. The programme of non-formal education for children will be strengthened.

15.8.8 Creche and day-care facilities will be expanded with the help of voluntary organisations to cover more children of the poor working women. In the organised sector, where creche/day care facilities are to be provided statutorily, it will be ensured that the employers implement the provisions pertaining to setting up of creches with the required basic minimum services. Training of creche workers will be organised.

15.8.9 Programmes will be developed with the assistance of voluntary organisations to suit the specific needs of children in need of care and protection with focus on family and community based services. In many cases, convergence of services and programmes which help the families to improve their incomes and the quality of their lives will be necessary. The standards of services of children's homes will be improved and a constructive intake and discharge policy formulated. Half-way homes to cover the transitional period of rehabilitation will be set up with the assistance of voluntary organisations. Programmes will also be developed for street children.

15.8.10 The problem of child abuse and its manifestations will be studied in depth and its causes analysed so that effective measures can be taken. The burgeoning problem of abandonment and destitution, especially in big cities will receive attention. Suitable preventive and rehabilitative activities will be taken up for such children with special stress on the provision of non-institutional services like adoption and sponsorship. For children without homes, special programmes will be developed. Institutional care will be provided selectively. Training programmes will be organized to improve the quality of services.

15.8.11 Concerted efforts will be made to tackle the problems of social deviance, juvenile delinquency and juvenile crime through preventive, correctional and rehabilitative services. Greater attention will be paid to the promotion of non-institutional community-based services. The infrastructure for implementation of the Juvenile Justice Act, 1986 will be set up in all the States to provide care, protection, development and rehabilitation to neglected and delinquent children. Existing facilities and standards of services in the institutions will be improved. Diversified vocational training programmes will be developed and linked with the existing vocational training institutions.

15.8.12 The problem of child labour is an unfortunate manifestation of economic compulsions as well as socio- cultural perceptions. While at the present stage of development it will not be possible to eliminate it altogether, programmes to combat the problem will be strengthened. Compulsory schooling and strong regulatory and administrative measures to prevent exploitation of child labour will be necessary. In areas where child labour exists on a large scale, efforts will be made to organise suitable literacy and vocational training for them after school hours. The enforcement of Child Labour Prohibition and Regulation Act, 1986 will be strengthened. More industries would be identified in which child labour is to be prohibited. In pursuance of the National Policy on Child Labour, specific projects will be undertaken in industries where the incidence of child labour is very high. Measures will be taken to cover families of child labourers under income generation schemes. Imparting of formal and non-formal education and setting up of special schools will be considered. Public opinion on the evils of child labour will be mobilised through investigative journalism, the use of electronic media and the support of activist groups.

NUTRITION

15.9.1 The nutritional status of a nation has close relationship with other indicators like the extent of economic growth, food adequacy and its effective distribution, levels of poverty, status of women, rate of population growth, and access to health, education, safe drinking water, environmental sanitation, hygiene and other social services. A multi-sectoral approach is, therefore, required to tackle the problem of malnutrition and other associated disorders.

15.9.2 In the earlier plans, malnutrition was perceived mainly as a problem of poverty due to which large numbers of the poor could not afford a 'balanced diet'. Ignorance about health and nutrition and frequent episodes of infections due to nutrition-related deficiencies were recog-

nised as associated, as well as aggravating, factors. The importance of raising the purchasing power, increasing production of cereals, pulses, milk, eggs and green vegetables and their consumption, therefore, received attention. Vulnerability of children and pregnant and nursing mothers was recognised. The range of direct interventions expanded over the years to cover supplementary feeding of children and mothers, production of nutritious foods, fortification of foods and of salt, nutrition and health education of mothers, and prophylaxis programmes against identified nutritional deficiencies. In the Fifth Plan, supplementary feeding programmes were brought under the Minimum Needs Programme (MNP). Supplementary feeding also became a component of ICDS. Substantial increase in allocations for poverty alleviation programmes in the Sixth Plan was visualised as a means to increase the purchasing power of the rural poor and enhance food intake. Larger coverage of vulnerable sections of the population through public distribution system, expansion of health and other social services to reach the poor and increased coverage of specific programmes to tackle problems of nutritional deficiencies were other measures expected to raise the nutritional status of the population.

Review of Performance

15.10.1 In the Seventh Plan, programmes of poverty alleviation, population control, increased production of cereals, pulses, etc and expansion of social services, particularly health, water supply and housing, were expected to have an impact on the nutritional status of the population. Special programmes were implemented in different sectors for improving nutritional status through a combination of direct measures covering nutrition education and extension; development and promotion of nutritious foods; fortification and enrichment of foods; supplementary feeding; and prophylaxis programmes.

15.10.2 Nutrition education and extension activities were strengthened. A network of 34 Mobile Food and Nutrition Extension Units (MEUs) of the Ministry of Food imparted education on nutritive value of different foods and on how to choose a balanced diet through live demonstrations supported by lectures, film, slide shows and exhibitions. In the Seventh Plan, 6,633 training courses, covering 135,839 trainees were organised. In 1990-91, 870 courses were organised covering 22,671 trainees. Four Food Processing and Nutrition Centres in rural areas provided demonstration/training in the processing of fruits and vegetables at home level and nutrition education. The Integrated Nutrition Education Scheme was launched in 1988 to equip grassroot-level workers of different departments with basic knowledge on food, nutrition and health. Under this programme, 210 education camps/orientation training courses were organised in the Seventh Plan for anganwadi workers, multipurpose workers, auxillary nurse midwives (ANM), lady health visitors, health education and adult education instructors and gram sevikas. The number of such courses organised in 1990-91 was 81.

15.10.3 In the area of development and promotion of nutritious foods, over 12.7 million litres of Miltone (a milk-like beverage based on 50 per cent groundnut protein and 50 per cent animal milk suitably enriched with vitamins and minerals) were produced. Five Ready-To-Eat (RTE) food plants produced 105,198 tonnes of extruded foods from cereals and pulses/oilseeds enriched with vitamins and minerals. About 73,673 tonnes of extruded energy food (non-extruded), a blend of cereal and pulse/oilseed flour, fortified with certain vitamins and minerals and sweetened with sugar or jaggery was produced in four energy food plants of the Government for the supplementary feeding programmes.

15.10.4 The scheme of fortification of milk with vitamin A was extended to 45 cooperative dairies in the country in 1990-91 from only 5 in 1985-86. About 3.35 million litres of milk were fortified with vitamin A daily in these dairies in 1990-91.

15.10.5 The fortification of salt with iron, to tackle the problem of iron deficiency anaemia, was continued in the plants in Tamil Nadu and Rajasthan. For the national goitre control programme, the production of iodised salt was stepped up from 7.72 lakh tonnes in 1986-87 to 22.56 lakh tonnes in 1989-90, through public and private sector units. Eighteen States/Union Territories completely banned the sale of non-iodised salt. Resurveys done to assess the impact of the goitre control programme indicated the effectiveness of iodised salt in controlling goitre/iodine deficiency diseases. Some States

decided to distribute iodised salt through the public distribution system.

15.10.6 A major programme of direct nutrition intervention was the Supplementary Nutrition Programme introduced in 1970-71. It aims at providing 300 calories with 10-12 g of protein to children below 6 years for 300 days in a year. Pregnant women and nursing mothers are provided 500 calories with 15-20 g of protein for 300 days a year. Coverage under SNP which was 11.57 million at the beginning of the Seventh Plan increased to 22.9 million at the end of the Plan.

15.10.7 The programme of Mid-Day Meals (MDM) for school going children initiated in the States in 1962-63 is meant for 6-11 year age group. Under the programme, supplementary food providing 300 calories and 8-12 g of protein per child is given for 200 days a year. Coverage of children under this scheme increased from 17.1 million at the beginning of the Seventh Plan to 21.1 million in 1989-90. In several States, supplementary feeding was assisted by food supplies from Co-operation for American Relief Everywhere (CARE) and World Food Programme (WFP).

15.10.8 A wheat-based supplementary nutrition programme for pre-school children and nursing and expectant mothers was introduced in January 1986. The programme followed the norms of the existing Special Nutrition Programme (SNP). It covered 3.3 million beneficiaries by the end of the Seventh Plan.

15.10.9 Several studies of SNP and MDM have brought out certain drawbacks in implementation of the supplementary feeding programmes in regard to supply of food, discontinuity of feeding, pilferage and lack of community participation. The programme also suffered because several States found it difficult to provide adequate funds on a sustained basis for these programmes. As a result, less than the prescribed quantity of food and for fewer days was being provided. Even though there was a recognition of the need for an integrated approach, convergence of supportive health and other services in areas not covered by ICDS projects did not take place.

15.10.10 In the health sector, too, some nutriton intervention programmes were implemented. For prophylaxis against nutritional anaemia of mothers and children, a daily dose of iron and folic acid was given for a period of 100 days. In 1989-90, 19.5 million women and 21.7 million children were beneficiaries of this programme as compared to only 8.38 million women and 6 million children in 1977-78. Evaluation of the programme by the Indian Council of Medical Research (ICMR) listed several drawbacks. These related to insufficient coverage of beneficiaries, poor quality of tablets resulting in low bioavailability of iron, non-distribution of full course of supplements to the beneficiaries and poor knowledge of anaemia among the functionaries and the beneficiaries. A prophylaxis programme against blindness due to vitamin A deficiency was carried out, under which vitamin A was given to about 38 million children in 1-5 years age group in 1989-90. There were shortcomings in the implementation of the programme in regard to coverage of children from high risk groups. These related to irregular administration of the dose, method of dispensing, poor knowledge about the programme among functionaries, low community awareness and poor extension approach.

15.10.11 Nutrition and health education was stepped up through inputs in the school curriculum, training courses of medical and allied health professional and other field level functionaries, use of mass, folk and nonformal communication media, the maternity and child services network and specific programmes like ICDS. Nutritional needs of pregnant and nursing mothers and of pre-school children constituted the core of the messages.

Current Situation

15.11.1 Data on trends in nutritional status of children, women and other disadvantaged segments of the population are unfortunately not available. It is, therefore, difficult to make a precise statement on this subject in the absence of national level data. However, some inferences can be drawn from the studies carried out in some centres. Surveys by the National Nutrition Monitoring Bureau in 8 States showed that the prevalence of 'severe' and 'moderate' degrees of malnutrition among children based on Gomez classification has declined, while the proportion of 'normal' children has increased.

Data on nutritional status from ICDS project areas based on age-for-weight records of pre-school children showed a significant increase in the percentage of children of normal and grade I nutritional status and a decline in the percentage of children in grades II, III and IV nutritional status. However, in a large number of slum areas and poor rural areas, only about one-third to two-fifths of the children were found to have normal nutritional status.

15.11.2 Various studies have shown that nearly one-third of infants are of low birth weight (less than 2.5 kg), largely attributable to poor maternal health and nutrition status. The incidence of anaemia among children of low income groups is reportedly high. Nutritional anaemia, mainly due to iron deficiency, therefore, continues to be a major public health problem among women in the reproductive age, especially during pregnancy and adolescence. Prevalence of anaemia, as reported by an ICMR Task Force (1989), does not appear to have declined during the last three decades. Nearly 88 per cent of pregnant women were estimated to be anaemic. This is a cause for concern since the status of maternal nutrition determines the course of intra-uterine growth and development of the foetus, the birth weight of the infant, the lactation performance of the mother, and growth and development of the infants.

15.11.3 Vitamin A deficiency, especially among pre-school children from low income groups in backward, drought-prone and hill areas is still a problem. Incidence of Keratomalacia, an important cause of nutritional blindness, is reported to have declined and, according to some experts, is no longer a major public health problem as it once was. The national survey of blindness (1986-89) by the Government of India indicated that the prevalence rate of vitamin A deficiency in children 0-6 years was 6.54 per cent in rural areas and 4.77 per cent in urban areas.

15.11.4 There are other disorders like goitre. In India, nearly 54 million persons suffer from goitre and 167 million are living in the known endemic areas. Lathyrism is noticed in areas where kesari dal is consumed especially among landless farm labourers. Flourosis is found in regions with high flouride content in drinking water.

Eighth Plan Strategy

15.12.1 A major objective in the Eighth Plan will be to bring about an overall improvement in the nutritional status of the population. Since the major dietary problem leading to malnutrition is more of inadequacy of calories in the diet than of proteins, the overall strategy will be to bridge the calorie gap among various segments of the population. This will, to a large extent, depend on the success of the poverty alleviation and other developmental programmes in raising the incomes and consequently, the purchasing power of the people. In addition, nutrition education and access to different food items which provide the nutritional balance must be given priority.

15.12.2 The future strategy needs to emphasise the value of diversification and improvement of diets. Increased production of cereals and pulses, green leafy vegetables, fruits, eggs, fish, milk and their availability at an affordable price are important. The crop pattern in agriculture must reflect cognisance of the nutrition needs of Indian diets. The public distribution system needs to focus on areas and categories of the population most affected by price fluctuations in the market. Strict implementation of the Prevention of Food Adulteration Act will also be necessary so that the nutritive value of foods is not affected. Direct nutrition intervention programmes will need to focus on children below 6 years of age, adolescent girls, pregnant and nursing mothers belonging to the lower income groups, Scheduled Castes and Scheduled Tribes and those living in the drought prone areas, backward areas, hill areas and urban slums. Special attention will be given to tackle the nutritional problems of anaemia, vitamin A deficiency, goitre, lathyrism and flourosis.

15.12.3 Over-consumption of fats, salt, sugar and rich foods by the affluent sections needs to be discouraged through nutrition education. The designing of appropriate messages for prevention of obesity, coronary heart diseases, hypertension and diabetes would be necessary.

15.12.4 There are certain area-specific nutritional problems. In Madhya Pradesh, Bihar, Uttar Pradesh and Andhra Pradesh, Lathyrism is prevalent in certain pockets. The cultivation of Lathyrus will need to be discouraged, although research efforts have also been intensified to produce cultivars without the neurotoxic agents in Lathyrus Sativa. In certain parts of the country, where fluoride content exceeds 4 ppm in water, Fluorosis is a problem. Ways of providing safe drinking water needs to be explored in such regions. The goitre control programme, based on iodine fortification of common salt, will be carried out more effectively by preventing the entry of non-fortified salt into the endemic regions and ensuring the supply of iodised salt through the public distribution system.

15.12.5 A massive effort will be made to educate the community on nutrition needs and the ways of meeting them at an affordable cost.

15.12.6 Nutrition programmes will not make much impact on nutrition/health status unless some inter-related factors are simultaneously or concurrently taken care of. Control of infections, (particularly parasitic infestations) and gastro-intestinal disorders would be essential, specially in case of children. Availability and use of safe drinking water is a must for preventing water-borne diseases. The unhygienic habits of the people like washing soiled clothes and utensils near the source of water supply is a major cause of contamination of water. Basic water filteration techniques are not observed in rural areas. Therefore, education of the community on consumption of safe water and keeping the environment clean would be necessary to improve health and hygiene.

15.12.7 Programmes in the area of nutrition have not succeeded to the desired extent due to apathy and lack of community participation. People perceive these as Governmental programmes, not of immediate relevance to them, specially since the benefits of preventive programmes do not have high visibility. Unless the community is involved in the process of planning of these programmes right from the inception, it would be difficult to enlist their participation. Hence, considerable emphasis will be given to community involvement and participation of local level voluntary organisations and panchayati raj institutions.

Programmes: Supplementary Nutrition Programme

15.13.1 The supplementary nutrition feeding programme for children below 6 years of age was primarily targetted in the Seventh Plan at the ICDS project areas though, in some States, beneficiaries outside the ICDS areas also received supplementary nutrition. In the Eighth Plan, with the opening of more the ICDS projects, most of the SNP programmes will be carried out in the ICDS project areas, as the convergence of services in these projects produces a much greater impact. Care will be taken to ensure that the full nutritional norm of supplementary feeding is observed, food is provided for all the 300 days, children below three years are duly covered and pregnant and nursing mothers and malnourished children get the food according to the higher prescribed norm. The mid-day meal programme will be continued in the States. Efforts will be made to involve the community in the implementation and monitoring of supplementary feeding to check pilfering and other forms of abuse.

Nutrient Supplementation Programme

15.13.2 The existing national programmes relating to nutrient supplementation with iron and folic acid to prevent nutritional anaemia, Vitamin A solution to prevent blindness, iodised salt to control goitre in the endemic areas and iron fortified salt to combat iron deficiency particularly among children and women, will be continued. Production and distribution of fortified salt will be streamlined. Low-cost salt fortification technology will be developed and the possibility of double fortification of salt with both iron and iodine and their distribution in areas where both anaemia and goitre are prevalent will be explored. Distribution of iron and folic acid and Vitamin A supplements through ICDS infrastructure will be further strengthened. Programme of fortification of milk with vitamin A will be geared up to expand production capacities of the existing dairy units and cover additional dairies in the cooperative sector.

Education and Extension

15.13.3 Health and nutrition education needs to be taken up on a large scale through the infrastructure of academic institutions, training institutions, industrial establishments and the mass media. Nutrition education would focus on

nutrition management, nutritional rehabilitation of malnourished children, food safety, environmental sanitation and hygiene and safe drinking water. Prevention of food adulteration has to be given high importance in the scheme of nutrition education, so that people become more aware about the quality of food they consume. Village level functionaries will be given orientation in nutrition education through condensed courses and short refresher courses.

15.13.4 An important objective of nutrition education would be to bring about changes in feeding and cooking practices, especially relating to pregnant women, nursing mothers and infants. Mass media, folk media and non-formal channels of communication will be utilised to project messages, which take into account the dietary habits, local availability of food and local beliefs associated with avoidance and intake of foods. Exhibitions on nutrition and health needs will be organised in backward rural and tribal areas. The socio-cultural bias in the intra-family distribution of food in a manner which adversely affects the girl children and women, will be tackled through nutrition education and other programmes which focus on the development of women.

Research and Evaluation

15.13.5 Surveys on the dietary habits of different segments of the population and surveillance data on nutritional status and deficiency disorders will be necessary to ascertain the trends. It would also be necessary to develop reliable indicators and new techniques/instruments for identification and measurement of nutritional deficiencies for field application. Assessment of the impact of various ongoing schemes would be made. Research in the development of low-cost nutritious foods using locally available materials would be encouraged as various supplementary nutrition programmes have expanded rapidly during the last decade. This would be supplemented by further research for evolving suitable processed foods for therapeutic and weaning diets with the help of Central Food Technology Research Institute (CFTRI), the National Institute of Nutrition and other institutions. Research on cereals with high protein content, pulses, and oilseeds will be encouraged to ensure increase in their production and improve per capita availability.

15.13.6 Modernisation has tended to erode traditional breast-feeding and weaning practices. The consumption of commercial baby foods is increasing. Breast feeding and home made nutritious inexpensive weaning food recipes will be promoted.

15.13.7 Institutions will be encouraged to take up research on food adulteration and quality control. Experimental fortification of foods with various vitamins and minerals will be supported for evolving suitable cost-effective and replicable methods for solving the problems of deficiency disorders.

Monitoring

15.13.8 The administrative set-up at the Centre and in the States would be strengthened by inducting expertise from the disciplines of nutrition, community health and social sciences in order to enhance the technical capability in the programme implementation and monitoring. Concerted efforts would be made to achieve coordination among various departments at the field level.

15.13.9 Absence of an effective machinery for coordination of policies and programmes implemented by different departments which have a bearing on nutrition has been a great handicap. It will be desirable to set up a body, preferably a high-powered Nutrition Council, at the national level, to facilitate development of an integrated food and nutrition policy and its monitoring. Such a body will also be responsible for nutrition surveillance of the country's population, with special reference to the vulnerable groups. The body should have not only the representatives of different departments but also experts from different disciplines. At the State level, too, a high powered coordination body will be necessary.

OTHER WELFARE PROGRAMMES

15.14.1 The process of development brings to the fore problems of desertion and family disintegration due to changes in values and institutions, which provide a safety net to the physically and socially handicapped in the community. New problems, such as drug abuse, have grown at an uncomfortable pace, while other problems such as beggary and immoral traffic in women and girls continue to persist.

15.14.2 The earlier Plans had made a modest beginning in the designing and implementation of programmes for the welfare of the destitute, the handicapped, the elderly and other categories in need of welfare services. Among the initiatives taken were the constitution of a National Advisory Council for the Education of the Handicapped in the Ministry of Education in 1955 and a Training Centre for the Adult Blind at Dehradun in 1950. A programme of old-age pension was started in some States for the elderly without any means or support. Several States enacted legislations in the area of social defence (beggary, probation, juvenile delinquency and suppression of immoral traffic) and organised services, both within and outside the statutory framework. Education and training institutions were also started.

15.14.3 For the welfare of the handicapped, a major programme was the grant of scholarships to the physically handicapped on the basis of means-cum-merit test. Among the other initiatives were special employment exchanges for the placement of the handicapped and reservation of 3 per cent seats for the handicapped in Central Government and public sector undertakings in Group C and D posts. The observance of the International Year of Disabled Persons in 1981 gave a fillip to the expansion of services throughout the country. A number of concessions were extended to the handicapped both by the Central and the State Governments in the matter of employment, travel, etc. National institutes were set up for different categories of the handicapped. Among other programmes were integrated education of the handicapped in normal schools, training of the handicapped in vocational rehabilitation centres and apprenticeship training programmes and setting up of district rehabilitation centres.

15.14.4 The World Assembly on Aging held in 1982 provided an occasion to assess the changed social scenario for the care of the aged and to initiate programmes for their well-being. Programmes were implemented for the welfare and rehabilitation of the widowed and women in distress and in the area of social defence.

Review of the Seventh Plan and Annual Plans 1990-92

15.15.1 The Seventh Plan and Annual Plans (1990-92) saw a significant expansion of programmes and services for the welfare of the handicapped in different sectors. The eradication of small pox, the extensive coverage of infants under the immunisation programme and the prophylaxis programme against vitamin 'A' deficiency, iodine deficiency and anaemia are expected to reduce significantly the incidence of handicap in early childhood. The extensive network of primary health care and the hospital-based curative services will also play their role in the identification of handicaps, treatment and cure.

15.15.2 For the education of the handicapped, almost all the States implemented programmes to provide stipends and other incentives to the handicapped at the elementary school stage. The Central Government continued the scheme to award scholarships to physically handicapped students to pursue general, technical and professional courses from class IX onwards on the basis of a means-cum-merit test. In 1990-91,

about 50,000 scholarships were awarded. The programme of integrated education of the handicapped covered about 28,000 disabled children in 1990 in about 6,000 schools through the creation of special facilities in normal schools, the training of teachers and production of special instructional material. Education of the handicapped was also facilitated through special schools in different States. Some States started pre-school education programmes for the handicapped children.

15.15.3 Vocational training facilities for the handicapped were expanded in the Seventh Plan through grants to voluntary organisations and institutions run by the Government. In 1990, 17 vocational rehabilitation centres were functioning in the country, of which two were exclusively for women. To facilitate speedy rehabilitation of the handicapped, seven skill training workshops were set up. Rehabilitation services were also extended to the handicapped living in rural areas through rural camps and extension centres. Until December 1990, 5,965 blind, 7,420 deaf and dumb, 47,111 orthopaedically handicapped and 1,046 persons with other handicaps were rehabilitated. Physically handicapped persons were benefitted under the apprenticeship training scheme implemented by the Ministry of Labour (DGET). For instance,

565 physically handicapped persons received training in different trades in 1990.

15.15.4 The District Rehabilitation Centres (DRC), established in the Sixth Plan, consolidated their services to the handicapped relating to medical intervention and surgical restoration, fitment of aids and appliances, therapeutical assistance, vocational training and assistance in job placement. To provide technical support to the eleven DRCs, four Regional Rehabilitation Training Centres (RRTC) were set up for developing the training material and the manuals and for producing material to create community awareness through the use of different media. The RRTCs conducted full-time training programmes for the field-level functionaries and conducted management courses in disability rehabilitation. The programme of DRCs was evaluated by the Indian Institute of Management. The restructuring of the programme is under consideration for reducing the staff strength and for making the services more cost-effective.

15.15.5 In the process of rehabilitation, employment in gainful activity assumes considerable importance. A number of States have programmes for giving margin money and subsidies to the disabled and arranging loans for them through banks to facilitate their self-employment. Some States have set up training-cum-production workshops for the disabled. Andhra Pradesh has set up a Corporation for the rehabilitation of the handicapped, which provides training, gives assistance for income-generating projects and undertakes various other activities like printing books in Braille, running a lending library for the visually handicapped, etc. The placement of the handicapped in jobs in the open market was arranged through normal employment exchanges, 23 special employment exchanges and 55 special cells in the normal employment exchanges. During the ten-year period 1981-90, 63,310 physically handicapped persons were found placement, of whom 88 per cent were orthopaedically handicapped, 6 per cent blind, 5 per cent deaf and dumb and less than 1 per cent having other handicaps. The number of physically handicapped persons on the live register of employment exchanges was 2,95,838 in 1990, as compared to 1,15,982 in 1981 showing a significant increase. A National Job Development Centre was set up at the Spastics Society for India, Bombay as a pilot project for the rehabilitation of persons between 18 and 45 years of age with disabilities like cerebral palsy, muscular dystrophy, paraplegia, etc.

15.15.6 The four National Institutes, one each for a major area of disability, set up in the earlier plans, offered a wide range of services in the Seventh Plan in the field of education, training of manpower, vocational guidance, counselling, research, rehabilitation and development of low-cost rehabilitation aids. They also functioned as documentation and information centres in the respective areas of disability. Two other organisations, viz., the Institute for the Physically Handicapped (Delhi) and the National Institute of Rehabilitation, Training and Research (Cuttack) also offered their services for the rehabilitation of the handicapped and organised manpower training. During the Seventh Plan and the following two Annual Plans, an expenditure of about Rs 63.8 crores was incurred on these six institutes. A National Information Centre on Disability and Rehabilitation was set up for dissemination of information on disability and related services. It is now functioning as a national resource centre. A Rehabilitation Technology Centre was set up in 1987 with assistance from the National Institute on Disability and Rehabilitation Research, Washington, USA to provide technology support to the programmes of the handicapped, including development of aids and appliances, their standardisation, research and related activities. Work was initiated to set up a Spinal Injury Centre at Delhi with financial assistance from Italy.

15.15.7 A Science and Technology Project in the Mission Mode on Application of Technology for the Welfare and Rehabilitation of the Handicapped was launched in 1988. About 21 projects have been funded in different areas of disabilities. These cover development and utilisation of suitable cost-effective aids and appliances and methods of education and skill development of the disabled.

15.15.8 The scheme of assistance to voluntary organisations for providing aids and appliances to the handicapped was expanded during the Seventh Plan, when grants to the tune of Rs 16.60 crores were given. Voluntary organisations were also assisted to provide services to the physically handicapped in the areas of education, training and rehabilitation. In the Seventh Plan,

Rs 6.67 crores were released to voluntary organisations under the scheme.

15.15.9 For the care of the elderly, the most important welfare measure was the scheme of the old-age pension to those without any means or support. By the end of the Seventh Plan, all the States and Union Territories had old-age pension schemes, the extent of coverage depending upon the resources of the State. In 1988, 49.16 lakh persons, constituting about 9 per cent of the population above 60 years, were receiving old-age pension from the State Governments/Union Territory administrations. The rates of pension varied from Rs 60 to Rs 100 per month. The Central Government operated a scheme under which grants were given to voluntary organisations for a wide range of institutional and non-institutional services. In the Seventh Plan, Rs 136.73 lakhs were given as grant-in-aid. The Scheme received encouraging response and in 1990-91, grants-in-aid of Rs 85.58 lakhs were given to 93 organisations. Some of the States, too, assisted voluntary organisations to set up old age homes.

15.15.10 The problem of drug abuse received attention in the Seventh Plan -- both the control and the welfare aspects. The Drug and Psychotropic Substances Act of 1985 was amended in 1988 to make the law stringent for more effective control over narcotic drugs and psychotropic substances. Subsequently, the Prevention of Illicit Traffic in Narcotic Drugs and Psychotropic Substances Act (1988) was passed, which provided for preventive detention of persons trafficking in drugs. The enforcement machinery was also strengthened. Voluntary organisations were assisted in creating awareness about the ill-effects of drug abuse and providing de-addiction, counselling and rehabilitation services to the drug addicts. Training of functionaries was also organised. In 1990, 112 counselling and 44 de-addiction centres, supported by the Ministry of Welfare, were functioning in the country. Community-based de- addiction camps were also organised and ten after-care centres set up.

15.15.11 Several States implemented special programmes for poor widowed women. While the older among them, without any means of support, received maintenance allowances, for the others, education, training and employment programmes were organised, including residential care for those without shelter. Short-stay home facilities were organised for women in distress. Assistance for remarriage of widows was also provided.

15.15.12 For preventing and checking trafficking in women, the Suppression of Immoral Traffic in Women and Girls Act of 1956 was drastically amended in 1986 and renamed as The Immoral Traffic (Prevention) Act. It widened the scope of the Act and made the penal provisions more stringent. Services such as reception centres, protection homes, State homes and corrective institutions were organised, as required under the Act and also outside the statutory framework.

15.15.13 Beggary prevention, control and rehabilitation programmes were implemented by the States, as provided under their respective anti-beggary legislation. Some services were, however, outside the statutory framework. This was a low priority area. The services were not only inadequate but hardly made any dent on the problem.

Current Situation

15.16.1 The disabled constitute an important group for welfare services. Estimates of the number of disabled vary depending on the definitions, the methodology and the extent of use of scientific instruments in identifying and measuring the degree of disability.

15.16.2 The National Sample Survey Organisation (NSSO) conducted in 1981 a country-wide survey covering three types of disabilities i.e., visual, communication and locomotor disabilities. It identified 12 million persons having at least one or the other disability -- constituting about 1.8 per cent of the estimated total population. About 10 per cent of these physically disabled were reported to have more than one type of disability. Considering each type of disability separately, those having locomotor disabilities were estimated at 5.43 million, followed by those with visual disabilities (3.47 million), hearing disabilities (3.02 million) and speech disabilities (1.75 million). The prevalence of disability was higher in the rural areas (about 81 per cent). A more recent national survey on blindness, conducted during 1986-89 under the aegis of the Ministry of Health and

Family Welfare and WHO, estimated 12 million blind persons as against only 3.47 million estimated by the NSSO survey.

15.16.3 Mental handicap was excluded from the NSSO survey. Hence, no reliable data regarding the size of the mentally handicapped are available. However, on the basis of some random sample surveys undertaken in Bombay, Calcutta, Delhi, Lucknow, Mysore and Nagpur and from the World Health Organisation reports, the number of mentally retarded is assessed to be 3 to 4 per cent of the country's total population.

15.16.4 The number of leprosy affected persons is estimated to be about 4 million, of whom about one-fifth are children. About 15 to 20 per cent cases are with deformities. In 196 districts in the country, the prevalence rate is more than 5 per 1000 persons. About 430 million persons live in these high endemic districts.

15.16.5 The incidence of disability differs by social class, ecological regions and occupational categories. Poverty, malnutrition, ignorance, poor environmental sanitation and hygiene and poor access to prevention and treatment programmes are responsible for the high prevalence rate of the handicapped population.

15.16.6 Industrialisation, urbanisation, increased mobility, changes in life styles and values of the young and shortage of accommodation in cities have made the elderly a vulnerable group, specially because of the decline of traditional support systems. Due to longer life expectancy, there will be a steady increase in the number, as well as proportion, of the aged as is the trend in other countries. By the turn of the century, 7.6 per cent of the population is projected to be above sixty years and in view of the large demographic base, the number will be phenomenal -- about 76 million in 2001. The bulk of this population will be from the low income groups, without any independent means of support as they do not own any productive assets.

15.16.7 Drug abuse is emerging as a major problem, complicated by the emergence of powerful crime syndicates. It now affects all segments of the population, including adolescents and youth. Illicit trafficking in drugs is now viewed as a major public concern. Although national estimates on the incidence of drug abuse are not available, statistics of law enforcement agencies, treatment centres and voluntary organisations working in this area show a rising trend.

15.16.8 The problem of beggary has remained unresolved. Its unmitigated presence in cities, towns and places of pilgrimmage indicate that the anti-beggary legislations of States have not succeeded in tackling the problem. The enforcement machinery is weak and the services inadequate. Prostitution, the worst form of exploitation and abuse of women, continues in various overt and covert forms. The rehabilitation of eunuchs in alternate modes of livelihood also demands attention.

Eighth Plan Strategy and Programmes

15.17.1 Services for the physically handicapped require integration and coordination, covering the entire range of activities from prevention of handicap to rehabilitation. Programmes under different sectors of the Plan, more particularly, health, nutrition, education, science and technology, employment and welfare have to integrate their operations in such a manner that effective inter-sectoral support develops.

15.17.2 The main thrust of the policy will be to make as many handicapped persons as possible active, self-dependent and productive members of the nation through opportunities for education, vocational training and economic rehabilitation. Voluntary organisations, which have played a key role in the organisation of services for the handicapped, will continue to be given encouragement and support. The existing services would be reviewed and suitably upgraded in terms of physical structure and training in order to make them more effective. Services should be increasingly community-based. Wherever required, the training programmes would be modified and diversified to make them relevant to available job opportunities. Emphasis will be on the promotion of programmes in the rural areas.

15.17.3 The programmes for the elderly will be both developmental and humanitarian. Their experience and energies will be utilised for societal well-being. Community and family-based welfare services will be developed for the

elderly with the assistance of voluntary organisations. Public services will be directed to show greater sensitivity to the needs of the elderly. The scheme of old-age pension in the States will be rationalised, attempts will be made to provide wider coverage and the process of disbursement will be streamlined.

15.17.4 To tackle the growing menace of drug abuse, coordinated educational, curative and rehabilitative programmes would be initiated along with enforcement of stringent measures to check drug trafficking. Problems like prostitution and beggary will be dealt with in a coordinated manner emphasising rehabilitation, correction and welfare.

Programmes: Welfare of the Handicapped

15.17.5 The incidence of disability can be reduced through timely intervention. Priority would be given to the prevention and early detection of impairments and disabilities and advantage taken of the latest advances in technology in prevention, early detection and rehabilitation. The programme of universal immunisation will be strengthened at the field level. Nutrition services including prophylaxis against anaemia, vitamin A deficiency and iodine deficiency will be streamlined. Safety measures for prevention of accidents and reducing the incidence of disabilities from agricultural and industrial operations and road transport, will receive attention. The enforcement machinery for safety measures at the place of work and on roads will be strengthened. Stress will be laid on educating the family and the community on the active role they can play in preventing disability, reducing disabling impact on an individual and promoting development of the disabled person. Measures will be taken to ensure maximum restoration to normal functions of the handicapped person.

15.17.6 Therapeutic and fitment services will be expanded to enable the disabled to become mobile and self-reliant as far as possible. Assistance will be provided for the fitting of aids/appliances. Research and development activities will be accelerated. The Technology Development Project in Mission Mode will direct application of technology in the development and utilisation of suitable cost-effective aids/appliances.

15.17.7 Education and training plays a vital role in the socio-economic rehabilitation of the handicapped. Integrated education of the handicapped will be strengthened. Special schools will also be set up in the States. Particular attention will be paid to districts which have poor educational facilities for the handicapped. The scheme of scholarships for education and training would be expanded through adequate publicity, particularly in rural and backward areas. Disbursement procedures will be streamlined. Vocational training will be diversified keeping in view the changing trends of employment market. The handicapped will be assisted through financial and other means to establish themselves in self-employment. They will be assisted in preparing income generating projects and getting loans from banks and other financial institutions.

15.17.8 The National Institutes for the handicapped, designed to be apex bodies in the areas of training, research, development of manpower and documentation of information, will be strengthened. They would be more actively involved in the design and implementation of alternative service models and in raising the standards of services. The District Rehabilitation Centres, meant for disabled persons in rural areas, will be reoriented. The ICDS infrastructure will be utilised to help in the early detection of handicaps by the anganwadi worker for which she will be given appropriate training.

15.17.9 Voluntary organisations, which have played a pioneering role in the past in developing welfare services for the handicapped, will be assisted in their activities to provide services to the handicapped. Assistance will also be provided for organising rural camps for sensitisation, early detection, timely intervention and appropriate referral and follow up of handicapped cases. Financial support to voluntary organisations working in the field of spastics, mentally handicapped and rehabilitation of leprosy-cured patients will be expanded. Attempts will be made for a more even distribution of services for the handicapped, both between states and within a state.

Welfare of the Aged

15.17.10 The coverage of elderly persons without any means of support will be expanded through the schemes of old- age pensions of the State Governments. The main thrust of the programmes for the elderly will be non-institutional services which are family and community based. Financial assistance will be given to voluntary agencies to provide not only care but also help improve the incomes of the elderly besides involving them closely in the activities of the community so that they are not marginalised.

Social Defence

15.17.11 Inspite of the existing anti-beggary legislations, the problem of beggary persists. Measures would be taken for the effective implementation of the Acts. Greater thrust will be laid on non-institutional care and rehabilitation of beggars. Able-bodied beggars in beggar homes will be put on productive and remunerative work in order to inculcate among them the habit of work and help them in their rehabilitation on release. Education and publicity measures will be carried out to bring about a change in the attitude of the society towards the problem.

15.17.12 The evil of prostitution and its diverse manifestations will need to be tackled not only through strict enforcement of the law but also by building strong public support, with police and community vigilance. Programmes for the rehabilitation of prostitutes and of devdasis need to be more imaginatively designed and implemented. Special programmes will be necessary for the children of prostitutes. The standards of the correctional institutions will be improved.

15.17.13 The growing menace of drug abuse and increasing habit of drinking have ruined many families and endangered the physical security of women. For prevention and control of drug abuse and alcoholism, apart from strict enforcement of the legislation, the role of the media would be enlarged. Counselling, de-addiction and after-care centres will be expanded.

Voluntary Action

15.17.14 Voluntary organisations will be encouraged and assisted to work in partnership with State agencies. Increasing emphasis will be laid on the strengthening of voluntary action for the development of welfare services. The existing grants-in-aid procedures will be reviewed, streamlined and decentralised so as to minimise delays in the sanction and release of funds. The procedures will be simplified without sacrificing the principles of accountability.

Administration and Monitoring

15.17.15 Welfare administration will be reoriented by inducting professionally trained persons at different levels. Capabilities in planning, project formulation and monitoring will be strengthened. The machinery for coordination of programmes will be streamlined. Structural realignments in regard to responsibility for implementation of programmes will not only have a better impact but also result in savings in expenditure.

15.17.16 The functions and the administrative set up of the Central Social Welfare Board need to be restructured in the light of the recommendations made by the review committee set up earlier for the purpose and the administrative structures that have come up in the States over the years, to implement welfare services. The grants-in-aid programme would be decentralised.

15.17.17 A number of social legislations have been modified and amended in the recent past. Their adequacy, effectiveness and problems of implementation would be studied in depth to provide feedback. Mechanisms for monitoring the implementation of legislation will be developed.

Research

15.17.18 Research will be strengthened to diagnose social problems and identify the areas which need special attention, thereby assisting in the designing of new programmes and modification of existing ones. Evaluation of programmes under implementation will be systematically carried out.

15.17.19 Studies will be sponsored in the area of drug abuse in order to discern the trends. The incidence of drug abuse among working and school going population also need to be asssessed periodically to gauge the impact of the ongoing programmes. Procedural hurdles and delays in the disposal of cases under the Narcotic

Drugs and Psychotropic Substances Act, 1985 will be identified. Awareness among different segments of the society regarding the ill-effects of hard drugs will be studied.

15.17.20 Research on the application of science and technology specially in the areas of aids and appliances, will be intensified. The National Institute of Public Cooperation and Child Development and the National Institute of Social Defence will be strengthened, specially in the area of research, training, documentation and development of innovative programmes and alternative approaches/models.

15.17.21 The total outlay for the social welfare sector in the Eighth Plan is Rs. 3857.21 crores, of which Rs. 2375.00 crores is in the Central sector and Rs. 1482.21 crores in States/UT sector. For the nutrition sector, the total outlay is Rs. 1796.31 crores - Rs. 10 crores for the Central sector and Rs. 1786.31 crores for States/UT sector. Details are given in annexures.

Annexure 15.1

Eighth Plan Outlays -- Social Welfare : Central Sector

(Rupees in crores)

Sl. No.	Scheme	Seventh Plan (1985-90)		Annual Plans (1990-92)		Eighth Plan (1992-97)
		Outlay	Expenditure	Outlay	Anticipated Expenditure	Outlay
0		1	2	3	4	5	6
A	**Central**					
I	Welfare And Development Of Women And Children					
1.	Schemes for the Welfare & Development of Women	160.72	102.39	82.50	76.22	228.79
2.	Schemes for the Welfare & Development of Children	96.90	94.65	31.85	23.53	130.26
II	Welfare Of The Handicapped					
1.	Institutes for the handicapped	12.00	15.79	12.80	20.62	42.00
2.	Schemes for the welfare of the handicapped	21.00	30.99	47.95	34.19	168.00
III	Social Defence And Welfare Of The Aged					
1.	Schemes for Social Defence	3.00	13.26	17.30	16.17	110.00
2.	Schemes for the Welfare of the Aged	-	-	3.00		10.00
	Sub-total(A)	293.62	257.08	195.40	170.73	689.05
B	**Centrally Sponsored**					
I	Welfare And Development Of Women And Children					
1	Schemes for the Welfare & Development of Women	1.0	1.22	1.60	0.50	0.21
2	Schemes for the Welfare & Development of Children	482.0	760.07	613.65	561.80	1640.74
II	Welfare Of The Handicapped					
1	Schemes for the Welfare of the Handicapped	1.00	0.45	3.10	0.31	4.00
III	Social Defence					
1	Schemes for Social Defence	25.00	21.06	25.00	18.88	41.00
	Sub-total(B)	509.00	782.80	643.35	581.49	1685.95
	Total(A+B)	802.62	1039.88	838.75	752.22	2375.00

Annexure - 15.2

Eighth Plan Outlays -- Social Welfare : States/UTs

(Rupees in Lakhs)

Sl. No.	States/ Union Territories	Seventh Plan (1985-90)		Annual Plan (1990-92)		Eighth Plan (1992-97)
		Outlay	Expenditure	Outlay	Anticipated Expenditure	Outlay
0	1	2	3	4	5	6
1	Andhra Pradesh	2970	6101	1037	867	2248
2	Arunachal Pradesh	125	87	76	377	198
3	Assam	300	451	175	230	821
4	Bihar	410	198	356	235	2215
5	Goa	88	32	83	211	1050
6	Gurajat	1031	723	624	646	1600
7	Haryana	678	19503	22669	17061	57883
8	Himachal Pradesh	240	372	1081	1001	1350
9	Jammu & Kashmir	253	455	188	704	1400
10	Karnataka	2600	4589	2913	3093	12550
11	Kerala	500	499	265	206	600
12	Madhya Pradesh	899	1486	1957	1578	5671
13	Maharashtra	1200	1064	400	564	1657
14	Manipur	170	238	114	109	250
15	Meghalaya	200	174	99	72	278
16	Mizoram	160	209	107	52	275
17	Nagaland	160	153	130	129	250
18	Orissa	200	670	286	416	2288
19	Punjab	700	852	831	239	5163
20	Rajasthan	239	231	199	155	553
21	Sikkim	70	43	49	47	150
22	Tamil Nadu	3000	22654	4204	3697	10000
23	Tripura	207	626	238	229	630
24	Uttar Pradesh	2000	6958	11730	10950	34967
25	West Bengal	1160	1082	823	464	2725
	Sub-total (States)	19560	69450	50735	43332	146772
26	A & N Islands	35.00	50.54	43.63	12.47	165.46
27	Chandigarh	225.00	138.76	79.00	26.72	145.50
28	D & N Haveli	12.10	4.51	14.65	3.26	41.45
29	Daman & Diu		1.32	5.10	0.41	20.10
30	Delhi	1217.00	984.97	463.00	95.13	600.00
31	Lakshdweep	39.00	39.66	40.00	20.34	122.00
32	Pondicherry	151.00	162.63	115.00	37.45	355.00
	SUB-TOTAL (UTs)	1679.10	1382.39	758.38	195.78	1449.51
	TOTAL (STATES & UTs)	21239.10	70832.39	51493.38	43527.78	148221.51

Annexure 15.3

Eighth Plan Outlays -- Nutrition : Central Sector

(Rs. in crores)

Sl. No.	Scheme	Seventh Plan (1985-90)		Annual Plan (1990-92)		Eighth Plan (1992-97)
		Outlay	Expenditure	Outlay	Anticipated Expenditure	Outlay
0	1	2	3	4	5	6
A	Central					
1	Fortification of milk with Vitamin A	0.80	0.30	0.13	0.09	0.15
2	Research & Development	0.50	0.02	0.39	0.04	0.30
3	Quality Control	-	-	0.07	-	0.30
4	Mobile Food and Nutrition Extension Units	*	0.20	0.13	0.07	-
5	Integrated Nutrition Education Scheme	2.00	0.36	0.66	0.78	3.00
6	Mass Media Communication	*	0.21	0.42	0.12	0.50
7	Diet and Nutrition Surveys	0.10	-	-	-	-
	Sub-total(A)	3.40	1.08	1.93	1.10	4.25
B.	Centrally Sponsored					
1	Production/Promotion of Nutritious Food & Beverages	1.92	0.42	0.95	0.04	0.75
2	Fortification of Salt with Iron	2.00	0.39	2.50	0.11	4.40
3	Food and Nutrition Extension Centres (FNECs)/Food Processing & Nutrition Centres (FPNCs)	0.85	0.28	0.41	0.06	0.60
	Sub-total(B)	4.77	1.09	3.86	0.21	5.75
	Total(A+B)	8.17	2.17	5.79	1.31	10.00

* Included under Integrated Nutrition Education Scheme

Eighth Plan Outlays -- Nutrition : States/UTs

(Rupees in Lakhs)

Sl. No.	States/ Union Territories	Seventh Plan (1985-90)		Annual Plan (1990-92)			Eighth Plan (1992-97)
		Outlay	Expenditure	Outlay	Ant.	Expd.	Outlay
0	1	2	3	4		5	6
1	Andhra Pradesh	5360	1292	555		529	8572
2	Arunachal Pradesh	200	233	503		409	1884
3	Assam	2000	2357	1220		903	2797
4	Bihar	3500	3583	2647		2191	18261
5	Goa	120	275	59		62	300
6	Gurajat	59550	26943	11486		8319	25000
7	Haryana	2794	2300	512		298	5000
8	Himachal Pradesh	282	604	450		400	1125
9	Jammu & Kashmir	755	1026	448		410	1940
10	Karnataka	11000	18057	1350		1773	5750
11	Kerala	4000	8836	237		226	1012
12	Madhya Pradesh	3389	3523	1793		1731	11396
13	Maharashtra	5000	2425	1303		604	5659
14	Manipur	220	287	201		201	900
15	Meghalaya	500	380	186		185	726
16	Mizoram	150	361	215		215	575
17	Nagaland	450	802	327		327	900
18	Orissa	1600	1978	944		809	3912
19	Punjab	1650	1244	300		700	1998
20	Rajasthan	1596	996	475		172	4721
21	Sikkim	270	223	150		180	400
22	Tamil Nadu	54000	31352	13165		14949	52500
23	Tripura	2000	1701	1318		974	2200
24	Uttar Pradesh	4470	5957	1490		1125	4600
25	West Bengal	5000	2798	5047		2870	12112
	Sub- Total (States)	169856	119533	47381		40562	174240
26	A & N Islands	70	124	57		62	168
27	Chandigarh	239	206	5		4	15
28	D & N Haveli	39	87	25		31	212
29	Daman & Diu	*	43	19		31	73
30	Delhi	2787	2372	1070		1024	3200
31	Lakshdweep	30	33	10		16	44
32	Pondicherry	265	246	132		141	680
	SUb- Total (UTs)	3430	3211	1318		1309	4391
	Total (states & UTs)	173286	122744	48699		41871	178631

* Included under Goa.

CHAPTER 16

WELFARE AND DEVELOPMENT OF SCHEDULED CASTES AND SCHEDULED TRIBES

Background

16.1.1. In 1981, India had 105 million people belonging to Scheduled Castes, which constituted 15.75 per cent of the total population of the country. To this number should be added about 4.1 million neo-Buddhists specified as Scheduled Castes during 1990. The projected figure for 1991, assuming the same decadal increase as for the general population, would be 134.74 million. More than twenty per cent of the population in Punjab (26.87 per cent), Himachal Pradesh (24.62 per cent), West Bengal (21.99 per cent) and Uttar Pradesh (21.16 per cent) belonged to the Scheduled Castes. Eight states, viz., Uttar Pradesh, West Bengal, Bihar, Tamil Nadu, Andhra Pradesh, Madhya Pradesh, Rajasthan and Karnataka, accounted for 77.5 per cent of the total Scheduled Caste population of the country in 1981.

16.1.2. The population of Scheduled Tribes was 53.8 million in 1981, constituting 7.8 per cent of the total population of the country. In Jammu & Kashmir, Scheduled Tribes were notified in October, 1989, their estimated population being about 0.8 million. The projected figure for 1991, assuming the same decadal increase as for the general population, would be 67.4 million. Majority of the population of Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, Dadra and Nagar Haveli and Lakshadweep are tribals. Madhya Pradesh(11.99 m), Orissa(5.92 m) and Bihar (5.81 m) accounted for about 46 per cent of the total tribal population of the country in 1981.

16.1.3. A number of Constitutional provisions exist for protection and promotion of the interests of these weaker sections. In conformity with the Directive Principles of State Policy, social justice has been an avowed goal of development. During the four decades of planning, a variety of programmes were launched with the objective of improving the socio-economic condition of Scheduled Castes and Scheduled Tribes. These measures have, no doubt, yielded results but not commensurate with the efforts or the needs of the target groups.

16.1.4. A specific sector of Backward Classes was included from the First Plan to cater to the special needs of Scheduled Castes/Scheduled Tribes/Other Backward Classes. It was visualised that the general development programmes should be so designed as to take care of the needs of Backward Classes as well and the special provisions in the Backward Classes Sector would be additive, to be used, as far as possible, for meeting the special developmental needs of these groups. Unfortunately, this expectation was belied in most cases and the Backward Classes Sector provisions, instead of supplementing the general sectors of development, tended to supplant the general sector provisions. It was, in this context, that the concept of Tribal Sub-Plan was introduced during the Fifth Plan and Special Component Plan for Scheduled Castes during the Sixth Plan to facilitate monitoring of development programmes for the benefit of Scheduled Castes and Scheduled Tribes.

Review of Seventh Plan and 1990 - 92 Plans

16.2.1 In the Seventh Plan, Special Component Plans for Scheduled Castes, Tribal Sub-Plans for Scheduled Tribes and specific schemes for the welfare and development of Scheduled Castes and Scheduled Tribes were implemented. At the end of the Plan, the Tribal Sub-Plan strategy was being implemented through 191 Integrated Tribal Development Projects, 268 pockets of tribal concentration (Modified Area Development Approach -- MADA), 74 clusters and 74 primitive tribal group projects.There was substantial increase in the flow of funds for the development of Scheduled Castes and Scheduled Tribes, resulting in expansion of infrastructural facilities and enlargement of coverage. There was limited involvement of Scheduled Castes / Scheduled Tribes in the formulation and execution of programmes resulting in non-

adaptability of schemes/policies to cater to their specific needs.

16.2.2 Emphasis was laid in the Seventh Plan on the educational development of Scheduled Castes and Scheduled Tribes. Pre-matric stipends and scholarships were given by the State Governments to 190 lakhs Scheduled Caste / Scheduled Tribe / Other Backward Class students. Other educational incentives included free supply of uniform, stationery and text-books to about 100 lakh students. Post-matric scholarships were given to about 15 lakh Scheduled Caste and Scheduled Tribe students in 1991-92 as against 9.75 lakh scholarships in 1985-86 and only 1,56 lakh scholarships in 1968-69. These scholarships were given for study of post-matriculation/post secondary courses of study in arts, science, commerce, as well as professional and technical degree/diploma and certificate courses on the basis of a graded means test. For Scheduled Caste and Scheduled Tribe students studying in medical and engineering colleges, a scheme of book banks was started in 1978-79 which benefited about 21,000 students in 1990- 91. Hostel facilities for Scheduled Caste and Scheduled Tribe students were considerably expanded.

16.2.3 For the economic development of Scheduled Castes and Scheduled Tribes, two national level institutions were set up: (i) Tribal Cooperative Marketing Development Federation in 1987 as an apex body for State Tribal Development Cooperative Corporations; and (ii) National Scheduled Castes and Scheduled Tribes Finance and Development Corporation, primarily to act as a catalytic agent in developing schemes for employment generation and financing pilot projects. The Scheduled Caste and the Scheduled Tribe Development Corporations in the States continued to provide economic assistance for self-employment projects. Economic assistance was given to 118.82 lakh Scheduled Caste families and 52.76 lakh Scheduled Tribe families under various programmes including IRDP. Margin money loan was disbursed to 22.56 lakh Scheduled Caste families through 21 State Scheduled Caste Development Corporations.

16.2.4 Special consideration was accorded to Scheduled Caste and Scheduled Tribe families in the Integrated Rural Development Programme (IRDP), the most important poverty alleviation programme in the country. The target of coverage of Scheduled Caste/Tribe beneficiaries in the Seventh Plan was 30 per cent of the total number of beneficiaries. However, the actual coverage was 32.05 per cent in the case of Scheduled Castes and 13.04 per cent in the case of Scheduled Tribe beneficiaries. A target of 50 per cent has been fixed for Scheduled Caste and Scheduled Tribe beneficiaries with effect from April 1990. Since 1990-91, Scheduled Caste beneficiaries are being treated at par with Scheduled Tribe beneficiaries for subsidy purposes, both getting 50 per cent subsidy subject upto a ceiling of Rs.5000. Prior to 1990-91, the subsidy admissible to Scheduled Caste families was only 33 1/3 percent. In the wage employment programme of Jawahar Rozgar Yojana, preference is given to Scheduled Castes/Scheduled Tribes and freed bonded labourers. It has also been provided that at the village panchayat level, 15 per cent of the annual allocation must be spent on items of work which directly benefit the Scheduled Castes and the Scheduled Tribes. Diversion of funds meant for Scheduled Castes and Scheduled Tribes is not permitted.

16.2.5 To enhance the competitive ability of Scheduled Caste and Scheduled Tribe students, about 8,000 seats were created in 101 pre-examination training centres where coaching was given to candidates appearing in competitive examinations for entry into public services. The Scheduled Caste and Scheduled Tribe candidates have been able to increase their representation in Central Government Services and Public Sector Undertakings over the years, as seen from the Table 1, due mainly to implementation of reservation policy coupled with educational and coaching facilities.

16.2.6 For elimination of scavenging, about 10 lakh service latrines in 490 towns in 19 States were taken up for conversion into pour flush latrines. Reports indicate that by the end of the Seventh Plan, 9.63 lakh dry latrines were converted, 14,529 scavengers rehabilitated and scavenging was eliminated from 40 towns.

16.2.7 The Protection of Civil Rights Act, 1955 and the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989 are the two important legislations to deal with untouchability offences and check commission of

Table - 1 Percentage of Scheduled Caste/Scheduled Tribe representation in Central Government Services

Category	Scheduled Castes		Scheduled Tribes	
	1.1.71	1.1.91	1.1.71	1.1.91
Class I	2.58	9.09	0.41	2.53
Class II	4.06	11.82	0.43	2.35
Class III	9.59	15.65	1.70	4.98
Class IV	18.37	21.24	3.65	6.82
(excluding Sweepers)				

Percentage of Scheduled Caste/Scheduled Tribe representation in Public Sector Undertakings

Category	Scheduled Castes		Scheduled Tribes	
	1971	1989	1971	1989
Class I	0.52	5.76	0.17	1.29
Class II	1.54	8.41	0.16	2.31
All categories	8.17	20.36	2.24	9.68

(Separately for Cl.III & IV not available)

crimes on Seheduled Castes and Scheduled Tribes. Fiftyseven special courts for trial of offences under the Protection of Civil Rights Act have been set up in eight States. Similarly, for implementation of the Scheduled Castes and Schdeuled Tribes (Prevention of Atrocities) Act, State Governments and Union Territory Administrations have specified existing District and Session's Courts as special courts for trial of offences under this Act. Exclusive special courts have also been set up in Rajasthan and Andhra Pradesh. Monetary relief and rehabilitation assistance were given to the victims of atrocities. Schemes to encourage inter-caste marriages and legal aid were implemented. Programmes were developed through the media, both formal and non-formal, against the evil practice of untouchability.

16.2.8. Details of outlays and expenditure for Special Component Plan/Tribal Sub-Plan and Backward Classes Sector during the Seventh Plan are given in Table 2.

Table - 2

(Rs. in crores)

Sl. No.	Item	Seventh Plan	
		Outlay	Expenditure
A.	Scheduled Castes		
1.	Flow from States Plan to SCP*	7385.42	6916.92
2.	Special Central Assistance	930.00	876.00
B.	Scheduled Tribes		
1.	Flow from States Plan to TSP*	6216.76	7074.50
2.	Special Central Assistance	756.00	847.00
C.	Backward Classes Sector -SCs/STs/OBCs		
1.	Centre/CSS	281.22	388.42**
2.	States Sector	1239.33	1456.13

* include outlay/expnd. under backward classes sector. Excluding share capital contribution of Rs. 50 crores to National Scheduled Castes and Scheduled Tribes Finance and Development Corporation.

** Includes grant -in-aid of Rs. 10 crores to Tribal Cooperative Marketing Development Federation.

Current Status

16.3.1 A very large number of Scheduled Castes and Scheduled Tribes continue to be socially and educationally backward and are languishing at the bottom of the social and economic pyramid. In rural areas, in 1987-88, the percentage of Scheduled Caste population below the poverty line was 44.7 and of Scheduled Tribe population 52.6, as compared to the All-India percentage of 33.4. The comparative

picture in the incidence of poverty during the period 1977-78 to 1987-88 is given below:

Table - 3

(In percentage)

Year	Total Population	Sch. Castes	Sch. Tribes
1977-78	51.2	64.6	72.4
1983-84	40.4	53.1	58.4
1987-88	33.4	44.7	52.6

16.3.2 Thus, while there has been a reduction in the percentage of population below the poverty line in the case of both Scheduled Castes and Scheduled Tribes, the incidence of poverty is still very high. Most of the Scheduled Caste and Scheduled Tribe families do not own land or other productive assets. They constitute bulk of agricultural landless workers, construction workers and workers in the unorganised sector. They suffer from long periods of unemployment and under-employment. They are also handicapped due to non-enforcement of protective laws such as the Minimum Wages Act and Prevention of Land Alienation Acts. Inequality and exploitation of Scheduled Castes and Scheduled Tribes, particularly in the rural areas, whether in the form of bonded labour or in other forms, both latent and manifest, still continue. Poverty, ignorance, lack of options in employment opportunities and non- existence of organisations which can fight for their rights, facilitate the continuance of age old exploitation. Scheduled Caste and Scheduled Tribe families have often not been able to derive the full benefit of development programmes. Wrong identification of beneficiaries, poor selection of projects, unrealistic and simplistic assumptions in regard to their viability, administrative costs, and leakages have been other problems which have been further compounded by a largely unresponsive administrative structure.

16.3.3 The dwindling resource base of the tribal people in the shape of loss of land, restriction on access to forest produce, and lack of opportunities for reasonable wage employment and usurious money lending have caused hardships to tribal people. Consequently, developmental inputs for the benefit of these people have had little impact. Significantly, development processes have interfered in many cases with traditional tribal institutional structure and ethos and have produced negative results. These were the contributory factors for dissatisfaction amongst tribal people and simmering unrest in some tribal areas.

16.3.4 The literacy rate amongst Scheduled Castes and Scheduled Tribes has no doubt increased over the years but the levels are still very low. The gap in literacy between Scheduled Castes, Scheduled Tribes and the rest of the population has been increasing, as is evident from Table 4.

Table - 4

All India literacy rate of Scheduled Castes and Scheduled Tribes

(Percentage)

Year	Scheduled Castes	Scheduled Tribes	Rest of the population	Gap between rest of the population and	
				Scheduled Castes	Scheduled Tribes
1961	10.27	8.53	27.86	17.59	19.33
1971	14.67	11.30	33.80	19.13	22.50
1981	21.38	16.35	41.22	19.84	24.87

16.3.5 Variation in literacy rates among the different castes and the different tribes is also fairly pronounced. Among certain Scheduled Caste and Scheduled Tribe communities, the percentage of literacy in 1981 was below five per cent. There is also wide inter-State variation in literacy levels of Scheduled Castes and Scheduled Tribes. For instance, in the case of Scheduled Castes, Kerala, according to the 1981 Census, had a literacy rate of 55.96 per cent, while Bihar had only 10.40 per cent. Likewise, in the case of Scheduled Tribes, Manipur had a literacy rate of 39.74 per cent while Andhra Pradesh had only 7.82 per cent. Among females, in both the categories, literacy rate is very low. In the case of Scheduled Castes it was 10.93 per cent and for Scheduled Tribes 8.04 per cent, in 1981.

16.3.6 A large number of Scheduled Caste and Scheduled Tribe children discontinue their studies prematurely before completing the level for which they were enrolled. The dropout rate in 1986-87 for classes I-V was 50.79 in the case of Scheduled Castes and 66.12 in the case of Scheduled Tribes. In classes I to VIII, the dropout rates were as high as 69.15 per cent and 80.19 per cent respectively.

16.3.7 Untouchability stands abolished by virtue of Article 17 of the Constitution and its practice in any form is punishable. But social discrimination against Scheduled Castes still linger in many parts of the country. It is a matter of concern that inspite of legal measures in the form of Protection of Civil Rights Act 1955 and the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989, 76,748 cases of atrocities against persons belonging to Scheduled Castes and 17,101 cases of atrocities against Scheduled Tribes were reported between 1986 and 1990. Of these, 3,328 cases were of murder, 5,339 of rape and 4,325 of arson.

16.3.8 The development process in many tribal areas, instead of providing succour, has been instrumental in causing numerous disadvantages, prominent among them being displacement and loss of land, the tribal's main resource base. Notwithstanding the fact that the State Governments have enacted laws/regulations to control/prohibit transfer of land to non-tribals, land alienation still continues.

16.3.9 While educational development programmes have widened the opportunities for Scheduled Castes and Scheduled Tribes, the number of job seekers among Scheduled Castes and Scheduled Tribes has also increased. At the end of 1990, there were 44.53 lakh Scheduled Caste and 11.48 lakh Scheduled Tribe job seekers on the live register of Employment Exchanges as compared to 19.69 lakh and 5.54 lakh respectively in 1981. The number of placements during 1989 was only 0.47 lakh in the case of Scheduled Caste job seekers and 0.27 lakh in the case of Scheduled Tribe job seekers.

Strategy for the Eighth Plan

16.4.1 In the nineties there has to be an intensification of efforts to bridge the gap in the levels of development of the Scheduled Castes, Scheduled Tribes, Backward Classes and other sections of the population so that by the turn of the century these disadvantaged sections of the population are brought on par with the rest of the society in all spheres of national endeavour. Problems of access for Scheduled Castes and Scheduled Tribes to programmes and services have to be identified and removed. Elimination of exploitation of Scheduled Castes and Scheduled Tribes and removal of all forms of oppression of Scheduled Castes and Scheduled Tribes must receive high priority. Untouchability, suppression of rights, usurious money lending, land alienation, non-payment of minimum wages, and restrictions on right to collect minor forest produce have to be removed to enable these people to avail of the benefits of development efforts.

16.4.2 Problems of Scheduled Castes and Scheduled Tribes have to be tackled by suitable streamlining of the mechanism of planning and implementation of programmes of Special Component Plan, Tribal Sub-Plan, and the schemes specifically targetted for the welfare and development of Scheduled Castes and Scheduled Tribes. The strategy of Special Component Plan for Scheduled Castes and Tribal Sub-Plan will be reviewed inter-alia to make them effective instruments of planning to ensure real and tangible flow of benefits to the target group, both individuals and families.

16.4.3 Re-orientation of administrative structure at all levels for functional coordination, integration and effective delivery of services will

be necessary. There is considerable inter-caste and inter-tribe variation in the levels of socio-economic development of Scheduled Castes and Scheduled Tribes and in the social and economic organisation of their life. It is essential that planning gives full cognizance to these variations and responds to their specific problems and needs and the socio-cultural values of the community through decentralised participatory planning.

16.4.4 Alleviation of poverty through sustained employment and generation of incomes is vital so that at least the basic needs are met. National poverty alleviation programmes will have to ensure that the Scheduled Castes and Scheduled Tribes are able to derive adequate benefit. Skill development programmes will be necessary to improve their earnings and help them to diversify into trades and occupations. It will also be necessary to provide assistance to Scheduled Castes and Tribes in the matter of choice of projects, marketing, procurement of raw materials, and introduction of new technologies.

16.4.5 Elimination of scavenging and rehabilitation of scavengers will be an important programme in the Eighth Plan. Education, training and other incentives will be provided to children of parents engaged in unclean occupations so that they can prepare themselves for occupations, which provide better incomes and a higher social status. Occupations like tanning and leather work would be modernised with improved technology to remove the stigma attached to these professions and to produce goods which have a better market.

16.4.6 A national policy on rehabilitation of people displaced by large development projects will need to be evolved. It is important that project authorities give as much attention to this aspect as to the projects themselves and ensure that full rehabilitation is completed before or by the time the projects become operational. Rights and concessions of the tribals in forests should be codified and the Forest Policy implemented in letter and spirit to maintain the symbiotic relationship between the tribals and the forests.

16.4.7 Women belonging to the Scheduled Castes and Scheduled Tribes are in a far worse situation by all development indicators. Poverty and deprivation affect them more adversely. Although they work along with men, they are not recognised as producers in their own right. The strategy for the development of Scheduled Castes and Scheduled Tribes will have to include a major thrust for the benefit of womenfolk.

16.4.8 Voluntary organisations will need to be promoted and assisted to play a partnership role in the designing and implementation of programmes. Their role in advocacy and acceleration of the process of change and development and in playing a constructive role of intermediaries in general and in innovating new programme structures, in organising and preparing the people and in giving them a stake in the success of their endeavours, in particular, has to be recognised. Voluntary organisations can also help in the training of grassroot level workers and in mobilising community resources.

16.4.9 Facilities like schools, hostels and institutional structures for health care, nutrition, drinking water supply, road linkages and housing will be made available in such a manner that these promote integration of Scheduled Castes and Scheduled Tribes with the rest of the society. Agencies and institutions excelling in promotion of integration and removal of all discriminatory practices will be suitably encouraged through appropriate incentives.

Programmes

16.5.1 While both Scheduled Castes and Scheduled Tribes lag behind the general population on most of the social and economic development indicators and in several areas the developmental needs are common, there are some important aspects in which the problems of Scheduled Castes and Scheduled Tribes differ. For instance, the Scheduled Castes suffer not only from economic backwardness but also from social disabilities. The Scheduled Tribes' problems arise from geographical isolation characterised by low level of techno-economic development and wide variation in the levels of living between different areas and different tribal groups but all the same assiduously retaining their distinct socio-cultural identity in a large measure. The programmes for these groups during the Eighth Plan will, therefore, need to be attuned to meet specific needs of these communities.

Educational Development of Scheduled Castes

16.5.2 For the educational development of Scheduled Castes and Scheduled Tribes, steps will be taken to ensure that at both pre-matric and post-matric stages, the problems such as high dropout rate, stagnation, non-enrolment of girl students and uneven growth amongst specified communities are effectively tackled. While the general sector would take care of the institutional arrangements for locating the necessary infrastructure, the programmes under the Backward Classes Sector would continue to pay special attention in supplementing these through incentives and support services.

16.5.3 At the pre-matric stage, programmes covering scholarships, boarding grants, hostel facilities, free supply of books, stationery and uniform and mid-day meals will be expanded. An appropriate package of services will be worked out to promote literacy and raise the level of education of communities where the current level is very low. Special attention will be paid to the retention of the girl child in school.

16.5.4 The post-matric scholarship scheme for Scheduled Castes and Scheduled Tribes in operation since 1944-45 has helped students from these communities to pursue higher education. Although the rates of scholarship under the scheme have been increased from time to time, no structural changes aimed at increasing employment opportunities have been made. The attempt during the Eighth Plan would be to rationalise the scheme to: (i) provide guidance with reference to employment opportunities and offering appropriate incentives for courses which have a larger market demand; (ii) improve the performance, if necessary by prescribing minimum standards; and (iii) identify causes for inter-caste/tribe variation in availing benefits under the scheme and chalk out appropriate remedial action.

Economic Development of Scheduled Castes

16.5.5 The economic development of Scheduled Caste families will be given high priority. The Scheduled Caste and Scheduled Tribe Development Corporations will strengthen their activitiies to enable proper identification of beneficiaries; selection of projects in non-traditional as well as traditional areas and matching them with the capabilities of the beneficiaries; provide financial assistance in the form of margin money or direct loan on concessional rate of interest in order to lessen the burden of repayment liability; facilitate the flow of credit through financial institutions for these projects; ensure tie-up with poverty alleviation programmes like IRDP; provide infrastructure support where necessary to enable the group of beneficiaries to take up their own ventures in a common work place; organise training in different skills to the target group; arrange for inputs such as supply of raw-material, marketing of finished goods, etc.; and monitor the implementation of the projects.

16.5.6 A time-bound programme, to be completed within the period of Eighth Plan, will be launched to achieve complete elimination of scavenging. The objective will be achieved by (i) making provisions of flush latrines mandatory in every house in urban areas and (ii) providing alternative work opportunities to those presently engaged in scavenging. For this purpose, necessary training facilities will be provided and rehabilitation undertaken.

16.5.7 The National Scheduled Castes and Scheduled Tribes Finance and Development Corporation would take up projects for the benefit of Scheduled Castes and Schdeuled Tribes. In addition, the Federation would organise training courses to provide skills.

Other Programmes

16.5.8 Under the provisions of the Protection of Civil Rights Act, most of the State Governments have taken measures for effective implementation of the Act including appointment of officers for initiating or exercising supervision over prosecutions, setting up of Special/Mobile Courts, appointment of Committees at the appropriate levels, periodic surveys on the working of the provisions of the Act and identification of areas where persons are under any disabilities arising from `untouchability'. Later, in 1989, the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act was promulgated to prevent commission of offences and atrocities against the members of the Scheduled Castes and the Scheduled Tribes involving their person, dignity and property. The measures taken for implementation of the Act include strengthening of existing police cells, mobile squads, increas-

ing the number of special and mobile courts for trying atrocities cases, survey of untouchability prone areas, provision of legal aid and relief, encouraging inter-caste marriages, monitoring, publicity and propaganda. The endeavour during the Eighth Plan will be to strengthen the enforcement of Protection of Civil Rights Act, 1955 and Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act 1989 and undertake programmes for mass awakening leading to attitudinal changes.

Educational Development of Scheduled Tribes

16.5.9 For the educational development of scheduled tribes, existing programmes for pre-matric and post-matric education of Scheduled Tribes will be continued. Residential schools, including ashram schools, will be expanded. As envisaged in the National Policy on Education, 1986, priority will be accorded to the opening of primary schools in tribal areas. The socio-cultural milieu of the Scheduled Tribes will be taken into consideration in developing the curricula and devising the instructional materials in tribal languages at the initial stages with arrangements for switching over to the regional language. Anganwadis, non-formal and adult education centres will be established in tribal areas on a priority basis. Further, the curriculum at all stages of education will be so designed as to create an awareness of the rich cultural identity of the tribal people as also of their enormous creative talent.

Economic Development of Scheduled Tribes

16.5.10 The Tribal Cooperative Marketing Development Federation through the State Tribal Development Cooperative Corporations would organise collection and marketing of minor forest produce in such a way as to ensure reasonable returns to tribals. A new policy on Minor Forest Produce in relation to the Scheduled Tribes will be formulated. The cooperative structure in the field for this purpose will be suitably reoriented and restructured.

16.5.11 The functioning of cooperative institutions including Large Multipurpose Cooperative Societies (LAMPS) in tribal areas will be reviewed with a view to meeting the genuine needs of tribal people in forests, credit, marketing of minor forest produce and supply of essential commodities. In addition, cooperatives for different occupational groups amongst the Scheduled Tribes will be formed. Essential productive and managerial skills would be developed in them through training and entrepreneurial development programmes so that they may seek self-employment. Measures aimed at greater participation of tribal people in conservation and development of forests and preservation of ecology, in a manner that their traditional rights relating to forest produce are not adversely affected, would be undertaken. Also, rights and concessions of the tribals in forests would need to be codified to ensure unhindered access to minor forest produce and use of forest resources by the tribals.

16.5.12 Limited access to credit for consumption and production purposes has resulted in increased dependence of Scheduled Tribes on money lenders/traders leading to: (a) siphoning of developmental benefits in order to discharge loan liabilities to money lenders and traders; and (b) loss of resource base in the form of land or other assets. An important objective during the Eighth Plan will, therefore, be to provide increased access to credit from banks and cooperative institutions.

16.5.13 For the primitive tribal groups, detailed plans will be prepared for their economic development, as far as possible, with the family as the unit. Infra-structure and other developmental needs will be specifically identified so that an integrated plan is developed. Schemes will be developed which take into account the social and economic organisation of life of these communities, their interests, aptitudes and abilities.

16.5.14 A viable and lasting solution to the problem of shifting cultivation, involving an area of about 10 million hectares affecting 6 lakh tribal families, is yet to be found. Even though special programmes under the Central Plan, including a Centrally Sponsored Scheme with an outlay of Rs 75 crores, have been operating and these have been supplemented by the States own schemes, many of them have been unable to make any real impact. During the Eighth Plan, schemes on water-shed basis, in which sectoral programmes like agriculture, forestry, horticulture, infrastructural and social services facilities will be interwoven in an integrated and viable

manner to enable the shifting cultivators to take to settled cultivation.

16.5.15 Originally created for meeting the manpower requirements for exploitation and regeneration of forest resources, the forest villages numbering about 5000, wherein more than 2 lakh tribal people live, have remained largely deprived of normal developmental benefits. In March 1984, the Ministry of Agriculture had advised the State Governments to confer long-term heritable but inalienable rights, say for 15-20 years, in respect of lands in occupation of tribals for more than 20 years. But this suggestion does not seem to have been fully implemented. In September 1990, the Ministry of Environment and Forests advised the State Governments to convert the forest villages into Revenue villages after denotifying requisite land as forest. It was further suggested that administration of these and other Revenue villages in forest areas should be entrusted to the State Forest Departments. While details of conversion are not readily forthcoming, the progress does not seem to be encouraging.

16.5.16 During the Eighth Plan an attempt will be made to reach developmental benefits to forest villages in a manner suited to the situation. Arrangements for review, on a regular basis, of the functioning of developmental schemes in forest villages for their all-round development, keeping in tune with environmental requirements, will be made.

Other Programmes

16.5.17 Legal and administrative measures and programmes aimed at elimination of exploitation in matters relating to land, forest, money lending, trade and labour will receive priority attention. These will be so implemented as to ensure for the Scheduled Tribes, the retention of basic resources like land, access to minor forest produce especially items for food, fuel and fodder and self and wage employment opportunities.

16.5.18 Peoples' initiative and participation would be made a key element in the process of development of Scheduled Castes and Scheduled Tribes and protecting their interests. Towards achieving this end, peoples' initiative and participation would be enlisted through continued assistance to non-governmental organisations working amongst Scheduled Castes and Scheduled Tribes. Research will be carried out to help identify the problems of Scheduled Castes and Scheduled Tribes. Tribal Research Institutes in the States will be activated to undertake concurrent evaluation of programmes under implementation. A bench-mark survey was undertaken in 1978 in tribal areas. It would be useful to undertake a similar survey in respect of the Tribal areas during the Eighth Plan.

16.5.19 Most of the State Governments have drawn up their own lists of sociallly and educationally backward classes and are implementing developmental schemes for them, mainly in the field of education. For the denotified communities, nomadic and semi-nomadic groups, rehabilitation measures have been taken up. Some State Governments like Andhra Pradesh, Assam, Gujarat, Haryana, Jammu & Kashmir, Karnataka and Maharashtra have also set up Development Corporations for other Backward Classes and Denotified Tribes. Efforts during the Eighth Plan will be to critically examine the ongoing schemes and modify them to more effectively cater to the needs of different groups amongst these communities.

16.5.20 The National Backward Classes Finance and Development Corporation will promote the economic and other developmental activities for the benefit of the backward classes. Assistance will be given to promote self- employment and other ventures subject to such income and/or economic criteria as may be prescribed from time to time.

16.5.21 An outlay of Rs. 2548 crores in the Central Sector, including Rs. 1125 crores as Special Central Assistance for Special Component Plan for Scheduled Castes and Rs. 3086.06 crores for the State Plan under Backward Classes Sector have been provided. In addition, a provision of Rs. 1250 crores has been made for Special Central Assistance to Tribal sub-plan.

CHAPTER 17

SPECIAL AREA DEVELOPMENT PROGRAMMES

I. Hill Areas Development Programme (HADP):

A. Problems of Hill Areas:

17.1.1 The crucial environmental problems of the hills are deforestation and soil erosion,both leading to the drying up of water sources, flash floods and decline in the yield of food and cash crops, fodder, fuel and other minor forest produce. Poverty in the hills is directly related to shortages of materials for basic subsistence, specially where, under the traditional land and water management systems, the capacity of land to support the population has already been exceeded.

17.1.2 In many hill areas, intensive human and livestock pressures along with indiscriminate felling of trees for commercial purposes have already led to loss of soil and rapid depletion and destruction of forest cover. Besides, to this, 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 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 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.

B. Classification of Hill Areas

17.2.1 The responsibility for balanced social and economic development of the hill areas rests primarily with the concerned State Governments.

17.2.2 The hill areas covered under the HADP were 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. The HADP would continue to be implemented during the Eighth Plan, only in those areas where it is already under operation.

17.2.3 The hill areas of the country fall broadly into the following two categories :

(i) Areas which are co-extensive with the boundries of the State or 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', namely :

a) Two hill districts of Assam - North Cachar and Karbi Anglong

b) Eight districts of Uttar Pradesh - Dehradun, Pauri Garhwal, Tehri Garhwal, Chamoli, Uttar Kashi, Nainital, Almora and Pithoragarh.

c) Major part of Darjeeling District of West Bengal.

d) Nilgris District of Tamil Nadu.

e)163 talukas of Western Ghats area comprising parts of Maharashtra (62 talukas), Karnataka (40 talukas) Tamil Nadu (29 talukas), Kerala (29 talukas) and Goa (3talukas).

17.2.4 The area and population of the Hill States and the Designated Hill Areas are detailed in Table 17.1.

C. Pattern of Funding

17.3.1 The Hill States mentioned in para 17.2.3 (i) above are called 'Special Category States'. The amount required for giving 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'.

17.3.2 The Special Central Assistance (SCA) provided for the HADP is additive to normal State Plan funds. This SCA is not meant to be utilised for normal State Plan activities. The schemes under the HADP is to be properly dovetailed and integrated with the State Plan schemes. The schemes undertaken under both these programmes also need to be conceived of and designed to achieve the specific objectives of these programmes and need not be merely conventional State Plan schemes.

D. Hill Areas DevelopmentProgramme (HADP) - Objectives, Approaches and Strategies

17.4.1 The programme has been in operation since the inception of the Fifth Five Year Plan in the Designated Hill Areas.

17.4.2 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 programmes implemented under the HADP have, therefore, aimed at promoting the basic life support systems with sustainable use of the natural resources of the area covered by the programme.

17.4.3 The approach and the strategy of the HADP has evolved 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 the 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.

17.4.4 During the last three 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. During the Eighth Plan, attention will have to be focussed on this, especially, in modernising the agricultural practices and small scale industries at household, cottage and village levels. To achieve this, involvement of the people, would be of paramount importance. Actual basic needs of the people have to be met through improved management of their land and water resources.

17.4.5 The following will be the approach and strategy in respect of hill areas development planning:

i) Intensive efforts would be necessary at the implementation level to halt the process of degradation of the hills and improve productivity of land.

ii) Innovative approaches to family planning and welfare to contain the population growth to sustainable levels have to be adopted.

iii) Financial and physical monitoring of the HADP by the State Governments would help improve implementation of various programmes.

iv) Afforestation programme may be popularised through village Panchayats or village authorities, schools and other local organisations, groups and clubs. Private nurseries, especially, of multi-purpose trees which yield benefits like fodder leaves, edible fruits or leaves or flowers, seeds, leaves of commercial value can be encouraged.

v) Application of scientific inputs to agriculture and allied sectors, including identification of crops suitable for the agro-climatic zones, 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 horticultural and serve the long-term objectives of enhancing production on sustainable basis.

vi) 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.

vii) Use of appropriate technologies to upgrade the traditional productive systems like 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.

viii) 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.

ix) 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.

x) In many hill areas, land assets are held as common or community property. In such areas, people do not make permanent investments and several other problems also originate from this. To overcome these, local communities have to evolve suitable models of land management that would invite permanent investment and ensure both optimal returns and ecological safety and development.

xi) The State Governments may take a fresh look at their Plan and non-Plan Schemes, forest policies, the land tenure systems, land and water use policies and realign them to eradicate practices destructive to ecology and environment.

xii) 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.

xiii) 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.

xiv) Development of non-conventional energy and use of non- wood based sources of energy could be encouraged.

xv) Development of watersheds that can meet water requirement 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.

xvi) 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.

xvii) 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.

xviii) At the household level, kitchen gardens can be popularised to supplement and enrich the diet of hill people.

xix) Wherever transport linkages have been established and local cultivation of food-grains is not advantageous, strong Public Distribution System could be extended, provided other adequate income generating avenues exist.

xx) To reduce the use of wood for packaging of horticultural produce, suitable non-wood based packaging materials such as plastics could be increasingly used on a viable basis.

xxi) Incentives that would encourage formation of large viable hill villages might be built into the development effort, so that the overhead input costs to reach amenities and services to them, could be reduced.

xxii) Many hill areas seem to be especially suited to industries that require pollution-free atmosphere, cool climate and precision skills like electronics, watch-making, optical glasses, sericulture, etc. A number of cottage industries like carpet weaving, handlooms, handicrafts and other village and household based small-scale industries can be encouraged. Due to higher transportation costs in these areas, industries which reduce weight and volume, but add value and increase shelf-life to the locally available raw materials will be advantageous. Large and medium industries may not generally be considered suitable except under favourable circumstances.

xxiii) Rubber plantations have proved successful in certain areas. Wherever degraded tree-free land could become available and where rubber plantations could thrive, these could be encouraged.

xxiv) Development of sericulture has good potential in hill areas. A systematic programme of planting feedstock trees for silkworms on all spare patches of land can be taken up. Development of sericulture can provide employment to educated and skilled workers and generate value-adding activities and bring in foreign exchange. However, the programme will call for right quality of graine, prompt payment in cash for the cocoons and primary processing activities at local levels.

xxv) Tourism can be organised as an industry, with due care taken to avoid exploitative use of scarce local resources, especially, water and fuel-wood.

xxvi) Location specific suitable code of conduct for tourists may be evolved so as to maintain the surroundings clean and disease free, protect local ecology and respect local traditions, culture and heritage.

xxvii) 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 the 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, porter or pony tracks can be built and properly maintained. Road construction should be completed in all respects without delays.

xxviii) Mining can be carried out but with adequate safeguards in favour of ecology during and after the mining operations.

xxix) Resources should not be thinly spread on a large number of projects and schemes. The priority for such ongoing and spill-over schemes, projects and programmes which do not benefit people in improving their quality of life or are destructive to ecology, can be reduced down or terminated.

xxx) Shifting cultivation, called `jhum'is mainly practised in nine States of country, ie.,seven States of the North Eastern Region,Andhra Pradesh and Orissa. The con-

tinuation of `jhum' cultivation reflects the inadequate attention paid to the development of agriculture. Improvement in agricultural practices, development of land for permanent cultivation, increase in `jhum 'land productivity and lengthening of `jhum ' cycle, will help in blunting the destructive edge of the practice. In comparatively isolated areas, permanent cultivation on scientific lines for localised self-sufficiency in food seems to be a strong viable solution to the problem. Simultaneously, development of location specific alternative income generating occupations can continue.

xxxi) Media support for transfer of suitable modern agriculture technology and its extension need to be given. A separate special programme at about 1800 or 1900 hours needs to be telecast and broadcast for the hill people who usually go to sleep early.

xxxii)Some of the voluntary organisations doing commendable work in the hills can be encouraged, especially, those engaged in improving the ecological system besides economic and social conditions of the people.

xxxiii)People have to be made aware of the far reaching implications of environmental degradation and their active participation has to be sought for reconstruction of ecology. Environmental aspects can be suitably woven into the curriculum of primary and high school classes.

xxxiv)Regeneration and development of the hill environment cannot be achieved without willing and active cooperation of the people. It will be forthcoming, only if, the benefits from improved land, water and forests resources reach directly and equitably to the people themselves.

xxxv) The hill areas prone to intense tectonic and seismic activities, need to be identified; activities like indiscriminate road and building construction and creation of artificial large water bodies need to be minimised and earthquake-proof construction designs should be used.

xxxvi)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.

xxxvii)In many hill areas men folk have migrated to towns and plains in search of employment opportunities. In such areas, women are managing land and other economic assets. The approach and policies should keep this in view, especially for lightening their burdens of daily chores like collection of fuel-wood, water, and tending to livestock and other domesticated animals and birds. It will be of much advantage if women extension workers are appointed in such villages.

E. Allocation of Special Central Assistance

17.5.1 In the Seventh Plan, out of the agreed outlay of special central financial assistance for HADP, 86.61% went for the Designated Hill Districts and 13.39% for the Western Ghats Talukas. However, during 1989-90, 1990-91 and 1991-92, additional funds to the tune of Rs.5.00 crores, Rs.1.67 crores, Rs.3.00 crores, respectively were allocated in favour of Darjeeling.

17.5.2 The funds in sight for HADP for the Eighth Plan are Rs.1450 crores.Out of this Rs.4.67 crores per annum as additional for Darjeeling are set apart and the balance amount will be distributed in the ratio of 86.61 : 13.39 between Designated hill Districts and Designated Talukas of Western Ghats respectively.

17.5.3 As against Rs.870 of agreed outlay for the Seventh Plan, the allocation on year-to-year basis aggregated to Rs. 1067.80 crores. For the Annual Plans 1990-91,1991-92 and 1992-93, the allocations were Rs.287.00 crores,Rs.290.00 crores and Rs.290.00 crores respectively.

17.5.4 In the light of the existing financial constraints, the outlay for the Eighth Plan will be Rs.1450 crores. The details are as follows:

Allocation of Special Central Assistance for the Designated Hill Areas during the Seventh and Eighth Five Year Plans.

	Seventh Plan		Eighth Plan.
	Outlay	Allocation on yearly basis.	Outlay
A. Designated Hill Districts of	753.50	924.03	1235.62
Assam	118.20	144.34	194.34
Tamil Nadu	33.75	41.53	55.49
Utter Pradesh	553.50	679.19	910.04
West Bengal	44.55	55.04	73.25+
Surveys & Studies	3.50	3.93	2.50
B. Designated Talukas of Western Ghats Region	116.50	143.77	191.03
TOTAL (A+B)	870.00	1067.80	1426.65 +

+ Excludes Rs.23.35 crores provided as additional SCA for Darjeeling hill areas of West Bengal.

F. Western Ghats Development Programme (WGDP)

17.6.1 The Western Ghats hill ranges run to a length of about 1600 kms. more or less parallel to the west coast of Maharashtra 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 38.85 million (1981 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.

17.6.2 The region generally receives 2000 mm to 7000 mm. of rainfall. Most of the rivers in peninsular India have their origin in Western Ghats. The Godavari, the Krishna, the Kaveri, the Kali Nadi and the Periyar are of inter-State importance. These water resources have been harnessed for irrigation and power. Thirty per cent of the area of the `ghats' region is reported to be 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 cocoanut in the coast along with mango and jack fruit. Tea, coffee, rubber, cashew, tapioca and potato are the other important plantations/crops of the region.

17.6.3 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.

17.6.4 A separate Western Ghats Development programme was launched in 1974-75 as a part of the programme for the development of hill areas.

17.6.5 During the Fifth Five Year Plan the 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.

17.6.6 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 Watersheds Development Programme was taken up on a pilot basis.

17.6.7 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.

17.6.8 The following guiding principles were folowed for the WGDP during the Seventh Plan period:

i) Maintenance of ecological balance essential for the life support system.

ii) Preservation of the genetic diversity.

iii) Restoration of the ecological damage caused by human interations.

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.

17.6.9 The approach to the WGDP during the Eighth Plan would continue to be substantially the same as for the Seventh Plan. The general approach would be that of taking up integrated development programmes on compact watershed basis keeping in view the overriding priorities of eco- development and eco-restoration as well as the basic needs of the hill people like food, fodder, fuel and safe drinking water. Efforts would be made to adopt a sub-plan approach in the WGDP.

G.Sub-Plan Approach

17.7.1 For the Hill areas covered by the 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 the Special Central Assistance (SCA) is provided as an additive to accelerate the pace of their development. 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 the State Plan are difficult to be quantified. Efforts are being made to follow the sub-plan approach in the WGDP also.

II. North Eastern Council (NEC).

17.8.1 The NEC was set up in August, 1972 under the **North Eastern Council Act, 1971** with its Secretariat at Shillong (Meghalaya) as an advisory body and is empowered to discuss matters of common interest of two or more States and to advise the Central Government and the concerned State Governments in matters of common interest, inter-alia, in the fields of: economic and social planning; inter-State transport and communication; power and flood control.

17.8.2 For securing balanced development, the NEC can formulate proposals of common interest for the States, coordinate regional plans, recommend priorities and location of projects which will serve common interest of more than one State of the Region. The NEC can recommend the manner in which the expenditure will be incurred and benefits apportioned,etc.

17.8.3 A number of projects requiring substantial funds are already in hand. Due to financial constraints, it may be possible to take up only new projects that have identifiable advantages to a number of States, i.e., having inter-State ramifications and that too with the consent of the concerned States regarding implementation, cost of maintenance and benefit sharing.

17.8.4 During the earlier Plan, the NEC had taken up small schemes and projects that could have been taken up under the State Plans or by the concerned Central Ministries or Departments. Such schemes and projects could, perhaps, be considered for transfer to the concerned States or Central Ministries.

17.8.5 Funds are provided by the Government of India through the Ministry of Home Affairs which is the `nodal' Ministry for the NEC. The NEC by itself is not an implementing agency. The Plan outlay and expenditure of NEC since 1973-74 are given in Table 17.3

17.8.6 The outlay for the Eighth Plan of NEC would be Rs.1160 crores as compared to the Seventh Plan agreed outlay of Rs.675.00 crores (including Rs.100.00 crores of L.I.C loans) and the yearly allocations aggregating to Rs.835.00 crores. The allocation for 1990-91, 1991-92 and 1992-93, were Rs.202.00 crores, Rs.230.00 crores, Rs.232.00 crores (including Rs.5.00 crores, Rs.20.00 crores, and Rs.10.00 crores of loan) respectively.

III. Boarder Area Development Programme (BADP)

17.9.1 A new programme for the development of border area was started under the Seventh Plan. It was funded entirely 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 of Punjab, Rajasthan and Gujarat. Subsequently, it was extended to Jammu and Kashmir. The outlay provided under the Seventh Plan was Rs.200 crores.

17.9.2 The actual execution of schemes under the Programme could begin only from 1986-87. Initially, it was to be administered by the Ministry of Home Affairs. Later, the principal thrust of the Programme was changed to development of human resources, particularly, education -- school, technical and vocational in the Community Development Blocks adjoining the border. In its final form, the Programme comprised four elements: issue of photo identity cards to the population in the target areas; education; irrigation and research studies on socio-economic development of these areas. The outlays in the Annual Plans of 1990-91 and 1991-92 were Rs.86 crores and Rs.85 crores respectively. The Programme will be continued in the Eighth Plan. However, its coverage will be extended to the Eastern Region and the scope reviewed so that problems occasioned by the existence of an international border are taken care of and not general development schemes which in the normal course are part of State Plans. The Eighth Plan contemplates an outlay of Rs.640 crores under this Programme.

IV. Desert Development Programme (DDP)

17.10.1 The Desert Development Programme was initiated in 1977-78 on the recommendation of the National Commission on Agriculture. It covers both the hot desert regions of Gujarat, Rajasthan and Haryana as well the as cold desert areas in Jammu and Kashmir and Himachal Pradesh. It is operative in 131 blocks of 21 districts in 5 States, covering an area of about 3.62 lakh sq. kms. and a population of about 150 lakhs.

17.10.2 The objectives of the programme include controlling the process of desertification, mitigating the effects of drought in the areas, restoring the ecological balance in the affected areas and raising productivity of land, water livestock and human resources. At least 75 per cent of the allocations have been earmarked for activities which would contribute towards combating the process of desertification. The proportionate weights assigned to sectoral activities in this programme are as follows:

Sector	Proportionate weightage
1. Land development, land shaping	15%
2. Water resources development	20%
3. Afforestation and pasture development	40%
4. Other activities	15%
5. Project Administration	10%
	100%

17.10.3 This programme is implemented with 100 per cent central assistance. The allocations are made at the rate of Rs.24 lakhs per 1000 sq. kms. with a ceiling of Rs.500 lakhs per district. However, for the cold desert areas a lumpsum provision is made, which is Rs.100 lakhs per district for Himachal Pradesh and Rs.150 lakhs per district for J & K. The Programme Evaluation Organisation of the Planning Commission has been entrusted with the task of evaluating this programme in order to assess its impact on the control of desertification and on improvements in productivity and incomes of life of the people living in these areas.

Table 17.1

HILL AREAS

States	Area(000)Sq Kms.	Population (1981) Lakhs
(1)	(2)	(3)
I.Hill states :(Special Category States)[1]		
1.Himachal Pradesh	55.67	42.81
2Jammu & 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 the 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
Pithoragarh	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 ofthe District)	2.47	5.59
Sub-total (a)	71.34	66.54

Table 17.1(contd.)

HILL AREAS

States	Area(000)Sq Kms.	Population (1981) Lakhs
(1)	(2)	(3)
b) **Designated Talukas of Western Ghats Areas** [2]		
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
Ratnagiri(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
Chikmaglur (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

Table 17.1(contd.)

HILL AREAS

States	Area(000)Sq Kms.	Population (1981) Lakhs
(1)	(2)	(3)
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-Tota l(b)	160.49	388.38
Total **(HADP)II**(a+b)	229.29	448.63
Grand Total (I+II)	691.03	621.58

1. It excludes Assam , which is also a Special Category State.

2. In the cae 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-17.2

Allocation of Special Central Assistance Under Hill Areas Development Programme (HADP)

(Rs Crores)

State/Area	Five Year Plans (outlay)			Annual Plans (Allocation)							
	1974-79	1980-85	1985-90	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93
(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	22.08	25.90	27.69	32.19	36.48	38.87	38.87	**38.87**
Tamil Nadu	7.00	21.81	33.75	6.73	7.30	7.90	9.19	10.41	11.09	11.09	**11.09**
Uttar Pradesh	104.00	350.00	553.50	107.98	120.00	129.65	150.75	170.81	182.01	182.01	**182.01**
West Bengal	15.00	29.85	44.55	9.21	9.50	10.44	12.14	13.75 *	16.32 **	19.32$	**19.32$**
Survey & Studies	_	11.76	3.50	0.93	1.00	1.00	0.50	0.50	0.50	0.50	**0.50**
Sub Total (A)	150.00	485.00	753.50	146.93	163.70	176.68	204.77	231.95	248.79	251.79	**251.79**
(B)Western Ghats Region											
Kerala	4.88	17.80	23.80	5.53	5.09	5.63	5.11	5.68	6.05	6.05	**6.05**
Maharashtra	6.45	23.08	38.10	7.29	8.26	9.01	11.39	12.67	13.50	13.50	**13.50**
Tamil Nadu	3.55	13.02	19.90	4.11	4.34	4.71	6.06	6.74	7.18	7.18	**7.18**
Karnataka	4.04	14.45	28.20	4.57	6.33	6.67	8.00	8.89	9.47	9.47	**9.47**
Goa	1.00	3.65	6.00	1.15	1.15	1.15	1.35	1.51	1.61	1.61	**1.61**
Survey & Studies	0.08	3.00	0.50	0.29	0.10	0.10	0.26	0.30	0.40	0.40	**0.40**
Western Ghats Sect.	-	-		0.03	0.03	0.05	0.05	0.07			
Sub Total (B)	20.00	75.00	116.50	23.07	25.30	27.32	32.22	35.86	38.21	38.21	**38.21**
Grand Total(A + B)	170.00	560.00	870.00	170.00	189.00	204.00	236.99	267.81	287.00	**290.00**	**290.00**

* In addition Rs 5.00 Crores were allocated from HADP.

** Includes additional Rs. 1.67 crores.(Were to become available for Darjeeling if an additional sum of **Rs 3.33** Crores was provided by the State Govt.in the State Plan.)

$ Includes additional Rs. 4.67 crores.

Table 17.3

NEC - Outlay and Expenditure

(Rs. Crores)

Period	Outlay	Expenditure
(1)	(2)	(3)
1973-74	0.33	0.28
Fifth Plan (1974-79)	90.00	86.58
Annual Plan (1979-80)	47.00	32.68
Sixth Plan (1980-85)	340.00	385.34
Seventh Plan (1985-90	675.00	779.80
1985-86	125.00	96.46
1986-87	145.00	144.13
1987-88	165.00	149.50
1988-89	185.00	184.36
1989-90	215.00	205.35
1990-91	202.00	191.95
1991-92	230.00	219.50
1992-93	232.00	
Includes LIC Loan as under		
1985-90		100.00
1985-86		10.00
1986-87		20.00
1987-88		25.00
1988-89		30.00
1989-90		36.00
1990-91		5.00
1991-92		20.00
1992-93		10.00

CHAPTER 18

SCIENCE AND TECHNOLOGY

Preamble

18.1.1 Science and Technology (S&T) has made a phenomenal impact the world over in shaping the lifestyle of the common man. If India has to really forge ahead in the coming decade, S&T must play a pivotal role in all the important tasks that lie ahead of us. Hence, the deployment of S&T as an effective instrument of growth and change becomes an imperative strategy. In order to derive maximum output from meagre resources, S&T and the associated methodology must be brought into the main theme of economic planning in the agricultural, industrial and services sectors. In this exercise, we are endeavouring not only to plan for S&T but also for integrating S&T in the economic planning.

18.1.2 Globalisation of business and of R&D are noteworthy developments. Meaningful partnerships on the international plane in the areas of mutual global interests are on the anvil. The S&T strategies will have to be suitably moulded to meet these realities.

18.1.3 Some of the old problems remain. This decade will pose further new challenges. The resource crunch, the balance of payment position and the shortage of foreign exchange are hard realities. Liberalisation in technology transfer and trade has been intensified. Resources such as energy, are in severe shortage. The increasing unemployment and continuing poverty constitute a threatening scenario. Improving living conditions of our population, especially in the rural areas, is a challenge demanding greater attention. These are national priorities which would make increasing demands on the S&T inputs in planning. Thus, S&T activities can no longer remain peripheral to our economic planning.

18.1.4 How then to produce more from less? There are ways through which it may be possible to achieve this. Conservation measures in every single endeavour, ranging from conservation of energy to conservation of forests have to be given a high priority. Indeed, conservation of everything -- from "oil to soil" -- should be the direction in which S&T will have to steer our action plans. Consolidation of existing position in different sectors through in-depth reviews and purposeful modernisation of the manufacturing industry for higher quality and productivity acquire significance. Commitment to excellence in everything we do has to become an essential ingredient if our endeavours have to yield results commensurate with our needs. Quality improvement in our products and related efforts would increase the demand for S&T, not only in concepts and design but right through production, testing, packaging, transportation of goods and post-sale activities. These would, in turn, create greater employment opportunities. Above all, it is imperative that we spread the culture of scientific processes amongst the entire population before the end of this century. Such a spread is essential to increase the quality of life.

18.1.5 Some of the ideas briefly outlined above provide the motivation and the basis for the S&T programmes of the Eighth Plan described in the following sections.

Policy Framework And Approach

18.2.1 The changing global and national scenario is bound to make greater demands on S&T. Our policy framework and approach to S&T planning has to be geared to face this demand. Science and Technology would also have to encompass major strategies towards agricultural and industrial development and this has to take into account the overall objectives of the new industrial and trade policies, besides the changing international situation. The Government policy framework will continue to encompass encouragement of entrepreneurship, development of indigenous technology through investment in R&D, bringing in new technology etc.

18.2.2 There has been a significant growth in our capability as also our accomplishments in several high technology areas such as nuclear and space science and technology, electronics and defence research and development. Many new programmes and initiatives are envisaged

in these, so as to ensure (i) growth in these strategic and vital sectors; (ii) operationalisation of projects or programmes that have been successfully demonstrated; (iii) transfer of technology to other sectors, particularly in the broader production sector. There have also been significant developments and achievements in S&T related to the sectors with large societal implications such as in agriculture. Efforts have been mounted for developing newly emerging key areas e.g. microelectronics, informatics/telematics, biotechnology, new materials, renewable energy sources, ocean sciences and several areas of basic research. A large base has been created in the areas of biological and industrial research which will be consolidated, expanded and utilized. Consistent with this need for capability building, there has been a corresponding increase in the Government S&T expenditure excluding Defence in the successive Plan periods as shown in Annexure 18.1. Annexure 18.2 gives the outlay and expenditure, during the Seventh plan, for the various components of the S&T sector. It will be seen that the total S&T outlay forms about 2.26% of the total public sector outlay. The S&T expenditure has steadily increased and reached a level of 1.12% of GNP at the end of the Seventh Plan. There has been a tendency to regard science and technology as a separate and compartmentalised activity, to be carried out in universities, in research laboratories and in large specialised scientific institutions. It is not generally realised that science and technology should be an integral and essential part of all sectors of our national activity. The results of S&T are yet to be felt in terms of a major impact on the economic development, improvement in the quality of life of our people and in the availability of better goods and services etc. During the coming years it should be ensured that the efforts in science and technology are not confined in laboratories and academic institutions but percolate to the grassroot levels so that science, technology and innovations increasingly become part of the life of our people. For this, appropriate mechanisms and management practices would need to be introduced.

Policy

18.3.1 In order to maximise returns from the investments in science and technology, it is necessary that policies covering S&T, industry, finance and agriculture must be meaningfully intermeshed. The recent Industrial Policy has reserved only very few industries for the public sector, reduced the sectors where industrial licensing was earlier necessary, liberalised the procedures relating to technology acquisition and investment, removed the restrictions on large companies and redefined the goals of the public sector undertakings. For this, the technology development must take place in a competitive environment and the policy for industrial research and development should be appropriately reoriented. In the formulation of future policy for the industrial R & D, the spirit and guidelines of the New Industrial Policy must be followed. In consonance with the agricultural policy, the S&T inputs must be able to provide the ever-increasing food requirements of our growing population. The S&T agencies would be directed not only to develop capabilities in their specialised areas but also to interact with the various developmental sectors, industries, institutions set up by the farmers and those providing services to promote the utilisation of their expertise. National laboratories/ centres under the S&T agencies should make their facilities available to the scientists from the agricultural and industries sectors and provide services to the university system and evolve collaborative programmes with them. The socio-economic sectors/ Ministries and States, therefore, must lay a greater emphasis on the S&T content in their programmes and place their crucial demands on the S&T agencies.

18.3.2 The following paragraphs highlight the importance of some of the activities planned:

(a) Science and Technology for accruing benefits to people

18.3.3 Priority must be given to utilising S&T in enhancing the pattern of utilisation of all our resources including the natural resources so that large sections of our society could ultimately benefit from the applications of S&T. Efficient management of land , water, and energy resources through S&T would result in significant benefits to the people.

18.3.4 The large infrastructure of S&T has a potential of contributing significantly towards the removal of poverty. For this purpose, the establishment of appropriate "Problem Referral and Data/ Information Network", consisting of linked units from the village through district and State to the national level is essential. This

would help in optimising the S&T resource utilisation and in sharing the experiences. The existing Government programmes for poverty alleviation will have to utilise the S&T inputs significantly. Development models based on optimising the total employment at the local level, based on all available resources, should be prepared. The S&T sector must develop innovative and cost effective techniques and technologies for the storage and processing of, and value addition to, the local resources in the decentralised sector. National level S&T efforts should devote a part of the manpower and budgetary resources directly on the R&D efforts related to measures for alleviation of poverty.

18.3.5 The strategy for using S&T inputs should be based on total integration of the various components of the related policies. For this, the involvement and participation of the target groups and also of the voluntary organizations would be very essential. There is a need for taking up specific activities for the benefit of the different target groups in the society who have so far been denied the benefit of S&T, for example the weaker sections, tribal population and women. It would be the endeavour of the scientific agencies and departments to direct specific programmes, wherever possible, so that these target groups derive maximum benefit. Mechanisms should be devised and implemented to facilitate trained and skilled personnel from the science departments and scientific organisations to actually work in these sectors of our society (rural, tribal areas etc.) and involve them in micro-level planning, relevant to their needs. The trained persons must develop means to get a proper feed-back from weaker sections regarding their problems. Specific programmes must be worked out to ensure that these sections and particularly the women are benefitted so that better working conditions, improved environment and better employment opportunities are created to improve their economic status, besides health care, nutrition, pre-natal and post-natal care for the women and children. New areas of research and technological development to improve the quality of these sections are to be identified in water management, sericulture, post-harvest technology and food processing and implemented. Scientific agencies and departments must give adequate facilities and freedom, recognition and rewards to young women scientists and encourage them more and more to pursue science as a career. The large potential of retired scientists should be effectively utilised for the integrated rural and tribal development programmes and in the related S&T activities.

(b) Integration of S&T in the socio-economic sectors

18.3.6 Science and technology must use innovative approaches and new technologies in such a way that it becomes an integral part of all sectors of national activity and particularly of the major socio-economic sectors, such as agriculture, chemicals, coal, construction, education, employment, various sectors of engineering, energy production and its use, fertilisers, health, population control, rural development and communication. It is necessary for every one concerned with the socio-economic Ministries to draw out a perspective plan for the next 10-15 years with clear objectives and targets and then identify specific science and technology inputs required to achieve them. For this purpose, it would be necessary to start "think tanks" in the form of a Science and Technology Advisory Committees (STAC) in different sectors. These committees should not merely clear a few R&D proposals but should plan an overall S&T perspective for that sector. Proper status should be given to these Advisory Committees. For example, the Committee should be able to report to the concerned Minister directly. Clear- cut demands must be put forward by them on the existing S&T sector, including the educational and research institutions, in the form of time-bound, need-based projects. There should also be an interactive mechanism to ensure that these demands are fulfilled. Some of the arrangements for this may have to be formalised in the form of contracts. The linkage between the S&T infrastructure and the economic ministries must be strengthened so that the use of S&T becomes inevitable. The user economic Ministries should earmark their S&T budgets and must accept responsibility for an effective use of S&T in their sectors, not merely in terms of expenditure but in terms of their full utilisation. The system should also encourage the academic community and the S&T agencies to take up challenging tasks to tackle socio-economic problems which would be assigned to them by the economic ministries.

(c) Technology Missions

18.3.7 The implementation of National Technology Missions and science and technology projects in a mission mode, for evolving new management structures with much closer linkages between, and better interaction and coordination of, many departments/ agencies, and ensuring large scale, time-bound tangible application of S&T, is important. Accordingly, a few more projects on a selective basis should be taken up in important sectors of the economy.

(d) Research and Development in Industry

18.3.8 Since independence, considerable effort has been made to build a strong base for industrial and technological development in the country. Substantial investments have been made over the last four decades in building R&D institutions in the country to meet the requirements of the industry. The support to the industry for establishing a strong R&D base was given by providing incentives through tax concessions of various types. However, the industry has not responded adequately to make substantial investment on R&D for their own utilisation and instead has gone for the import of technology to meet their growing demand.

18.3.9 Significant inputs of S&T are needed in various socio-economic sectors, with R&D carried out and promoted in the concerned industry. The absence of design and engineering capabilities, the lack of linkages with and the demand from the production system, continued foreign assistance in basic engineering activities/product design and consultancy etc. have been the main constraints in the promotion of indigenous technology.

18.3.10 Mobility of scientists and technologists between the academic institutions, Government laboratories and industry has been emphasised repeatedly but it still largely remains unfulfilled. There are many barriers in promoting mobility and those arising from wrong administrative approaches and cadre structures can be rectified with minor modifications in procedure.

18.3.11 For the industries, the absorption and application of science and technology is inevitable. Therefore, industrial enterprises must be encouraged to support rapid absorption of technologies and their adaptation to suit varying needs of the Indian environment. This will lead to gradual introduction in the market of new or modified products that can secure their share in the world markets.

18.3.12 Industrial infrastructure specially in older industries needs to be improved quickly by revamping and modernisation. Modernisation will have to be given priority over new investments. Textiles, jute, sugar, leather, mining, plantation crops, processed export food and spices etc. require modernisation and substantial S&T inputs.

18.3.13 While individual industries should continue to pursue their competitive roles, they should also form consortia, as and when necessary, to capitalise on their collective strength to ensure synergism and develop a team of small vendors around them.

18.3.14 The possibility of joint management of few educational programmes by the industry should be explored to facilitate the orientation of the educational sector to promote industrial growth.

18.3.15 There have been numerous achievements at the level of the national laboratories. However, these achievements have not been commercialised because of the absence of design and engineering capabilities and lack of linkages with the production system. Our national S&T institutions will.,therefore, have to play an increasing role in moulding the technology and adapting and interfacing it with the existing systems. A judicious mix of the indigenous and imported technology would be necessary. The Indian industry needs a technological thrust for modernisation so that it achieves self-reliance.This would imply a much greater emphasis on innovation through inhouse research and development by the industry. Major efforts are required to ensure that the technology status of the local units is brought to the level of international standards so that its products are of international standards. Thus, we must ensure that quality products are produced for internal consumption as well as for export.

18.3.16 During the Eighth Plan a major thrust would be made on supporting and strengthening the pilot plant investigations and activities in the industry. For this, major investments should be expected from the industry through soft loans.

Venture capital/risk financing companies have a crucial role to play in this endeavour. Similarly, the establishment of independent pilot plant centres as a cooperative venture of several connected industries would also be a possible option. Also, a few design centres should be established with the Government support and through incentives provided by the industries.

18.3.17 There is a lot of production technology in use in the small scale and village industry sector, which provides significant and gainful employment and helps decentralised operations. Such industries with their technologies must be nurtured and supported.

(e) Science and Technology Education

18.3.18 The National Policy on Education (NPE) has been reviewed recently and a programme of education in the Eighth Plan is being sharpened. The Eighth Plan must recognise that there can be no excellence in science and technology without excellence in the S&T education. A significant portion of our support for science, therefore, must go to educational institutions. More importantly, adequate investment should be made for S&T related activities in the educational institutions so that these could contribute to their maximum to national development.

18.3.19 In the absence of adequate information on manpower requirement, it would be difficult to indicate in reliable terms the technical manpower requirement. The establishment of Technology Information Forecasting and Assessment Council (TIFAC) is an important development. Besides, the evaluation of the existing technology and the preparation of technology forecast, it could also include manpower forecasting.

18.3.20 Many talented Indian engineers and scientists are now residing abroad and they are engaged in a wide range of highly sophisticated technological activities. Some of them are woking in institutions of excellence, sophisticated industries or in new and emerging areas of science. In the last decade many non-resident Indians (NRI) have shown interest in involving themselves actively in the industrial development of India. This interest is due to several factors in addition to desire to return to India. They have acquired a high degree of technological expertise, have an in-depth experience in matters closely related to industry and commerce and have also acquired sizeable resources. Thus they would like to gainfully invest their skill and resources in their motherland.

18.3.21 The scientific manpower abroad has been often referred to as `Brain Bank', from which India could gainfully draw for its own economic and technological development. Several studies have indicated the measures and mechanisms to facilitate a closer involvement of NRIs in Indian activities. Some of the new policies and measures announced by the Government, since July 1991, have emphasised the role of NRIs in promoting investments in India. This would lead to increasing the quality of our products and will enhance exports. Preparation of preliminary industry profiles on items of immediate interest to the Non-Resident Indians, incorporating general information on industry, technology, demands, measures and policies of the government and specific information about the product and market characteristics, would prove to be extremely helpful in setting up industrial units with the assistance of NRIs in the country.

(f) Promotion of Basic Research & Excellence

18.3.22 Creativity and innovation are the main ingradients for growth and development. Recognising these, the Scientific Policy Resolution emphasises the need for promoting basic research in the country as one of its main objectives. Promotion of basic research involves besides financial inputs, many other factors.

18.3.23 In certain selected areas of research, all efforts should be made to identify a few educational institutions where talented students and faculty members could be attracted for pursuing well-planned advanced courses so that these institutions become the centres of excellence for teaching and research. The selected centres of excellence should receive support, not only from the Ministry of Education and the UGC but also from S&T agencies.

18.3.24 The following approach is necessary for ensuring adequate mechanisms for supporting basic research:

(i) S&T agencies and high level committees of scientists should be given the special task

of identifying outstanding individual scientists or small groups in different parts of the country. Such outstanding individuals/groups should be encouraged.

(ii) Efforts should be made to encourage industrial houses to support basic research in educational and other institutions.

(iii) International collaboration should be more effectively utilised to give our scientists the best opportunities to interact with the best of the international talents, undertake collaborative projects of mutual interest and enable the utilisation of the best research facilities in the world where our scientists could pursue their own research ideas and research programmes further which they have undertaken in their own institutions at home.

18.3.25 Dynamic functioning of academic and professional bodies in the country can greatly help in increasing critical assessments, which are important for quality, as also for the dissemination of research work within the country. Unfortunately, very few of our professional bodies and academies have been able to raise the standards of excellence of our publications to the international levels. During the last 5 years or so, increased support is being provided to the professional bodies for undertaking academic activities and this needs to be accelerated.

(g) Thrust,Prioritisation,and Areas of Special Significance

18.3.26 The Eighth Plan will have to deal broadly with four categories of programmes, each with its own distinctive features. These are:

(i) basic research in frontline areas;

(ii) innovative research in exploitable areas of S&T with emphasis on R&D activities in emerging technologies which provide us with an opportunity of securing a position for leadership and self-reliance;

(iii) diffusion of appropriate technology and technology support for ancillaries of large units.

(iv) integration of S&T in socio-economic and rural sectors to fulfil the basic needs of water, food, nutrition, health & sanitation, shelter, education, energy, clothing, employment etc.

18.3.27 Consistent with the above, the S&T should contribute to meeting the short-term and long-term needs in the priority socio-economic sectors and also in keeping the country abreast with the latest advances in science and technology in at least some of the front-line areas of research. In view of these observations, the priority areas of S&T activity would be different for the S&T agencies, for the socio-economic sectors and also for the States. While S&T agencies and academic institutions would primarily lay emphasis on programmes in categories (i) and (ii) listed above, the socio-economic ministries and States would mainly concentrate on the last two categories.

18.3.28 As regards the S&T programmes for short-term needs, priority should be given to programmes that aim at expediting the diffusion of cost-effective technologies for products and services. These programmes will be based on available knowledge and known R&D results and will be integrated with different socio-economic sectoral programmes.

18.3.29 The programmes to meet long-term needs in exploitable areas of S&T should contribute to the preparedness of the country for the future and in meeting the developmental requirements. The changing scenario, nationally and internationally, on the economic and technological fronts, requires that investments be made in those areas of science and technology that are considered as critical determinants for such changes. Self-reliance in all aspects of national and economic security, including energy, food etc. would dictate the priority in such programmes.

18.3.30 The manner of utilisation of R&D results would call for strengthening of the S&T information system, forecasting and assessment networks, data bases for management of natural resources, structures for planning and analysis of socio-economic aspects in the application of these technologies, training and awareness building, and actual implementation of strate-

18.3.31 Coupling between R&D capabilities and fulfilment of socio-economic needs has to be brought about through the innovation chain, which connects activities spanning research, development, design, demonstration, engineering, production and diffusion, leading to utilization of technology for production and services. Emphasis during the Eighth Plan should be on strengthening the various links in this innovation chain.

18.3.32 An important aspect to be pursued in the case of thrust areas is that of setting up national facilities in terms of highly sophisticated infrastructure, instrumentation, workshops and trained supporting manpower to be used by a large scientific community in view of the limited resources available.

(h) Science & Technology Manpower Development & Employment

18.3.33 It is well recognised that in all countries involved in social and economic development, there is a shift in the percentage of total population employed in agriculture, towards industry and services. With limitations on land and water, self-reliance and sufficiency in food, fodder and fuel can be obtained only through a substantial increase in productivity per unit of land area, with high efficiency in inputs, especially of fertilizers, agrochemicals and energy. Similarly, post-harvest treatments to avoid wastage, or contamination and to introduce processing, are all urgently needed. These call for major inputs of knowledge in S&T, special efforts in supply of high quality seeds and materials and monitoring of the quality of products. Animal productivity as well as fish and egg production can be markedly increased by S&T. Thus, S&T services in agriculture and rural industry should be specially encouraged as also in diagnostic evaluations, technical advice and the supply of vaccines, animal feeds and nutrients. This would call for a major demand on the S&T manpower.

18.3.34 These principles of inputs of high quality S&T apply to all infrastructures such as transport, communications, health, population control and nutrition. There are innumerable opportunities for the S&T services, backed by R&D and special equipment or material which can be manufactured in India. High efficiency and appropriateness must be the hallmark of these inputs and these should change with time. Training and retraining, using modern communication methods, should become essential to maintain progress. Thus, advances in R&D and their output in the areas such as electronics, new materials, computers, telecommunication, sensors, instruments, on-line analysis, diagnostics, biotechnology, genetic engineering and nutrition, when applied, will generate a large employment potential for the S&T personnel and would lead to upsurge in economic activity. This, in turn, will identify further areas for R&D and S&T inputs. Environment, ecology, recycling of resources such as water, are major needs and these call for S&T. Here again, substantial manpower can be deployed.

18.3.35 While a number of steps have been taken by the Government to increase employment opportunities, the number of scientists would fall far short of the rate at which S&T persons are needed in the country. Some of the strategies for the creation of jobs and for retaining S&T personnel are:

(i) Motivating S&T personnel to capture the full potential of self-employment;

(ii) Creating awareness about entrepreneurship leading to self-employment among the college and school students;

(iii) Introducing greater capital investment in the areas where the outlay per work place is minimal;

(iv) Restructuring government policies to minimize import of goods;

(v) Creating Entrepreneurship Development Cells in all science/engineering/IITs and other academic institutions by the concerned Central/State agencies;

(vi) Introducing automated techniques selectively from the viewpoint of safety, reduction of drudgery, improvements in productivity/efficiency, etc;

(vii) Examining export strategy to enable the country to pay for imports through exports and thereby simultaneously generating greater employment;

(viii) Encouraging the establishment of sophisticated industries in the emerging areas of technology as also encouraging the service sectors requiring inputs from high technology so that highly trained S&T personnel could be retained and gainfully employed;

(ix) Maintaining centres of excellence in various branches of Science and Technology to retain highly trained persons within the country.

(x) Providing proper working atmosphere and adequate amenities (e.g. housing in urban areas) to S&T personnel.

(i) Disseminating Scientific Temper, Science Communication

18.3.36 Efforts and activities of various types, in the cause of propagation of scientific temper and S&T popularization, by a variety of agencies and institutions, have been and are underway in the country. Some of these are quite effective. They include both the "formal"/traditional sector like science museums, planetaria, exhibitions, coverage in the mass media etc., as well as the "non-formal"/non- traditional sector like work of the popular science movement groups, use of non-electronic, field media, jathas, science marches, environmental awareness camps, etc. There is a need to catalyse further the science communication activities in the States especially in the rural parts and tribal areas.

18.3.37 Several existing impediments and hurdles in the way of popularization of science on a large-scale need to be overcome. These include according validity to observations made and the data collected by common people and voluntary scientific groups, involving and drawing upon manpower and other resources available with the adult education departments and in creating enabling mechanisms for a large number of interested scientists, technologists and teachers who could be deputed to work with scientifically and technically-oriented voluntary organisatioins engaged in S&T communication and popularization activities. Also there is a need to increase the availability of proper reading material for the children and adults.

18.3.38 While the use of mass media in the dissemination of information cannot be underestimated, it definitely needs to be supplemented for better and more lasting effect. Furthermore, voluntary groups/agencies, which have established their credibility either through field work and activities in the area of S&T communication, or otherwise, ought to be encouraged and assisted to take up innovative ideas as projects.

(j) International Cooperation

18.3.39 International linkages in S&T must be a means to assist in the implementation of national programmes, as well as to open up avenues for collaborative interaction, on the basis of mutuality, in the frontier areas, or in those sectors which lead to the acquisition of knowledge not available within the country. The overall modalities of cooperation should be such that they should ensure the enhancement of self reliance, and at the same time, avoid impingement upon considerations of security and sensitivity of the country. This window should also serve as a tool for sharing of India's experience and expertise in the S&T with the other developing nations.

18.3.40 India has arrangements for cooperation in science and technology with over 40 countries. The instruments of cooperation are mostly in the form of agreements/MOUs on a bilateral basis. This could involve Governments or Societies/Academies on the two sides. There are regional programmes with SAARC countries, .programmes under India- EC Joint Commission and also S&T linkages with several countries under the umbrella of Technical Assistance Programme (TAP). Collaborative arrangements also exist with a number of international organizations including UNDP, UNESCO, UNIDO, WHO etc. Existing mechanisms of cooperation cover a wide spectrum of areas under various programmes and include exchange of scientists and research workers, training programmes for S&T personnel, joint research and R&D programmes etc.

18.3.41 The policies and approaches for evolving effective international programmes in S&T must result in strengthening the national S&T endeavours; harmonising the external relations defined by the Government in the areas such as defence, industry/trade, finance, etc. Further,

these must be in tune with the defined national priorities. Major effort should be on selecting such programmes and projects which are relevant to the development needs in the Plan; developing alternate models and approaches, which enable the implementation of foreign aided projects based on indigenous resources; ensuring multiplier impact and extension mechanisms and evolving appropriate mechanisms for review; coordination/linkages of the various foreign programmes and science agreements.

18.3.42 There is a clear need for making a critical evaluation of the usefulness of the existing S&T collaborations and delineating those which are truly meaningful. In many cases, institute-to-institute linkages on a long-term basis will serve us well in comparison with the routine broad-based umbrella arrangements between the agencies. Furthermore, the present cooperations are more in the science sector than in the technology sector. Linkages of the Indian industry with corporate R&D centres abroad, for instance, can go a long way in fostering the innovative R&D through a global effort.

(k) Development and Application of S&T in the States and Union Territories

18.3.43 A large part of the activities that affect large sections of the society, such as population control, agriculture, irrigation and water management, housing and construction, urban development, education, health, energy, employment etc. are carried out at the State level using local infrastructure and resources. To ensure that these activities derive maximum benefit from the application of S&T, appropriate institutional mechanisms which have been evolved, at the State level during the last two plan periods should be fully utilized. The details of the plan outlays and the expenditures for the S&T sectors in the States and Union Territories during the past three plan periods are given in Annexure 18.2.

18.3.44 The approach and policy framework envisaged for the development of S&T in States in the Eighth Plan are as follows:

(i) Long term S&T policy should be evolved and location-specific programmes in relation to the State's natural resources, skills and socio-economic conditions should be taken into consideration.

(ii) The State Councils/Committees and State Departments of Science and Technology must be developed, nurtured and kept at par with the S&T organizations of the country. They should have adequate flexibility and operational freedom to establish their own professional secretariat. Linkages between them and the academic/research/ technical institutions, as also with the other developmental departments, should then be established.

(iii) There is a need for holding periodic meetings of the State S&T Councils so that the policies, programmes and the implementation strategies are approved by this apex body.

(iv) A strong mandate is necessary for the Central Scientific Agencies to liaise and work with the State S&T Councils/Departments on a regular basis and they must consider ways by which they can contribute to regional development programmes through the State Councils/Departments. Efforts should be made to initiate new scientific activities in the less developed, rural/tribal regions.

(v) The State S&T Councils must be actively involved in the implementation of National Technology Missions.

(vi) Voluntary organizations engaged in the S&T activities must be associated in the formulation and implementation of the State S&T plans.

(vii) District and village specific problems should be identified so that the challenges based on these can be thrown open to the scientific community. These problems should be made known to R&D institutions and specific teams must be identified for solving them.

(viii) Remote sensing centres should be made fully operational. The State National Informatics Centre (NIC) units, and the Natural Resources Data Management System (NRDMS) programmes, wherever they exist, should be integrated for evolving a S&T

based information systems for the district-level planning.

(ix) Each development sector must earmark a certain percentage of its plan outlay for the S&T activities, which should be executed by the concerned development department on the basis of advice given by their standing research advisory committees/expert committees, and the State Council for S&T.

(x) Funds for the S&T activities in the States/UTs should be increased in the State plans and budgets especially in the socio-economic sectors and these should be "earmarked" and not diverted/ reappropriated to any other programme.

(xi) In the planning process in the States/UTs, the S&T Secretaries/Heads of State S&T organizations including the State Councils should be involved/ consulted/represented to reflect the S&T efforts in all the development sectors.

(l) Management & Administration of S&T

18.3.45 With the growing demand on the application of science and technology to the various programmes of development, the S&T activities cannot be looked at in isolation from the others. These activities cannot remain limited to research institutions alone. The effective pursuit and the use of S&T in the Government both Centre and States, industry and in socio-economic developmental programmes require a proper understanding of the management and administration of S&T in these structures. The basic requirement of having S&T personnel perform and manage these activities may be common. The expertise and skills that need to be developed and the environment in which they are applied are however widely different. The administrative practices followed in autonomous research institutions, educational institutions, industry, voluntary field groups/agencies and Government organizations are so diverse that it becomes extremely difficult to provide a flexible deployment of S&T personnel from one organization to the other. Moreover, the skills acquired by a researcher in a laboratory may have to be suitably tuned and perhaps augmented with training programmes in different facets of manpower development. These include familiarization with skills for financial management or through learning of programme planning techniques, budgeting, public relations etc. In all these, the professional background and scientific thinking, with emphasis on innovation, curiosity and creativity must remain the hallmark of S&T personnel involved in different types of S&T activities described above.

18.3.46 During the Eighth Plan, this aspect of management and administration of S&T activities has to be fully appreciated and appropriate measures should be taken to ensure that science not only becomes a rewarding career in itself but that the S&T personnel are trained and encouraged to implement a wide variety of S&T programmes which are being taken up for national development. We should not only produce outstanding scientists, engineers, technologists and technicians for our R&D programmes but also ensure that an adequate number of highly trained S&T managers and administrators and field workers are also available for performing the multifaceted programmes of national development through the application of S&T.

(m) Organizational Structures and Framework

18.3.47 The organizational structure in most of the scientific agencies and national laboratories have been autonomous and quite independent of the structures in educational institutions. However, the efforts to establish linkages between these two structures is of recent origin. In the Eighth Plan, a far more integrated approach is needed for the promotion and utilization of the wide range of national S&T efforts that exists in the country. For this to become effective, some modifications in the organizational and management systems would be necessary.

18.3,48 There is a need to set up a mechanism in the form of a forum to bring about close interaction amongst the S&T departments/ agencies and the experts from the academic institutions, industries, and socio-economic sectors and users.

Seventh Plan Review

General

18.4.1 During the Seventh Plan, major efforts were directed towards optimal utilisation of the capabilities and the infrastructure already created for scientific and technological activities in the country. Some of the existing structures have been strengthened and augmented for taking up specific programmes. New structures have also been created in the high priority areas. A Department of Biotechnology was set up in February, 1986. An Apex Body under the chairmanship of the Prime Minister and a Project Management Board were established for dealing with the newly developing field of high temperature superconductivity. A Technology Information Forecasting and Assessment Council (TIFAC) was also created. The Science Advisory Council to the Prime Minister (SAC-PM) comprising almost entirely of scientists and technologists from outside the Government system was also set up and a Scientific Adviser to the Prime Minister was appointed.

18.4.2 A major action in the Seventh Plan involved National Technology/Societal Missions in the areas of vaccination and immunisation of vulnerable population especially children; edible oil, intensive cultivation of oil seeds and oil extraction; better communications; drinking water in every village and water management; eradication of illiteracy; dairy development and wasteland development. The responsibility for the implementation of these was assigned to the concerned nodal ministries. Nine Science and Technology projects in the mission mode were also undertaken in the areas of immunological approaches to fertility control; integrated vector control of malaria, filaria and other vector-borne diseases; national goitre control programme with full coverage of UP; S&T inputs for monitoring development and production of immunodiagnostics; cattle herd improvement for increased productivity using embryo transfer technology; operationalisation of National Natural Resources Management System (NNRMS) and Natural Resources Data Management System (NRDMS); setting up of a National Centre for Medium Range Weather Forecasting and development of agrometeorological services; development of amorphous silicon solar cell technology; and application of technology for the welfare and rehabilitation of the handicapped. These were monitored by the Scientific Adviser to the Prime Minister.

18.4.3 Efforts were mounted to enter the newly emerging areas such as microelectronics, informatics/ telematics, biotechnology, new materials, renewable energy sources, ocean sciences, and several other frontier areas of basic research. Some positive trends in the education of science and technology have emerged through programmes like COSIST. A few universities have emerged as centres where quality work in specific departments has reached a high level.

Activities of S&T Agencies

18.4.4 The Seventh Plan outlay and expenditure for the central S&T agencies and departments are given in Annexure 18.3. The expenditure during the period accounts for 1.17% of the public sector outlay.

Atomic Energy (R&D)

18.4.5 Through sustained R&D effort, capability has been developed in the field of nuclear energy. This covers the entire nuclear cycle including the exploration, mining, extraction, purification and conversion of nuclear materials, production of fuel elements for reactors, the design and construction of power reactors and their control systems for the units of 235 MWe capacity; production of heavy water; health and safety instrumentation; reprocessing of spent fuel; waste management and production and use of radio isotopes. Some of the other achievements include: operation of the 100 MWe Dhruva research reactor at full power from January 1988 and its utilisation; commissioning of the 14 MV Pelletron accelerator; the commissioning of the Fast Breeder Test Reactor; initiation of the design work on the 500 MWe Prototype Fast Breeder Reactor; development work on advanced laser systems and the synchrotron radiation light source. The neutron source reactor KAMINI at Kalpakkam was completed and zero energy reactor PURNIMA III at Trombay attained criticality in 1991. Under the atomic energy programme, there have been wide-ranging applications of radio-isotopes in medicine, agriculture and industry. The numerous spin-offs from the R&D work include: neutron activation analysis for crime detection; development of beryllium technology for space programme; design of control systems for anten-

nas etc. The design and development of advanced instrumentation systems for scientific research like the radio-telescope, mass spectrometers, high vacuum systems, computer-controlled diffractometers and spectrometers etc. Three national programmes viz. National Centre for Characterisation of Pure Materials, Giant Meter Radio Telescope (GMRT) and a National Centre for Research in Biosciences were envisaged but except for the GMRT, the other two programmes could be initiated during the later years. The tasks of the selection and acquisition of site for the Giant Metre-Wavelengh Radio Telescope (GMRT) near Pune and also the basic design of GMRT were completed.

Biotechnology

18.4.6 An integrated programme was launched with the setting up of a Department of Biotechnology. Eleven national infrastructural facilities have been set up in various scientific institutions in the country which include germ plasm collection, animal house facilities, a centralised facility for the import and distribution of enzymes and biochemicals, protein-peptide sequencing, supply of oligoneucleotides, genetic engineering units and a network of bio-informatic system etc. A manpower training programme has been launched for providing the skilled manpower at various levels. Twenty six universities have set up separate departments of biotechnology. Four S&T projects in the mission mode were undertaken in the areas of cattle herd improvement using embryo transfer technology; development and production of immunodiagnostic kits; immunological approaches to fertility control and tissue culture of cardamom. Under the vaccine programme, a new joint sector unit called the Indian Vaccine Corporation Ltd. (IVCOL) is being set up with French Collaboration in Gurgaon district in Haryana to produce vaccines for measles; vero rabies (VRV); killed polio vaccine (KPV) and a quadruple vaccine (DPTP). The other unit in the public sector viz. Bharat Immunologicals and Biologicals Corporation Ltd. (BIBCOL) is being established in Bulandshahar in Uttar Pradesh in collaboration with the Soviet Technology Consultancy Corporation under the Long-Term Programme of Cooperation in S&T between India and Russia to manufacture 100 million doses of oral polio Vaccine. The embryo transfer techniques have been standardized in cattle. The National Institute of Immunology has developed products like animal fertility vaccine, TALSUR, immunodiagnostics for the early detection of pregnancy and immunodiagnostic kit for the amoebic liver abscess. Biotechnology Consortium India Limited (BCIL), a bioventure company has been set up in collaboration with industry and financial institutions with a view to facilitating commercialisation of biotechnology in India. Two major pilot plant facilities for providing a large number of planting materials at the National Chemical Laboratory (NCL), Pune and Tata Energy Research Institute (TERI), New Delhi have been set up. Major programmes were initiated on biological pest control, crop and animal biotechnology and aquaculture of fishes and prawns with specific targets and objectives.

Ocean Development

18.4.7 A first order survey of polymetallic nodules occurring in large quantities on the deep seabed in the central Indian Ocean was completed with delineation of a prospective area covering 300,000 sq. km., which formed the basis of the legislation and allotment of 150,000 sq.kms. mine site to India. Thus, India had become the first country in the world to get a mine site registered, as a Pioneer Investor, in August, 1987. Six scientific research expeditions to Antarctica have been launched since 1984. The second permanent station was established at Maitri in 1988 in the Schirmacher Hills. Two marine pollution centres were established at Bombay and Calcutta.

Science and Technology

18.4.8 In the overall promotion of Science & Technology, three new autonomous research institutions namely, the Institute for Plasma Research, Satyendra Nath Bose Centre for Basic Sciences and Jawaharlal Nehru Centre for Advanced Scientific Research as well as an autonomous body called the Technology Information Forecasting and Assessment Council (TIFAC) were set up. Through the activities of the Science and Engineering Research Council (SERC) and other specific schemes for the promotion of research, several hundred projects were supported and regularly monitored through periodic reviews and through group monitoring workshops. The engineering research and technology promotion programmes have made substantial progress in the areas of new materials such as fibres and composites, micro-hydro turbines, computer-aided ship design and power

engineering. The instrument development programme has resulted in the development of some selected instruments such as: IR-Spectrophotometer, grain moisture analyser, field usable pH meters, etc. The science and society related programmes have largely concentrated on developing technologies relevant to the improvement of living conditions for the rural population, weaker sections of the society and in particular, for the rural women. The nationally organized Bharat Jana Vigyan Jatha was a major feature of the science popularisation programme. Production of films like the Bharat Ki Chap, Ramanujan and C V Raman; publications in regional languages; introduction of courses on S&T Communication etc. are also some of the achievements. Under the S&T entrepreneurship development, 6 Science and Technology Entrepreneurship Parks (STEPs) have been set up; 20,000 S&T personnel were exposed to camps and this has resulted in 400 units, started by such entrepreneurs. To enhance our quantitative capability in the weather forecasting, a supercomputer has been commissioned and the National Centre for Medium Range Weather Forecasting (NCMRWF) has been set up as a S&T project in mission mode. Under the autonomous scientific institutions, some major facilities such as the 234 cm Vainu Bappu telescope - the largest in Asia - has been set up at Kavalur. TOKOMAK facility for plasma confinement at Gandhinagar, a large millimetre wave radio telescope at Bangalore and modern facilities for biomedical engineering at Trivandrum have been set up.

Meteorology

18.4.9 The Indian Meterological Department has been working on the identification of high quality scientific programmes, improvement of services and removal of obsolescence. A cyclone warning centre was established on the west coast at Ahmedabad. Round-the-clock watch was introduced at the cyclone warning centres at Bhubaneshwar and Bombay. Message-switching computers were installed at Bombay, Delhi and Calcutta airports. The message-switching computer at the regional telecommunication hub was modernised. A storm detection radar, two sets of airport meteorological instruments and RTT/facsimile facilities at two centres were commissioned. Runway visual range observations were introduced at four national airports. Capabilities for advance forecasting of monsoon are being developed.

Scientific and Industrial Research

18.4.10 The schemes of the Department of Scientific and Industrial Research (DSIR) relate to National Information System for S&T (NISSAT), technology utilization, NRDC and CEL. Under NISSAT, eleven sectoral centres in the areas of leather, food, machine tools etc. and hard data centres in the areas of Crystallography and advanced ceramics were established. A number of technology utilization schemes, such as National Register of Foreign Collaboration (NRFC), Technology Absorption and Adaptation Schemes (TAAS) etc. have made an impact in facilitating interactions in many areas such as industrial research, transfer of technology and related aspects and consultancy development activities. As many as 1200 in-house R&D units were recognised under the programme of promotion of research in industry and for providing support to industrial R&D projects. Towards the end of the Seventh Plan, 40 projects of 20 industrial units were supported under the Technology Absorption and Adaptation Schemes (TAAS). A Consultancy Development Centre was also set up. Under the scheme on National Register of Foreign Collaborations (NRFC), technology status studies on 83 areas/products were initiated. As a result of aggressive marketing policy, the National Research Development Corporation's lumpsum premium had increased from Rs.16.62 lakhs in 1984-85 to Rs.43 lakhs in 1989-90. It has built up a close working and policy links also with the other public sector venture capital financing companies, namely the Risk Capital and Technology Corporation of IFCI and TDIC of ICICI. Plan support for the Central Electronics Limited (CEL) was provided initially for an R&D project on multi-crystaline silicon solar cells (MSSC). Subsequently, S&T plan programme was evolved comprising 11 projects in three thrust areas viz., solar photovoltaics, electronic components and electronic systems.

18.4.11 Most of the work on the establishment and development of a few institutions under the CSIR viz., CCMB, CFB, IMT, Palampur Complex and RRL Bhopal, was completed by the end of the Seventh Plan. A number of new national facilities in the areas of testing of tower structures (SERC, Madras), acoustic

testing (NAL), modular transfer function (CSIO), hydro-metallurgy (RRL/B) and novel drug testing on primates (CDRI), computer-aided-design (CLRI) etc. were established with inhouse capabilities. The CSIR also participated in the national societal missions, undertook work on the frontier areas in basic sciences/high technology and endeavoured to develop scientific temper in the country. Evidence of the excellence of CSIR can be found in the breakthroughs achieved such as early flowering and seeding of tissue-cultured bamboo, improved strains of yeast for fermentation of molasses to ethanol for enhanced yield/productivity, a novel catalyst for a single step process for the production of ethylbenzene, a bimetallic catalyst for petroleum refining, centchroman - a novel once a week non-steroidal female contraceptive, etoposide - an anti-cancer drug, azidothymidine an anti-AIDS drug, an indigenous probe for DNA finger-printing and liquid nitrogen SQUID. More importantly, some production processes were licensed to other countries such as gugulipid to France for $ 50,000; pentasil zeolite catalyst to Holland for $ 3,00,000 plus $ 6,50,000 as royalty; membranes for desalination plants to Thailand for $ 1,60,000; and azidothymidine and etoposide drugs to the Phillipines for $ 50,000. Consultancy for setting up of a Polymer Research Institute in China for a fee of $ 1,30,000 is another important landmark. Industrial production, based on CSIR knowhow/technologies, has increased from Rs.650 crores in 1986-87 to Rs.1300 crores in 1990-91. The total value of this production, over the last six years (1985-91), works out to over Rs.4500 crores.

18.4.12 On the basis of the report of a Review Committee for CSIR, several structural changes such as the reconstitution of governing body, establishment of an Advisory Board, creation of Research Councils for individual laboratories and Technical Advisory Boards for different areas, reorganisation of CSIR Headquarters etc. have been implemented. As a consequence, there has been a growing shift towards the concentration of resources in a few selected areas of high priority, encouragement to multi-laboratory and multi- agency activities and emphasis on accountability for the resources invested.

Space

18.4.13 The main thrust of the Space programme in the Seventh Plan was to rapidly realise satellite-based national systems for telecommunications, broadcasting (TV and Radio), meteorology and natural resources management on an operational basis, largely based on indigenous satellite and launch vehicle systems. A National Natural Resources Management System (NNRMS) was established in the country combining optimally the advantages of satellite remote sensing and conventional methods.The successful launch of IRS-1A satellite on March 17, 1988 (from Russia) and its operationalisation in May 1988 marked a major milestone in the remote sensing programme. IRS-1A still continues to provide excellent operational service. IRS-1B satellite, identical to IRS-1A, was successfully launched on August 29, 1991 from Russia. With both IRS-1A and IRS-1B operational, coverage of the same region is now possible once in 11 days. The data from IRS-1A and 1B, comparable with the data from contemporary international satellites, is used for operational remote sensing application projects/missions. Five Regional Remote Sensing Service Centres were set up by Department of Space with partial funding from Departments of Space, Science and Technology, Mines and Indian Council of Agricultural Research. Twenty one State Remote Sensing Application Centres are already operational. Remote sensing facilities have also been established in 14 Central Government agencies and 10 academic institutions. Application of remote sensing has been operationalised in a number of important areas such as forest vegetation cover mapping and change detection, ground water targeting, wasteland mapping, land use/land cover mapping, flood mapping, large area crop inventory, regional geological mapping and drought monitoring. A number of remote sensing application missions at national level were jointly undertaken by Department of Space and other user Departments/Agencies. Emphasis has been laid on the use of remote sensing-based information system for microlevel planning and sustainable development. Development of second generation IRS satellites namely IRS-1C and IRS-1D were initiated with their launch targetted for 1993-94 and 1996- 97 respectively. Augmentation of facilities at NRSA for reception of data from the European Microwave Remote Sensing Satellite (ERS-1) was taken up.

Simultaneously, development of the aircraft version of a C-Band synthetic aperture radar (SAR) was undertaken, apart from carrying out aerial flights using the "side looking aperture radar (SLAR)". The INSAT System, a joint venture of the Department of Space, Department of Telecommunications, the India Meteorological Department, All India Radio and Doordarshan represents India's first step towards implementing operational Space Systems for identified national requirements. This multipurpose INSAT operation system caters to domestic long distance telecommunication, meteorological observation and data relay, nation-wide direct satellite TV broadcasting to augmented community TV receivers in rural and remote areas, nationwide radio and TV programme distribution for rebroadcasting through terrestrial transmitters, and News feed assembly from various locations. Space segment for the INSAT system was provided by the multi-purpose INSAT-1B satellite, launched in August 1983, for more than seven years successfully. INSAT-1C, launched in July 1988 by the European Launch Vehicle ARIANE-4 was operated with part of the payloads due to an anomaly in one of the power buses. The satellite functioned partially till November 1989. INSAT- 1D,launched on July 12, 1990 onboard a US Delta Rocket, was pressed into operational service in July 1990 and all services handled by INSAT-1B till then were shifted to INSAT-1D. To augment the INSAT system, two transponders from INTELSAT and twelve transponders from ARABSAT were leased. These transponders have been put to effective use. By August 31, 1991, 123 telecommunications terminals of various sizes and capabilities (excluding NICNET and RABMN micro terminals) were operating in the INSAT telecommunication network, providing more than 4500 two-way speech circuits or equivalent over 137 routes. Over 100 additional earth stations, including 50 for the rural telegraphy networking in the north-eastern region, are being implemented. As many as 450 micro terminals are being operated for the NICNET. Apart from the National TV service, INSAT-1D is being used for providing regional TV services. and also providing nationwide operational meteorological services. The disaster warning system provided timely warning during the cyclone that hit the Andhra coast in May 1990 and helped in evacuating about 1,70,000 people. The development of INSAT-2 test satellites was initiated in 1984. Two test satellite viz. INSAT- 2A and INSAT-2B are slated for launch during 1992 and 1993 respectively. Building of three INSAT-2 satellites viz. INSAT- 2C, INSAT-2D, INSAT-2E, required for the operational INSAT-2 space segment has also been initiated. One of the major initiatives taken in the area of Satellite Communication is the satellite aided Search and Rescue. India joined the international COSPAS-SARSAT system. Two developmental flights of ASLV were carried out in 1987 and 1988, with SROSS-1 and SROSS-2 satellites onboard. While both the missions failed to accomplish the objectives, the data from the flights and subsequent analysis provided many valuable inputs. They include strapon technology, S-band telemetry and metallic bulbous heat shield technology. Additional inputs in the areas of aero-control-structure interaction, transonic buffeting, acoustic levels have also come out of these flights. All recommendations made by the Expert Review Panel and the Failure Analysis Committee have been implemented in the ASLV D-3/C1 Vehicle. Extensive independent verification of all vehicle systems and of the missions have been carried out to improve the confidence level. The flight hardware of ASLV-D3/C1 has been realised and the launch is scheduled for 1992. The primary goal of ASLV-D3/C1 is to evaluate the performance of the vehicle. It will also carry the SROSS-C satellite with a Gamma Ray Burst Detector and Retarding Potential Analyser payloads for conducting ionospheric experiments. The PSLV project entered the hardware realisation phase in 1986. The flight units are in advanced stages of completion for the first flight expected in 1992. In order to realise launch capability for INSAT-2 class satellites, several configuration studies for GSLV were carried out. The GSLV configuration was finalised after critically evaluating various options.

It is configured by replacing the two upper stages of PSLV with a single cryogenic stage and by substituting the six solid strapon motors of the booster with four liquid strapon derived from PSLV second stage. One of the most important considerations in arriving at the final configuration of GSLV has been to maximally utilise the subsystems and propulsion modules developed for PSLV to take full advantage of the heritage and thus ensure reliability. The Geostationary Satellite Launch Vehicle (GSLV) project to de-

velop indigenous capability to launch INSAT-2 class satellites was approved in November 1990. The first launch of GSLV is scheduled in about five years. The procurement of long-lead items has also been initiated. Design and fabrication of facilities required for GSLV are also underway. The setting up of the national facility, MST Radar, near Tirupathi was a notable achievement for the advancement of atmospheric research. The Stratosphere Troposphere (ST) portion has already been made operational. The full facility is expected to be made operational within a year. The Geosphere- Biosphere programme to study the effects of anthropogenic activities on the earth environment was also initiated. Substantial progress was achieved in bringing Indian industry as a major partner in the space effort. Space divisions were established in some of the major public sector organisations. Capacities and capabilities were established in the industry for production of Vikas liquid engine, rocket hardware for PSLV using indigenously developed maraging steel, rocket fuel, light alloy structures and electronic systems. About 180 technologies developed by Department of Space were transferred to industry. Interface with academic institutions were strengthened through the sponsored programme (RESPOND). More than 200 projects were taken up in about 75 universities and academic institutions. Space technology cells have been established at the Indian Institute of Science, Bangalore, IIT Madras and IIT, Bombay. A programme has been evolved along with University Grants Commission and NCERT to introduce remote sensing in the curriculum at college/school levels.

Forensic Science and Police Wireless

18.4.14 The schemes under Forensic Science are being carried out by the Central Forensic Science Laboratories (CFSLs) at Calcutta, Hyderabad, Chandigarh and Delhi; Government Examiners of Questioned Documents (GEQDs) at Shimla, Calcutta and Hyderabad and Institute of Criminology and Forensic Science at New Delhi. The Directorate of Coordination, Police Wireless has been implementing the programmes of Police Wireless. During the Seventh Plan, efforts have been made to modernise these laboratories by acquisition of certain sophisticated equipments and inducting research staff to undertake application oriented research. Some of the important areas where R&D programmes have been undertaken during Seventh Plan include: indentification of different materials: plant materials such as tobacco ash by ICP emission, the detection of secret writing by ESDA and stabilisation of phenolphthalein colour.

Programmes in Socio-Economic Sectors

18.4.15 The Plan outlay and expenditure in the socio-economic sectors during the Seventh Plan are given at Annexure 18.2. This accounts for 1.09% of the total public sector outlay. The Plan outlay and expenditure break-up in the individual socio-economic Ministry/Department are given in Annexure 18.4. Progress of S&T programmes of the various economic sectors are given in the respective chapters.

S&T Activities in the States and Union Territories

18.4.16 All the States/Union Territories have set up State S&T Councils; a few of them have also set up separate Departments of S&T to promote S&T and to tackle local/regional problems with greater inputs of S&T. Expenditure incurred under the State S&T sector during the Seventh Plan is given in Annexure 18.2 and this sector accounts for only 0.04% of the total public sector outlay. Statewise break-up is given in Annexure 18.5. Science and Technology programmes have been initiated in several areas which include support to location specific R&D projects; demonstration projects for specific target groups, popularisation of science, S&T entrepreneurship development, use of remote sensing for the survey of national resources, training/awareness to promote artisans, use of local materials in the construction etc. Central S&T agencies have also provided technical and financial assistance in developing some of the programmes like remote sensing by the Department of Space, ocean-related activities like aquaculture, marine pollution, by Department of Ocean Development etc. The DST has provided financial assistance in setting up and strengthening the State S&T Councils.

Eighth Plan Programmes

Atomic Energy (R&D)

18.5.1 In the BARC, it is proposed to add a superconducting LINAC booster to the Medium Energy Heavy Ion Accelerator facility. A National Centre for the Neutron Beam Research in Trombay is also proposed. The INDUS- I storage ring at CAT, Indore, will become operational and it will serve as a Synchrotron Radiation Source. Thrust will also be given to augmentation of water chemistry research for the nuclear energy programme, development of decontamination formulations for the Primary Heat Transport (PHT) systems and for the Pressurized Heavy Water Reactor Systems (PHWRS) including the preparation of novel materials and a study of their physico-chemical properties. Novel methods for fuel materials and minerals would also be developed. The reactor physics design of 500 MWe PHWR and the analysis of the related safety issues would be the other main areas of thrust in the future systems. A facility for the development of specialised items needed for the high technology remote handling equipments is proposed to be set up. Efforts would be mounted in several instrumentation activities such as the Development of CAMAC and FAST BUS Instrumentation for Data Acquisition, Development of Ultrasonic Image Processing Systems for Non-destructive Testing and Image Processing Instrumentation and Development of Advanced Plasma Devices etc.

18.5.2 In the Variable Energy Cyclotron Centre, Calcutta, the emphasis would be on taking up a project on Superconducting Cyclotron. At the Centre for Advanced Technology (CAT), Indore, major programmes would be focussed on Synchrotron Radiation utilisation, insertion devices, development of accelerators for the industrial applications and feasibility study of an advanced accelerator facility for research in nuclear physics. It is also planned to develop electron accelerators like D.C. accelerators and microtrons. At the Indira Gandhi Centre for Atomic Research, Kalpakkam (IGCAR), training simulator will be developed for Fast Breeder Test Reactor (FBTR). For the development of materials and manufacturing processes for FBR, new studies are proposed to be initiated to provide information for PFBR design in the domain of high cycle, high temperature fatigue, fracture mechanics, alloy development and corrosion studies. The mass transfer in Plutonium systems would be studied and a facility, in which scaled up equipment required for PFBR can be tested and developed, would be established. For improved instrumentation systems for FBRs, a major programme would include the Modernisation and Development of Fast Reactor Instrumentation and Control.

18.5.3 Major projects on R&D for atomic minerals include geochemical surveys and exploration, augmentation of geochronological facilities, application of remote sensing techniques and augmentation of airborne surveys.

18.5.4 At the Tata Memorial Centre, the major activity would relate to the setting up of an Advanced Centre for Training, Research and Education (ACTREC) in cancer detection at New Bombay and the establishment of a Nuclear Magnetic Resonance Unit (NMR). Two rural cancer centres, have also been proposed.

18.5.5 At the TIFR, in order to derive full benefit from the operation of pelletron accelerator installed, a second-beam hall along with certain types of common facilities for the users such as scattering chambers, detectors, data acquisition systems have been proposed. Three more new national programmes have been suggested viz. A National facility for Neutron Beam Research, High Energy Physics Research and a National Programme on Lasers.

Biotechnology

18.5.6 The primary objective in this descipline would be to develop products and processes/technologies, whose large-scale applications would result in societal benefits in the sectors of health, agriculture, animal resources development, aquaculture, energy, environment and forests and industry. The strategy would involve the development of specialized manpower and infrastructure for these programmes and a very strong base of R&D.

18.5.7 The main activities to be undertaken would be: production of vaccines, production of immunodiagnostic kits, large scale production of biofertilisers, propagation of cardamom plant through tissue culture technique, promotion of animal birth control vaccine (TALSUR) and the use of Biocide-S in controlling mosquito.

18.5.8 International collaboration with both developed and developing countries would be strengthened so as to have access to the latest state-of-the-art technology in this frontier area of science and also to tackle the most common developmental problems. The activities of the National Institute of Immunology (NII), National Facility for Animal Tissue and Cell Culture (NFATCC) and International Centre for Genetic Engineering and Biotechnology (ICGEB) would be continued with newer thrusts. Areas identified by the 13 task forces would be supported for R&D and for training and demonstration activities. Special efforts would be made to develop and promote environmentally useful biotechnologies such as biofertilisers of different types, biocontrol agents, biopesticides, use of microbes for various purposes etc. Integrated demonstration projects would be taken up specially to benefit the population in the rural areas. The department would promote and catalyse efforts for the development and application of relevent biotechnologies in the States and in the Union Territories. Product/process-oriented R&D would get a major thrust.

Ocean Development

18.5.9 It is proposed to concentrate on a limited number of key programmes that can generate high science and technology. Thus the approach would be

(i) to develop knowledge of the physico-chemical structure of the earth-water-sea system and to identify both living and non-living resources;

(ii) to develop and deploy state-of-the-art remote sensing and data acquisition systems for monitoring the dynamic state of the oceanic regime and to develop analytical frameworks;

(iii) to develop Data Bases and to promote high quality basic research;

(iv) to develop technologies for seabed mining, extraction of metals and extraction of marine chemicals;

(v) to direct Antarctic research towards a greater purpose and to play a meaningful role in the Convention on Antarctic Minerals.

18.5.10 The creation of viable institutional bases in some key activities and training of manpower will be a pre- requisite for the accomplishment of the above mentioned goals. Major research programmes will be: the Antarctic research programme and the deep seabed exploration. Other programmes will include marine pollution, harnessing of wave energy, remote sensing, instrumentation and the creation of data bases.

Science and Technology

18.5.11 Using SERC and other mechanisms, certain national R&D programmes involving a number of institutions in multi-disciplinary fields will be taken up. The disciplines include: superconductivity, instrument development, molecular electronics, astronomy, seismicity and deep continental studies. The National Superconductivity S&T Board (NSTB) has the responsibility to promote superconductivity R&D in the country.

18.5.12 Measures to improve the efficiency of the production and service sector, through the application of science and technology would be given due attention in all the programmes connected with the technology promotion. Science and Technology Advisory Committees in the economic ministries would be effectively utilised for promoting and encouraging the utilisation of indigenous technological development relevant to the user ministries. In few selected areas, like the cryogenics, composites, ceramics, biomaterials and other new materials, efforts will be mounted to promote a few well-selected technology development projects. The programmes under the Technology Information Forecasting and Assessment Council (TIFAC) would become fully operational through the creation of information system including the data banks for conducting action-oriented studies and forecasting in the selected priority areas.

18.5.13 To promote S&T programmes for the socio-economic development, special use would be made of the infrastructures available with the State Councils for Science and Technology and the State Departments of Science and

Technology. These would be encouraged to take up focussed programmes for the socio-economic development of the States. It is proposed to conduct entrepreneurship awareness camps in different educational institutions and impart training in entrepreneurship. A catalytic role will be played in setting up S&T entrepreneurship parks (STEPs) with the support of financial institutions.

18.5.14 The broad features of the activities to be taken up through the National Council for Science and Technology Communication (NCSTC) would be: emphasis on the S&T reaching a larger number of people across the country on the lines of Bharat Jan Vigyan Jathas (BJVJ). People will be reached via all possible media, employing software in various Indian languages.

18.5.15 Under the international S&T cooperation programmes, the Intergrated Long Term Programme (ILTP) of cooperation in Science and Technology between India and Russia will be strengthened. The Indo-French Centre for the Promotion of Advanced Research (IFCPAR) has become fully functional. This will actively pursue collaborative R&D programmes. Similarly, joint projects with other developed and developing countries would be pursued further.

18.5.16 By introducing systematised marketing strategies and an appropriate network it will be possible to reach a wider spectrum of users with the production of 'client-specific' maps. Map substitutes would be the main activities of the Survey of India. National Atlas and Thematic Mapping Organization (NATMO) would enhance their capabilities for the production of various thematic maps.

18.5.17 The emphasis in the sector of meteorology research, development and operation programmes would be on: development of sophisticated numerical weather prediction models using the supercomputer for medium range weather forecasting, and the development of region- wise, crop weather relation/pattern so that research on the medium range weather forecasting reaches the farming community both at the planning and the operational levels.

18.5.18 The major thrust of the IMD's programmes would be on the improvement of forecasts by evolving new methods so that the forecasts become more accurate. Modernisation of the data management system at Pune and participation in the world climate research programmes are the other activities. Support facilities envisaged are: information dissemination system with the availability of satellite-based communication system, commissioning of ground segment of the INSAT-II, extension of Disaster Warning System to some more areas on the east coast.

Scientific & Industrial Research

18.5.19 The activities proposed under NISSAT include metropolitan library network, library automation and retrospective conversion, database development, database on CD-ROM, information referral system, INDIMARC. Under the technology utilization scheme, the National Register of Foreign Collaborations provides an opportunity for the national laboratory system to tune its activities to meet the current demands and possible future demands of technology by the industry and for preparing the technology status reports of several industries in the country. The Technology Absorption and Adaptation Scheme provides a mechanism of interaction for R&D by the companies which have imported the technology and will take advantage of the existing national infrastructure. The Transfer and Trading in the Technology Scheme provides suitable avenues for commercially viable technologies produced indigenously to be marketted in the other countries. Schemes such as the TIES scheme, Promotion of International R&D Collaboration and Promotion of Indigenous Development of Capital Goods will open up new opportunities for strengthening linkages between the R&D and industrial system in the country with their possible commercial utilization.

18.5.20 The National Research Development Corporation (NRDC) would provide techno-commercial and financial support to entrepreneurs for commercialising the indigenous technologies licensed by NRDC. The Central Electronics Limited (CEL) has drawn up a plan to induct new products such as multi-crystalline silicon solar cells, ultra high efficiency solar cells, micro-wave ferrites, high permeability ferrites etc.

18.5.21 The CSIR's approach to the Eighth Plan would be to implement four categories of programmes, viz., "industry and economy-oriented programmes", "societal programmes", "basic research programmes" and "research support activities and technical services programme". The thrust of the industry-oriented programmes is in the areas of: Agro-chemicals/pesticides, catalysts, drugs and pharmaceuticals, light transport aircraft, machine-life prediction and life- extension technology, environmental impact assessment, risk and hazard studies; leather, electronics and instrumentation, post- harvest technologies etc. The societal programmes would provide S&T inputs for the benefit of economically weaker sections including women, tribal population and the handicapped. The thrust in this case would be on: safe drinking water, health care, oils and fats, housing techniques, natural hazard mitigation etc. The basic research programmes mainly pertain to modern biology (including cellular and molecular biology); organic synthesis under chemistry pertaining to drugs and pharmaceuticals; natural product chemistry; electrochemistry; earth sciences including geophysics and ocean sciences; atmospheric and space physics; material science; computer- aided studies and parallel computation and aeronautics. The external budgetary resources of CSIR are expected to reach a much higher figure during the Eighth Plan as compared to what was allocated for the Seventh Plan. The new activities proposed are the creation of data bases and data centres, technology gate-keeping, establishment of a strong monitoring group including safety monitoring, new strategy for commercializing CSIR research output and archiving and preservation technology. For effectively involving the NRI scientists in the development process, the interface for the NRI scientists and technologists (INRIST) will be strengthened.

Space

18.5.22 The basic frame-work for the Eighth Plan for Space programme is the 1990-2000 Decade Profile, which was drawn up after detailed consultations with the user community. A self-reliant and integrated programme, with indigenous building and launching of satellites with maximal utilisation of Indian industry has been envisaged in this Profile for providing and sustaining two operational space systems viz. INSAT System and IRS System for meeting the various application needs in communications, broadcasting, meteorology, disaster management and resources management. Maximam utilisation of space technology for socio-economic development of the country and the rural areas in particular, has been envisaged in this Profile.

18.5.23 In the satellite communications area, the major thrust during the Eighth Plan will be to (i) manage efficiently the operation of INSAT system for providing a multitude of national services, (ii) establish and operationalise the INSAT-2 space segment, (iii) augment the operational satellite aided search and rescue programme with a geostationary satellite component, (iv) establish an initial mobile satellite communications system including experiments with low-earth orbiting satellites for rural/mobile communications, (v) develop new and advanced satellite-based communication applications in the areas of information dissemination, interactive distant education etc. including a GRAMSAT network dedicated for aiding rural development and education, (vi) conduct studies and experimentation leading to definition and initiation of programme for a direct broadcast satellite system and INSAT-3. The launch and operationalisation of INSAT-2A, 2B, 2C, 2D, 2E satellites are envisaged during this period apart from development and launch of GRAMSAT satellites, low-earth orbiting communication satellites and mobile satellite system.

18.5.24 The second generation Indian Remote Sensing satellites viz. IRS-1C and IRS-1D, planned to be launched and operationalised during the Eighth Plan period, incorporate sensors with resolutions of around 20 meters in multispectral bands and better than 10 meters in the panchromatic band, apart from stereo-viewing, revisit and onboard data recording capabilities. A new band in shortwave infrared is also planned with a spatial resolution of 70 meters. Also, a wide field sensor with 180 meters spatial resolution is incorporated for monitoring of vegetation. Application studies using microwave data received from the European Remote Sensing satellite ERS-1 and our own air-borne SAR are expected to yield significant advantages. A satellite system using microwave remote sensing sensors is proposed to be initiated. The major goal of achieving an operational Natural Resources Information System (NRIS)

based on Geographic Information System (GIS) and with modelling capabilities is targetted for the Eighth Plan period. With the emphasis shifting in favour of optimal exploitation of natural resources on an environmentally benign and sustainable basis, there is need for taking a holistic approach to resource management. Towards this, integrated study of land and water resources at microlevel is envisaged at national level. These studies will help in preparing a comprehensive plan of action for sustainable development.

18.5.25 Satellite-based space science missions will be carried out using the SROSS satellites onboard ASLV, and the 1000 kg class satellite onboard PSLV. Scientific studies using the MST Radar facility and Infrared telescope, Geosphere-Biosphere programme and experiment using space stations have been envisaged during the Eighth Plan. Operationalisation of ASLV, PSLV and completion of development of GSLV are the three major milestones targetted during Eighth Plan for achieving self-reliance in the launch vehicle area. Development of a number of critical technology elements for satellite system, payloads and launch vehicles are planned. Renewal and replacement of selected in-house facilities, including major computer systems and establishment of a second launch pad at Sriharikota, which are imperative for supporting the operational satellite/launch vehicle missions, are planned. Maximal use of Indian industry for manufacturing, assembly/integration and even operation of selected in-house facilities is envisaged. Efforts are planned, in collaboration with Indian industry for the indigenisation of strategic/critical components and materials.

18.5.26 There is export potential for providing ground systems/products, satellite and launch vehicle systems, satellite services and launch services on a commercial basis to other countries, which will make the Indian space engineering industry a more viable proposition in the years to come. The setting up of the Corporate Front, a techno-managerial corporate body will facilitate ploughing back the corporate earnings for sustained product development and market promotion efforts, besides promotion of partnership between Space Department and industries. The expertise and experience gained in carrying out complex space technology projects in academic institutions and Universities will be harnessed further for enhanced participation of these institutions in the national space effort.

Forensic Science and Police Wireless

18.5.27 The modernisation and manpower development programmes in the Central Forensic Science Laboratories and GEQDs, which were started in the Seventh Plan will continue. The research areas envisaged pertain to DNA finger printing; cadavar entomology; immuno-assay techniques; classification of handwriting characteristics; instrumental techniques for examining writing materials; computerised image processing of firearms and ammunition; development of computerised system for superimposition; immuno diagnostic technique, hair identification, range and time of firing and explosive analysis, etc. It is expected that rapidity and sophistication would be introduced by way of video- fit techniques, laser-tracing, holography, image processing, computer aided automatic finger print identification system and initiatives taken in new frontier areas like forensic psychology. Suitable structure and mechanism would be evolved for the formulation, implementation and monitoring of S&T schemes under the Forensic Science. In the area of police wireless, the main thrust will be to achieve communication link from the national capital upto rural police station through State Headquarters, Range Headquarters, District Headquarters. This is proposed to be achieved through the development of high speed message switch, micro processor based specifically designed computerised connectors, pocket radio system, micro earth station and secrecy devices and multiaccess radio telephone etc.

S&T Programmes in the Socio-Economic Sectors

18.5.28 Science and Technology programmes envisaged by the socio-economic sectors are given in their respective chapters.

Financing Science and Technology Plan

18.5.29 The impact of scientific innovation and technological advances in a country such as India, in its present economic situation, with a large agricultural base, and with its impending transformation to an industrial society, will be particularly profound. It is clear, therefore, that fullest efforts must be made to promote scientific

innovations and use these, with their progressive technoiogical advances, in all the sectors of the economy. The resources needed for this purpose will be small, compared to the benefits that the country could derive in the future. All our experience shows that, if properly managed, the multiplier effect of S&T would be very large.

18.5.30 While investing in science and technology, we have to give a thought to the concept of Zero-Based Budgeting (ZBB). There is a dichotomy in that the non-Plan and the Plan expenditures are looked at separately, while the ZBB concept implies an integrated approach to budgeting.

18.5.31 In order to decide about the size of the total S&T outlay for the Eighth Plan, the trends in S&T outlay, as a percentage of total public sector outlay, for the three domains of S&T activities can be taken as a guide. As can be seen from the Annexure 18.2, the Plan outlay for S&T as a percentage of the total outlay of the public sector Plan has varied from 2.07% during the Fifth Plan to 1.98% in the Sixth Plan and to 2.26% in the Seventh Plan. The Plan outlay for the Central S&T agencies, as a percentage of the total outlay of the public sector Plan, was 1.12% in the Fifth Plan; 0.83% in the Sixth Plan and 1.12% in the Seventh Plan. For the socio-economic sectors, it has varied from 0.96% in the Fifth Plan to 1.13% in the Sixth Plan and 1.09% in the Seventh Plan, while for the States it has increased from 0.02% in the Sixth Plan to 0.05% in the Seventh Plan. A large part of the present allocation for the S&T agencies is for certain specialised areas, such as atomic energy and space and this provides support for such activities, which are highly specialized. Support for these activities at the present levels. and indeed at somewhat increased levels based on the actual assessment of projects and needs, will have to continue. There is also a need to support the efforts in the newly emerging domains of high technology such as informatics, biotechnology, new materials etc.

18.5.32 With the change in the emphasis and direction enunciated in the Eighth Plan, it has become essential to provide sufficient funds to the S&T agencies and to the socio-economic sectors to carry out crucial S&T projects and bring about a major change in our attitudes and performance. Many important programmes and projects have been dropped in the past due to lack of adequate financial support. Thus, it is customary to indicate the percentage of GNP spent on S&T as a measure of the importance given by a country to the S&T sector.

18.5.33 The Plan outlay for the Central S & T Agencies / departments and for the States and Union Territories in S & T sector during the Eighth Five Year Plan (1992-97) is given in Annexure 18.6 and 18.7 respectively.

Annexure 18.1

Progress Of S & T Expenditure In Different Plan Periods

(Rs. in Crores)

Five Year Plan Period	Plan	Non - Plan	Total
First Plan (1951-56)	14	6	20
Second Plan (1956-61)	33	34	67
Third Plan (1961-66)	71	73	144
Plan Holiday (1966-69)	47	83	130
Fourth Plan (1969-74)	142	231	373
Fifth Plan (1974-79)	693	688	1381
Annual Plan (1979-80)	208	222	430
Sixth Plan (1980-85)	2016	1652	3668
Seventh Plan (1985-90)	5087	3158	8245

Annexure 18.2

Plan Outlay And Expenditure For The S & T Sector And Its Relation To The Total Outlay During The Fifth, Sixth And Seventh Five Year Plans

Rs. Crores

S.No	Dept./ Agency	Fifth Plan(1974-79)		Sixth Plan(1980-85)		Seventh Plan(1985-90)	
		Outlay	Exp.	Outlay	Exp.	Outlay	Exp.
1.	Central S&T Agencies/Deptts (@)	438.23	384.51	808.15	990.16	2022.74	2589.14
2.	S&T In Socio-economic Sectors	375.59	308.65	1100.91	989.66	1953.49	2408.14
3.	S&T In The States/UTs And NEC	0.00	0.00	17.05	36.39	87.06	89.25
4.	**Total S&T (@)**	813.82	693.16	1926.11	2016.21	4063.29	5086.53
5.	Total Public Sector(*)	39303.00	39426.20	97500.00	109291.70	180000.00	221850.20
6.	Total S&T As % Of Total Public Sector	2.07	1.76	1.98	1.84	2.26	2.29
7.	Central S&T Agencies As % Of Total Public Sector	1.12	0.98	0.83	0.91	1.12	1.17
8.	S&T In Socio-economic Sectors As % Of Total Public Sector	0.96	0.78	1.13	0.91	1.09	1.09
9.	S&T In States As % Of Total Public Sector	-	-	0.02	0.03	0.05	0.04
10.	**Total Central Sector**	19954.00	18755.00	47250.00	57825.20	95534.00	130394.82
11.	Central S&T Agencies As % Of Total Central Sector	2.20	2.05	1.71	1.71	2.12	1.99
12.	S&T In Socio-economic Sectors As % Of Total Central Sector	1.88	1.65	2.33	1.71	2.04	1.85
13.	**Total State Sector(&)**	19349.00	20671.00	50250.00	51466.50	84466.00	91455.38
14.	S&T In States As % Of Total State Sector	-	-	0.03	0.07	0.10	0.10

(@) Excludes Environment.

(*) Includes Rs 450 crores under Hill and Tribal area Development.

Annexure 18.3

Plan Outlay And Expenditure For The Central S & T Agencies/ Deptt. During Seventh Plan

Rs. Crores

Dept./ Agency	Seventh Plan (1985-90)	
	Outlay	Actuals
1.DST	301.78	332.90
2.DSIR/CSIR	370.00	400.91
(a)S&T	355.00	382.04
(b)I&M	15.00	18.87
3.DBT	132.00	142.86
4.DOD	110.00	72.63
(a)S&T	100.00	71.80
(b)I&M	10.00	0.83
5.DOS	793.96	1364.89
(a)S&T	700.00	1098.86
(b)Operational	93.96	266.03
6.DAE(R&D)	315.00	284.86
7.Forensic Science & Police Wireless	25.00	9.79
Total S&T (Excluding I&M)	2022.74	2589.14
8. **Total Public Sector**	180000.00	221850.20
9. Central S&T Agencies As % Of Total Public Sector	1.12	1.17
10.**Total Central Sector**	95534.00	130394.82
11.Centrl S&T Agencies As % Of Central Sector	2.12	1.99

Annexure 18.4

Plan Outlay And Expenditure For S&T In Individual Socio-economic Ministries/ Deptts.

Rs. Crores

S.No.	Socio-economic Sectors	Fifth Plan (1974-79)		Sixth Plan (1980-85)		Seventh Plan (1985-90)	
		Outlay	Exp	Outlay	Exp	Outlay	Exp.
1.	Agricultural Research(ICAR)	153.56	153.37	340.00	287.10	425.00	438.15
2.	Biomedical Research(ICMR)	21.32	15.99	40.00	48.08	150.00	141.57
3.	Chemicals	2.35	1.74	26.03	14.76	2.59	2.83
4.	Civil Aviation	19.96	19.12	46.50	52.00	3.47	1.98
		(Including IMD And Institutes)					
5.	Civil Supplies	0.00	0.00	0.00	0.00	2.78	1.05
6.	coal	6.39	3.85	18.00	6.15	120.00	33.19
7.	Commerce	0.00	0.00	32.40	35.00	12.77	19.79
8.	Communications	22.39	18.99	62.15	40.57	151.00	163.42
9.	Drugs & Pharmaceuticals	Included under Chemicals				7.00	4.65
10.	Education	35.50	24.42	112.00	151.00	180.00	528.74
11.	Electronics	18.73	14.41	32.34	21.05	38.00	62.06
12.	Fertilizers	Included under Chemicals				23.15	20.81
13.	Food	3.20	2.19	8.10	3.71	13.64	6.78
14.	Food Processing			Included under Food			
15.	Forests & Wild Life	4.70	2.38	12.00	10.78	33.00	43.79
16.	Heavy Industry	28.76	19.80	57.51	40.00	66.01	76.23
17.	Industrial Development	10.74	8.05	18.80	23.73	20.95	37.43
18.	Information & Broadcasting	0.77	0.18	2.50	1.80	6.25	3.97
19.	Irrigation(Water Resources)	8.48	1.89	20.45	12.37	10.00	40.49
20.	Labour	0.15	0.00	1.06	0.36	1.51	2.03
21.	Mines	6.48	2.88	16.16	14.18	30.24	28.89
22.	National Test Houses(supply)	Included under S&T Agencies		8.50	2.85 * (7.11)	14.75	8.40
23.	Non-convl energy sources	0.00	0.00	50.00	44.00	130.35	162.30
24.	Petro-Chemicals	Included under Chemicals				41.74	47.60
25.	Petroleum & Natural Gas	12.08	8.71	37.66	67.40	150.00	212.61
26.	Power	8.69	3.28	53.10	33.00	76.22	74.58
27.	Railways	0.00	0.00	0.00	0.00	25.00	27.28

Annexure 18.4(contd.)

Plan Outlay And Expenditure For S&T In Individual Socio-economic Ministries/ Deptts.

Rs. Crores

S.No.	Socio-economic Sectors	Fifth Plan (1974-79)		Sixth Plan (1980-85)		Seventh Plan (1985-90)	
		Outlay	Exp	Outlay	Exp	Outlay	Exp.
28.	Rural Development	1.21	0.73	10.05	15.02	20.00	14.62
29.	Shipping & Transport	2.98	1.98	9.75	3.50	18.17	11.98
30.	Social Welfare & Nutrition	0.00	0.00	2.00	1.04	0.00	2.96
31.	Steel	6.62	4.48	79.85	59.91	98.94	104.05
32.	Textiles					70.95	67.36
33.	Urban Development(including Housing & Water Supply)	0.53	0.21	4.00	0.30	10.01	6.93
34.	Vill. & SSI	+	+	+	+	+	9.62
	Total	375.59	308.65	1100.91	989.66	1953.49	2408.14

* Actual Exp. under NTH was Rs.7.11 crores. Since this was included under Agencies during Sixth Plan untill 1983-84, the exp. of Rs.2.85 crores for 1984-85 alone which was excluded under Agencies has been included under Socio-economic Sector.

+ Included under Industrial Development

Annexure 18.5

Statewise Break Up Of S&T Plan Outlay And Expenditure In States And Union Territories

Rs in Lakhs

S.No & States/UTs	Seventh Plan (1985-90)	
	Outlay	Actuals
1. Andhra Pradesh	610.00	208.00
2. Arunachal Pradesh	12.00	19.92
3. Assam	300.00	376.00
4. Bihar	300.00	430.00
5. Goa	110.00	127.20
6. Gujarat	450.00	88.00
7. Harayana	165.00	310.00
8. Himachal Pradesh	100.00	79.00
9. Jammu & Kashmir	100.00	38.00
10. Karnataka	200.00	312.00
11. Kerala	1700.00	2302.00
12. Madhya Pradesh	650.00	626.00
13. Maharashtra	200.00	193.00
14. Manipur	200.00	202.00
15. Maghalaya	150.00	61.00
16. Mizoram	10.00	54.00
17. Nagaland	80.00	57.00
18. Orissa	216.00	479.00
19. Punjab	400.00	199.00
20. Rajasthan	344.00	130.00
21. Sikkim	22.00	36.00
22. Tamil Nadu	450.00	575.00
23. Tripura	200.00	208.00
24. Uttar Pradesh	1000.00	1414.00
25. West Bengal	320.00	186.00
Total States	8289.00	8710.12
1. Andaman & Nicobar Islands	26.00	58.54
2. Chandigarh	20.00	57.23
3. Dadra & Nagar Haveli	14.00	1.55
4. Delhi	56.00	10.24
5. Daman & Diu	**	
6. Lakshadweep	25.00	29.24
7. Pondicherry	36.00	1.03
Total UTs	177.00	157.83
Total(States/UTs)	8466.00	8867.95
North Eastern Council	240.00	57.19
Grand Total	8706.00	8925.14

** Included in Goa

Annexure 18.6

Plan Outlay For Eighth Five Year Plan For Central S&T Agencies/ Departments

Rs. Crores

S.No.	Departments/ Ministries	8th Plan 1992-97 Outlay
1.	Dept. of Science & Technology	640.00
2.	Dept. of Scientific & Industrial Research	655.00
	(a) CSIR	585.00
	(b) DSIR(S&T)	52.00
	(c) DSIR(I&M)	18.00
3.	Dept. of Biotechnology	265.00
	(a) S&T	260.00
	(b) I&M	5.00
4.	Dept. of Ocean Development	130.00
	(a) S&T	115.00
	(b) I&M	15.00
5.	Dept. of Space	1804.00
6.	Dept. of Atomic Energy (R&D)	600.00
7.	Forensic Science and Police Wireless	25.00

Annexure 18.7

S & T Plan Outlay For Eighth Five Year Plan For The States And Union Territories

Rs. in Lakhs

S.No & States/UTs	8TH PLAN (1992-97) Outlay
1. Andhra Pradesh	200.00*
2. Arunachal Pradesh	47.00
3. Assam	462.00
4. Bihar	782.00
5. Goa	300.00
6. Gujarat	550.00
7. Harayana	662.00
8. Himachal Pradesh	275.00
9. Jammu&Kashmir	190.00
10. Karnataka	800.00
11. Kerala	2193.00
12. Madhya Pradesh	641.00
13. Maharashtra	568.00
14. Manipur	400.00
15. Maghalaya	193.00
16 Mizoram	195.00
17. Nagaland	100.00
18. Orissa	4556.00
19. Punjab	750.00
20. Rajasthan	700.00
21. Sikkim	250.00
22. Tamil Nadu	1000.00
23. Tripura	225.00
24. Uttar Pradesh	1000.00
25. West Bengal	1833.00
Total States	18872.00
1. Andaman & Nicobar Islands	135.00
2. Chandigarh	15.00
3. Dadra & Nagar Haveli	38.00
4. Delhi	30.00
5. Daman & Diu	40.00
6. Lakshadweep	127.61*
7. Pondicherry	13.00
Total UTs	398.61
Total(States/UTs)	19270.61

* Includes Environment

CHAPTER 19

PLAN IMPLEMENTATION AND EVALUATION

Introduction

19.1.1 The success of a Plan lies in the effectiveness with which the projects and programmes are executed and the efficiency and productivity levels at which various enterprises operate. The nature and problems of implementation of large investment projects, which are mostly in the infrastructure and industry sector, differ from those of development programmes which are mostly in the field of agriculture, rural development and other social sectors. While sector-specific implementation problems are broadly covered in the respective chapters, the focus in this Chapter is on some of the common and general steps to be taken to improve efficiency in the process of formulation, implementation, monitoring and evaluation of projects and programmes.

Implementation of Projects

19.2.1 Delays in project implementation not only affect their contributions to the economic growth and result in the wastage of scarce resources but also lead to a reduction in the employment potential to be generated on the completion of these projects. The timely completion of large investment projects, particularly in the infrastructure sector, is important for improving the production performance of many other sectors. A large proportion of public sector investment on projects in the Eighth Plan will be for the development of physical and social infrastructure. In the interest of overall growth and international competitiveness, it is necessary to minimise the time and cost over-run of the projects and programmes.

19.2.2 As on Ist January 1992, there were 307 Central sector projects, each costing Rs.20 crores or more with total anticipated cost of Rs.94,500 crores, which were being monitored by the Ministry of Programme Implementation. Of these, 201 projects had cost over-run with respect to the original estimates and 165 projects, to the extent of 35% in aggregate, with respect to latest approved cost. As many as 189 projects had time over-run with respect to their original schedule and 182 projects had time-over-run even with respect to the latest approved schedules. Thus, about two-thirds of the major projects under implementation are facing the problems of time and cost over-run. The status of State projects, mostly in power and irrigation sectors was generally worse.

19.2.3 The factors responsible for time and cost over-runs are mainly:

(a) Inadequate investigations and project formulation Frequent changes in scope and revision of drawings due to inadequate project preparation;

(b) Delay in clearances from various regulatory agencies;

(c) Delay in land acquisition;

(d) Delay in activities such as supply of equipment by suppliers;

(e) Inadequate release of funds;

(f) Management problems such as personnel, labour and contractor disputes, mismatch of equipment, etc.; and

(g) Unforseeable reasons such as adverse geomining conditions, natural calamities, etc.

Inadequate Project Formulation

19.2.4 Often, projects are found to have been poorly formulated because of inadequate field investigation, lack of adequate data, inadequate analysis or inadequate attention to environment, forest and rehabilitation aspects. Time and cost over-runs inherently get built into a poorly formulated project from the beginning, if the project parameters are not properly determined or time and cost are understated and the project, during implementation, runs into problems many of which could have been foreseen and avoided. As a result, the scope of work, equipment requirement, quantum of construction work, location and other parameters, also change. The introduction of two- stage clear-

ance procedure introduced in 1985 for the Central sector projects costing Rs.20 crores or more in some of the important sectors was meant primarily to improve the quality of project formulation so that after the first stage clearance, the project authorities could take up detailed investigations and analysis, obtain necessary clearances such as environment and forests, get budgetary quotations and then submit a properly formulated project with reasonably firm physical and financial parameters so that later the changes in scope and design would be minimum. However, in practice, these procedures have not been adequately followed in preparing the projects.

19.2.5 During the Eighth Plan, it is proposed to enforce two-stage approval procedure, issue clear and sector- specific guidelines for project feasibility studies, strengthen the project appraisal mechanism and take up only those projects which have been properly investigated and formulated.

Investment Approval of Projects

19.2.6 The approval procedures are often long-drawn and take considerable time. In the Eighth Plan, it is proposed to identify all new projects and programmes which would be taken up during each year and work out their detailed time schedules, including their approvals by various Government agencies and from the forest and environment point of view. These schedules should take into account the required time for each agency and also the fact that some of these clearances ,can be processed simultaneously rather than sequentially. Even after the investment clearance, there are a large number of clearances, often as many as 50, which a public sector project may have to seek from Government and other authorities at various levels. During the Eighth Plan, it is proposed to streamline the clearance procedures. With two-stage approval procedure, it is possible that some of these clearances, such as for land acquisition, could be processed simultaneously while the detailed feasibility report is being prepared and some funds could also be committed for acquisition of land, technology and knowhow.

19.2.7 It is also proposed to enhance the limit for delegation of powers and streamline investment approval procedures. In order to give more autonomy to public sector enterprises, powers to sanction new investments upto Rs.50 crores and replacements upto Rs.100 crores, provided there is provision in the Plan, have been delegated to those Central enterprises which have gross block of Rs.200 crores and above and which have signed a Memorandum of Understanding (MOU) with the Government. The Public Investment Board has been reconstituted. Revised guidelines for the preparation of detailed feasibility reports, mentioned earlier, are also expected to facilitate quicker and better appraisal by providing all the required information at one place. A Data Bank on projects, appraised in the past, is being developed in the Planning Commission which is expected to help in improving the appraisal of projects. The criteria and parameters to be used for appraisal are also being re-examined. In addition, it is intended to streamline the investment approval procedures and minimise the delays in the system.

Availability of Funds

19.2.8 There is little merit in starting a number of projects without the requisite financial resources in sight. An important step in the Eighth Plan will be to attach top-most priority to the completion of on-going projects which have made significant progress in implementation and only after meeting their requirements, any commitments for new projects will be made. This will ensure accrual of benefits from the investments.

19.2.9 As far as possible, the funding pattern of the projects would need to be specified. In some sectors, such as Railways, Irrigation, etc, where there are more sanctioned projects than can be fully implemented due to the resource constraints, a strict prioritisation will have to be made for selecting the projects which can be funded fully for early completion. There is need to keep a shelf of projects ready. On the basis of past experience, it seems likely that the cost of some projects included in the Plan might increase beyond the estimates. It would be necessary, either to find more resources for them or drop them depending on their priority, economic viability and their overall social costs and benefits. Such adjustments will continue to be made at the time of the formulation of annual Plans.

Planning of Implementation and Management

19.2.10 In many cases, implementation of projects is initiated without full and detailed planning, covering the physical work effort, time required for various activities, matching of the input and equipment requirements with the availability constraints, linkages with other projects/activities, etc. There are only a few projects which have clear resource-based PERT or CPM charts specifying different areas of activity, their time phasing, the precise responsibility for different work items and the monitoring system. Inadequate time is often provided for essential preliminary activities like design, technology collaboration, calling for tenders and their evaluation. There is also unrealistic assumption as to the time required for all clearances, placement of orders, deliveries by suppliers, transportation, erection and testing. In the Eighth Plan, it is proposed to ensure detailed and realistic planning for these aspects so as to help in anticipating various problems and making provision for necessary corrective action.

19.2.11 Effective project management, including monitoring and corrective action in time will be encouraged through incentives, rewards, recognition, etc. Use of consultants for both planning and supervision of implementation as well as monitoring will need to be encouraged so as to help the project managers to improve efficiency, effectiveness and quality of implementation. The project manager will be given full autonomy and be accountable for proper project implementation and his commitment ensured through a system of incentives and disincentives.

Time and Cost Over-runs

19.2.12 There are a few elements of cost over-run, such as fluctuations in foreign exchange rates, changes in statutory duties or price rise due to inflation,that may be considered to be beyond the control of the project authorities. It is proposed that during the Eighth Plan, cost over-runs due to these factors should be separated and for these, the project authorities may not be required to go to the Government or the approving authorities for revised approval. However, any other cost over-run which may be due to delay, changes in scope and physical quantities of work, initial underestimation of cost, all of which are generally within the control of project authorities, may have to be fully explained in the revised cost estimates and responsibility fixed for the same before the revised cost is approved by the Government. Similarly, in the case of time over-run, if there is any delay because of Government decisions or circumstances beyond the control of project management, such as natural calamities, this should also be separated, while the other delays which are normally within the control of the project authorities, including those due to their consultants, suppliers, contractors, would need to be suitably explained in the same manner as cost over-run.

Ex-Post Evaluation of Projects

19.2.13 It is proposed to undertake case studies of some selected projects which have been completed without delay and within cost and those which have suffered time and cost over-runs. The results of these evaluation studies are to be utilised for improving the formulation, appraisal, planning and implementation of projects in future.

Efficiency in Operation

19.2.14 While efficiency during implementation and construction of projects lies in minimising the time and cost over-runs and completion of projects as per specifications, the efficiency of operation relates to the achievement of the physical targets of production of goods and services of quality with minimum cost of operation. Efficiency of operation should *inter-alia* help to generate the desired financial surpluses which can then be invested in other projects and development programmes. The main areas for operational efficiency would be as follows:

i. More effective labour participation in management, training of workers, improvement in working conditions in order to improve the productivity of the workers significantly;

ii. Maximising the utilisation of the existing capacity through not only proper upkeep and preventive maintenance but also the optimum deployment of equipment. In this context, in some projects, debottlenecking schemes may be taken up for increasing capacity utilisation. In many public sector undertakings, there may be a mismatch of

capacity between different plants or sections and some minor adjustments may be needed in such cases in some sections or processes. Necessary studies will be undertaken to maximise utilisation of all equipment through suitable reorganisation;

iii. Minimising energy consumption, which is high in almost all the sectors. Significant reduction in energy consumption will automatically lead to cost reduction. To introduce changes in technology to remove bottlenecks may call for adjustments in equipment;

iv. Review of consumption of other inputs per unit of output besides reduction in the rate of rejections in the engineering industries, better by-product utilisation in chemical industries and similar improvements;

v. Laying down of targets specifically for efficiency measures in respect of use of energy and other major inputs, machine use and plant-use. Certain broad efficiency parameters will be constantly watched for each industry and a more detailed system of efficiency monitoring will be introduced in respect of selected projects.

vi. Apart from the reduction of direct production cost by various measures mentioned earlier, the burden of overheads also needs to be reduced.

vii. Adoption of proper inventory management systems, as many enterprises, particularly in the service sector, carry excessive inventories which lock up resources;

viii. Increasing use of management techniques such as value analysis, maintenance planning, standard costing, budgetory control, etc., for improving the physical performance and reducing costs.

Management Consultancy Development

19.2.15 Many public sector organisations, including public utilities, have already set up efficiency and productivity improvement norms and in-house management consultancy units. During the Seventh Plan, the in-house management consultancy units set up in three State Electricity Boards i.e., U.P., M.P. and Tamil Nadu, on a pilot basis, have demonstrated the usefulness of such services in identifying and analysing management problems besides serving as an effective in-house problem solving mechanism and creating better efficiency environment in the respective organisations. Following the encouraging results, three more in-house management consultancy groups have been established in Punjab State Electricity Board and A.P and Maharashtra State Road Transport Corporations. Similar in-house services can be established by large public utilities which require management improvement. These efforts towards inhouse problem solving and efficiency improvement will be encouraged. In addition, the management consultancy profession will need to be developed with adequate training and other inputs, so as to provide required inputs for improving management of projects and programmes at all levels. Voluntary professional bodies like the Institute of Management Consultants of India (IMCI) can play a useful role in the orderly development of management consultancy profession in the country.

Implementation of Programmes

19.3.1 A majority of development programmes in sectors such as agriculture, rural development, social welfare, health and education, etc. involve inputs in the form of manpower, implements, credit, etc. apart from some construction of buildings etc. Most of these programmes are people/beneficiary oriented and involve efforts at local/area levels for effective implementation without leakages in the delivery system.

19.3.2 The main deficiencies in the implementation of these programmes have been:

i. Wrong selection of beneficiaries/type of assistance,without considering their needs, capabilities and skills;

ii. Lack of flexibility. Straight - jacket guidelines issued centrally often ignore local needs, situations and variations;

iii. Inadequate delivery mechanism, pilferages, malpractices etc.

iv. Lack of coordinated approach, with many sectoral organisations working independently for different components of the programmes.

v. Lack of commitment on the part of agencies/agents responsible for the delivery of the programmes.

19.3.3 During the Eighth Plan, it is proposed to initiate a number of steps to overcome these deficiencies and to ensure effective implementation of the programmes, achievement of targets and realisation of intended benefits by the beneficiaries. Some of these are as follows:

i. Strengthening the people's bodies at local levels, i.e., District Boards and Gram Panchayats.

ii. Integrated area development approach by bringing about a convergence of all the sectoral agencies concerned at micro-level.

iii. Involvement of beneficiaries in the implementation of the programmes through organisation of beneficiaries and/or Panchayats.

iv. Introducing flexibility in the programmes by giving more autonomy to the local bodies and Panchayats to plan according to the needs and resources available at the local area level.

v. Handing over the management and supervision of local service centres like health centres, schools, etc., to District Boards and Panchayats.

vi. Greater involvement of voluntary agencies who have the abilities to demonstrate and innovate, provide technology and training and act as support mechanism to local level institutions.

vii. Streamlining of organisations at various levels so that overheads are cut down, delays are reduced, necessary funds are made available to local agencies in time, various sanctions are issued and dedicated manpower and other inputs made available in time.

viii. A concerted effort to involve and train officials as well as non-officials, not only to bring about required skills for planning and implementation but also to inculcate required attitudes and impart necessary knowledge about the management of programmes at local levels.

ix. Devising effective system of monitoring and evaluation which monitors the programmes more in terms of ultimate benefits than of expenditure incurred or inputs used. For example, the ultimate benefit of the family welfare programme is reduction in birth rate, while the targetting and monitoring is done in terms of couple- protection rate. This needs to change.

x. Introduction of better delivery system through self-managed organisations.

Project and Programme Sustainability

19.3.4 In addition to effective implementation of the projects and programmes, it is also necessary to make adequate provision for ensuring their sustainability so that the intended benefits in the form of goods and services and coverage of beneficiaries are, in fact, generated with required quality, various assets created are adequately maintained and the anticipated life of the projects and programmes is achieved. To ensure proper sustainability of projects and programmes, following aspects may be considered:

i. The project/programme design should include the parameters which bring out clearly as to how the project output in the form of goods and services will be sustained during its operation, how various assets will be maintained and quality ensured. The project/programme costs should include both the capital components as well as operating and maintenance components required for sustaining the output.

ii. The appraisal of projects and programmes should cover the sustainability aspects. Criteria should be developed for this purpose covering physical, organisational and other aspects. Viability calculations should

include relevant operation and maintenance requirements and costs for this purpose, even if these are on non-plan side. It should also be analysed at this stage as to how these costs would be funded and whether there is any possibility of project/programme authorities generating adequate resources for operating and maintaining the projects/programmes through user charges, etc.

iii. While analysing the project design and parameters, it should be ensured that there is market and demand for the goods and services to be produced at the price or the user-charges proposed and that there will be adequate provision made in the project design for extension, marketing, transportation and other requirements to ensure that the project output reaches the targetted beneficiaries and users as intended. The interaction with the beneficiaries during project or programme formulation can help in incorporating the sustainability aspects in the project design.

iv. Effective monitoring and evaluation aspects to ensure sustainability should be built into each project design as well as during the implementation stage of a project/programme.

Construction

19.3.5 Construction is a general term which covers various forms of activities ranging from small house construction to large buildings, from small rural works to large mining and industrial complexes, from village roads to national highways and railways, from tiny irrigation works to large dams and power projects and from onshore drilling to construction of offshore platforms. Construction can be looked at as a system in which the participants are many and varied, including Government agencies, private organisations or individuals/households, architects, engineers, consultants, contractors, material suppliers, manpower suppliers and trainers, software suppliers, R&D institutions and finally, the construction workers. All these participants have to work together, in partnership, to make construction efficient and cost-effective and at the same time consistent with social justice to construction workers who are by and large unorganised.

19.3.6 Implementation of both the projects and the programmes involves construction. In fact, about 40 to 50% of the Plan outlay on projects and programmes is estimated to be for construction. Similarly, about half of the gross capital formation in the economy, after excluding inventory increases, is on account of construction, the balance being due to plant and machinery. At the same time, this activity not only provides significant employment but also accounts for the highest rate of growth of employment in the past decade. The growth rate of employment in construction during 1977-78 to 1987-88 has been about 10% as compared to about 2% for all sectors put together. The success of Plan implementation would, therefore, be determined largely by the efficiency and effectiveness with which construction activities are undertaken.

19.3.7 The problems relating to diverse construction activities are naturally varied and multifarious. However, there are some common problems and thrust areas which require specific attention during the Eighth Plan. Some of these problem areas and issues are discussed below.

Construction Labour

19.3.8 Labour engaged in construction works is unorganised and mobile from one construction site to another. Their children cannot attend a school. Not having a regular address, they cannot have a ration card and are thus deprived of the benefits of public distribution system. A Tripartite Working Committee on Building and Construction Industry, set up by the Ministry of Labour in February 1985, has been looking into the problems of construction labour. As of date, nearly a score of labour laws are applicable to construction sites, but none of these laws is fully implemented or followed even in essentials. A comprehensive legislation covering construction labour is proposed to be introduced in the Eighth Plan with effective machinery for ensuring its implementation so that the employment and working conditions of construction labour can improve. If necessary, a cess may be levied on contracts above a certain value to provide for a Construction Labour Welfare Fund. Ways have to be found to extend the benefits of Public Distribution System to construction workers and

to all such other workers who do not have a fixed abode. Special arrangements by way of mobile schools may have to be made for the schooling of children of construction workers.

Construction Training and Technology

19.3.9 Institutionalised training in construction trades is almost non-existent. At present, out of about 15,000 seats for technical training offered in the country, not even 1% is for construction trades. Special efforts are necessary to develop programmes of training in construction trades, which may range from short training programmes of ITI's standard and higher level training in designing, planning and material management with emphasis on low- cost high quality construction.

19.3.10 As mentioned earlier, construction accounts for nearly half of the capital formation in the economy and therefore, it affects the cost of production in almost all the sectors of the economy. Low-cost construction is the only answer to the housing needs of the millions. There is a need for judicious mix of labour-intensive and mechanised technology, depending on the nature of the project complexity, quality and other factors. Wherever modern technology promises to cut down costs and delays in construction, it should be used, particularly for complex and highly capital-intensive projects. Even in areas like mass housing for weaker sections, mechanised and pre- fabricated construction can bring down costs. Labour-intensive methods may be more suitable in other areas, especially rural works.

19.3.11 In most projects, materials account for about two thirds of the construction cost. It is, therefore, essential to assess and plan for requirements of essential materials. Use of new materials, many of which are proven, has to be encouraged. In particular, the use of fly ash bricks and other low-cost, locally available construction materials has to be increased manifold in order to help solve environment related problems associated with fly ash disposal as well as reduce the cost of construction. Use of materials like timber, which have environment implications, needs to be discouraged. Efficiency, productivity and energy conservation in use as well as production of construction materials have to be encouraged. There has to be a continuing search for cheaper materials. Research, development and standardization efforts related to construction industry user requirements need to be intensified.

Contract Management

19.3.12 A major part of the construction work is carried out through contractors. However, contract management is a neglected area. There is need to standardize and develop a fair and equitable contract document which should provide adequate incentives for completion of jobs on or before schedule and disincentives for delays. Works manuals of engineering departments have to be revised. As already indicated, the use of modern techniques such as PERT, CPM, Value Engineering, Workstudy etc. need to be incorporated in contracts. The system of prequalification needs to be streamlined. Two or three part bids (technical, commercial, price) from qualified bidders could be introduced to eliminate delays and other problems. Use of consultants in construction planning, management and monitoring can be useful in making construction management more effective.

Project Export

19.3.13 Overseas construction projects have emerged as an important area of economic acitivity. It is estimated that overseas construction work to the tune of Rs.10,000 crores has been executed by Indian companies so far, mainly in the Middle East, Africa, South-east Asia, Far East and Pacific regions. Despite some uncertainties in the neighbouring countries today, the medium-term potential is large and two factors coming in the way are: (a) technology and (b) manpower quality and management. Both these areas require special attention if the Indian companies have to sucessfully compete in the international market.

Main Thrust in Construction

19.3.14 The main thrust in the construction sector in the Eighth Plan will, therefore, be on efficiency, cost reduction, timeliness, quality on the one hand, and increased employment and greater welfare of construction workers on the other.

Management Information System

19.3.15 During the Seventh Plan, a large network of computers - NICNET - was established with a national centre at New Delhi and four regional computer centres, besides centres in all States, Union Territories and district headquar-

ters. All these are interconnected through satellite and the terminals connect all major Government departments in the Central and State Governments. This network operated by the National Informatics Centre(NIC), provides the hardware and software support for the data bases at every level and for interchange of information with a view to improving operations and management.

19.3.16 It is proposed to develop information system and databases at national, State, UT's, district and block levels in important Plan areas and economic activities during the Eighth Plan.

19.3.17 The range and spread of informatics, being developed has special relevance for the thrust on decentralised planning which is the cornerstone of rural development in the Eighth Plan. Two points are relevant in this context. First, the reliability of information is a major desideratum and the information system has, therefore, to improve the collection of primary data, much of which flows from the administrative system. With the decentralization of the administration and of the services delivery system, there is need for a link up between the new delivery system and data collection, through and for them. Secondly, with the availability and networking of variegated information system together with details such as are not available from satellite imagery interpretation, decentralized planning can now be taken up on a scientific basis.

19.3.18 On a sectoral or industry level, efforts have already been initiated to develop management information systems at the enterprise and sector level. A beginning was made with a common data base developed for the power sectors. Similar formats need to be evolved for all sectors. This will avoid multiple reports, reduce paper work and facilitate consistency checks and at the same time make available online data as per requirements. It will minimise delays as well as enable processing and analysis of data speedily as per requirements. An inter-ministerial Committee has recently examined the monitoring system with regard to central public sector enterprises which have signed Memoranda of Understanding. The Committee has suggested streamlining, common data collection, reduced paper work, etc.

Monitoring

19.3.19 During the Seventh Plan, a monthly "Flash Report" monitoring system was introduced for all Central sector projects costing over Rs.100 crores to enable a top level review by the Government. Separate systems were established for other Central projects and for the monitoring of the 20-Point Programme and infrastructure performance. A separate Ministry of Programme Implementation was also establised for monitoring tasks. Of late, the monitoring system at various levels has got into a stereotyped mechanism, handling routine information. During the Eighth Plan, efforts will be made to evolve a system of regular flow of relevant information to make monitoring an effective tool of management action at all levels. At present, too many agencies demand data from the source agencies. Availability of data in a common data base in the system, which is accessible to various user agencies, can reduce such pressures on in-source agencies.

Performance and Efficiency Improvement in Public Sector Enterprises (PSEs)

19.4.1 Over the last four decades massive investments have been made in the Central public sector enterprises(PSEs). Growth of the public sector was phenomenal in terms of number, investment, production and range of activities. The number of Central PSEs rose from 5 in 1951 to 246 by the end of March 1991, and investment from Rs.29 Crores to Rs.1,13,234 crores during the same period.

19.4.2 A sustained and continuing effort for improving the performance of all PSEs and realising the objectives for which they were set up is required. A major desideratum is the improvement of management, which calls for increased delegation of powers for fast decision-making, management by professionals and specialists and increased distancing of Government administration from the PSEs, subject to certain essential safeguards to ensure "accountability". The introduction of the concept of Memorandum of Understanding is meant to develop proper relationship between the Government and PSEs.

Administrative Improvements

19.4.3 The main administrative tasks and the need for administrative improvements in the Government system at different levels have been highlighted in successive Plan documents. The

Second Plan document brought out the need for speedy, efficient and economic methods of work, objective evaluation of methods and results, local community action, public participation, provision of incentives and opportunities for creative service and training of Government personnel. Many Committees and other bodies have looked into the requirements for improving the administration. The Administrative Reforms Commission in the sixties made comprehensive recommendations covering wide areas. However, the situation today is not very different from what prevailed at the beginning of the planning in the country and not many positive achievements appear to have been made in improving the administrative system.

19.4.4 The main thrust in the Eighth Plan in this area would be on initiating some basic improvements in the administrative system so as to (a) increase efficiency and reduce public expenditure and (b) considerably improve the services to the people. The important aspects to be considered in this regard are as follows;

i. Reduce considerably the area of Government's intervention, regulation and control of multifarious activities;

ii. Simplify procedures of Government sanctions to cut down delays;

iii. Instead of creating departmental units within the Government for specialised services, contract out such services to outside agencies;

iv. Review the need for each and every existing Government organistion or unit based on the concept of `Zero Based Budgeting' with a view to closing as many such units as possible. The surplus staff could be usefully deployed elsewhere on productive jobs.

v. Use computer networking and information exchange to reduce paper work.

vi. Shift towards an "open office system" and a closer interaction among Government officers, against the present tendency of compartmentalisation. Instead of separate specialised personnel, there can be combination of skills and responsibilities in one unit or person, thereby avoiding the need for referring to many other agencies, i.e., a move towards the `single window' system.

vii. Evolve a system to encourage efficient persons by providing motivation, including financial incentives and better promotion system, such as `flexible complimenting' scheme presently applicable to scientific personnel. Also, assign a package of full responsibility and authority to willing officers with expectation of time-bound results and full accountability, as an experimental measure.

viii. Create an environment of mutual trust between the public and the Government. The existing rules and procedures were devised mainly to protect the interest of the Government against the public and this creates an atmosphere of antagonism. This needs to be replaced by rules which protect the interests of the public as much as that of the Government.

ix. Assign the overall responsibility for implementation of programmes and results to one agency at the district and the sub-district levels. The activities of the multiple agencies involved in the implementation of various programmes, which are often funded from various heads have to converge at one focal point.

x. Evolve a system through which administrative improvements are continuously undertaken, evaluated and modified wherever necessary so as to make the Government functioning result-oriented.

Training

19.4.5 The role of training as an important input in the process of economic development has been recognised in successive Five Year Plans. There are several institutions, organisations and agencies engaged in imparting training at various levels. Apart from the funds provided for the training component in the Plan programmes in different sectors, a separate scheme on Training for Development was initiated in the Fifth Plan. It has been continued during the Sixth and

the Seventh Plans. Under the Scheme, a number of specially designed training programmes for the personnel engaged in planning, implementation, monitoring and evaluation of various plan projects and schemes in the Central and State Governments as well as public sector undertakings have been organised every year. During the Eighth Plan, the scheme will continue and cover the activities relating to training programmes, research and publication support to State and Central institutions. Alongwith the emphasis on the training programmes per-se, more efforts are necessary to provide support services to the Central and the State training institutions.

19.4.6 To support decentralised planning, a new scheme of Training for Decentralised Planning is envisaged under the Plan. This Central scheme will provide requisite support for the State and sub-State level institutions, including faculty support, training equipment, training material and required soft-ware etc. It is also envisaged that each State Government will undertake schemes for the development of necessary training infrastructure at the district and sub-district levels. The main focal points for the training effort for decentralisation will be the State Administrative Training Institutes (ATI) which, in collaboration with other institutions, will undertake the apex training effort, particularly for training of trainers, development of training materials, etc. It is also proposed to introduce training by distant learning methods in order to cover vast numbers involved. These activities will be coordinated with the training efforts to be undertaken through the State Institutes of Rural Development and other State, sub-State, district and sub-district level institutions as part of training under various rural development programmes. National institutions like the National Institute of Rural Development (NIRD), Lal Bahadur Shastri National Academy of Administration (LBSNAA), etc. are expected to perform the functions of nodal institutions to support the training for decentralisation. The Training Division in the Department of Personnel and Training will coordinate with other Ministries in this training effort.

19.4.7 Other Plan training schemes, relating to strengthening and modernisation of training facilities in national institutions such as LBSNAA, Indian Institute of Public Administration (IIPA) etc., setting up of a National Institute of Financial Management and training of the staff of civil accounts departments etc., most of which are ongoing schemes, will be continued.

19.4.8 There is a need to evaluate the effectiveness of the training programmes both under the Plan as well as non- Plan, of different organisations and examine as to what extent the training has been helpful to the personnel in better performance of their tasks. Where necessary, the training programmes should be reoriented and remodelled, so as to make these cost-effective and provide desired inputs for improving the effectiveness, efficiency and productivity. Voluntary professional organisations like the Indian Society for Training and Development (ISTD) are also expected to play an important role in the promotion and improvement of training effectiveness.

19.4.9 An outlay of Rs.47 crores has been provided in the Eighth Plan for training and other related schemes.

Strengthening of Planning Machinery in States

19.4.10 The Planning Commission has been providing assistance to the States to strengthen the planning machinery at the State and district levels. The scheme of Strengthening of Planning Machinery provides for Central assistance to the extent of 2/3rd of expenditure on planning staff at the State level and 50% of expenditure on planning staff at the District level. Apart from strengthening of planning machinery, it is also felt that, in order to achieve the objective of decentralised planning, certain model plans should be prepared to provide guidance to the district level authorities.

Evaluation

19.5.1 Feed-back through evaluation results is an important requirement for assessing the performance, comparing the intended with the actual operations and using this information to guide the future line of action.

19.5.2 The importance of evaluation for timely and continuous feed-back in the planning process was realised as early as 1952, when the Programme Evaluation Organisation (PEO) was set up. Although, in the beginning, the PEO was more concerned with the evaluation of Community Development and other allied programmes,

its role and range of activities widened over the successive Plan periods. Evaluation organisations were also set up in the States during the Third and the Fourth Plans. At present, evaluation machinery exists in one form or the other in almost every major State of the country.

19.5.3 The role of evaluation during the Eighth Plan will be more challenging. Development during the Eighth Plan will largely be achieved by a process which entails `operation by the people and cooperation by the Government' in the formulation and implementation of the Plans and the programmes through a system of open and democratic decision- making. Naturally, therefore, the evaluation process and the organisations will have to be suitably streamlined and made more effective both in qualitative and quantitative terms. The programmes of national importance, such as poverty alleviation, health and family welfare, rural drinking water supply, elementary and adult education, public distribution system, and elimination of scavenging, will be evaluated by the PEO. The PEO may also associate the State Evaluation Organisations and other research and academic institutions for taking up studies of regional and local importance, besides those innovative in nature. An Evaluation Advisory Committee is proposed to be set up with relevant expertise. This Committee will be consulted on the studies to be taken up, methodologies to be adopted, and linkages to be established with evaluation, research, and academic institutions.

Statistics

19.6.1 With a view to providing a sound statistical base and developing a system of continuous flow of information, the Planning Commission had constituted two Committees, namely (i) Standing Committee for Improvement of Data Base for Planning and Policy Making and (ii) Standing Committee for Improvement of Data Base for Decentralised sectors, consisting of members from Government and non-Government organisations.

19.6.2 A notable development has been the conduct of Economic Census (EC) and the follow-up surveys, starting from 1977, to fillup the vital data gaps relating to the unorganised segments of the economy. While the Economic Census provides basic macro details and a frame of enterprises in the country, the follow-up surveys, which are carried out on a sample basis, go into the details about the structure, investment, employment, receipts and expenditure and several other aspects. Reliable information on the unorganised segments in the sectors of manufacturing, trade, transport, hotels and restaurants, storage and warehousing and services are thus made available. As rapid changes generally take place in the structure of the unorganised segments of the economy, it is necessary to repeat such economic censuses and follow-up surveys at regular intervals, say, five years to capture these changes. The first Economic Census was carried out in 1977, the second in 1980, and the third in 1990. Keeping in view the need for minimising delays in the tabulation and dissemination of the results of the Economic Census and also to get uptodate frame of enterprises for follow-up surveys, steps have been taken to decentralise processing of Economic Census data with active participation of the Directorates of Economics & Statistics of the States and UTs. The follow-up surveys based on EC 1990 will be continued during the Eighth Plan with increased sample size for estimation of survey results at State and UT levels.

19.6.3 Statistics pertaining to manufacturing industries in the registered factory sector are collected on statutory basis through the Annual Survey of Industries (ASI) for which the field operations are conducted by the National Sample Survey Organisation. The Central Statistical Organisation in addition to processing of data and publication of the results of ASI, is responsible for sample design and estimation procedures, issue of policy guidelines, clarification of concepts, definitions and classification of production units to the field staff engaged in ASI.

19.6.4 In view of the increased emphasis on decentralised planning, new schemes have been provided in the Eighth Plan for the preparation of estimates of gross fixed capital formation, private final consumption expenditure and input-output tables at State levels. Higher priority is being given to build up estimates of important components of national income and related aggregates broken up into rural and urban sectors.

19.6.5 A major problem relating to the statistical system in recent years has been the excessive delays in processing and publication of data.

Data are useful only when available in time. During the Eighth Plan, special attention will be paid to speedier processing and publication of quality data at disaggregated levels. Certain crucial gaps in the statistical systems of housing, environment, services, social development and disadvantaged groups have been identified. The Eighth Plan will make special attempt to evolve a system for building up useful information on these areas with regular periodicity. An outlay of Rs. 106 crores has been provided in the Eighth Plan for Statistical schemes.