

DRAFT FIFTH FIVE YEAR PLAN

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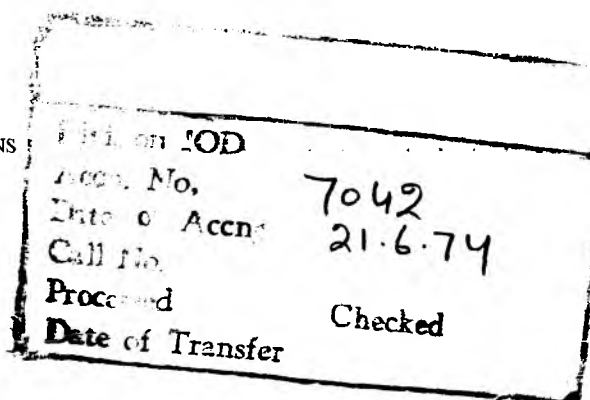
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SUMMARY OF CONTENTS

	PAGE
CHAPTER 1 : AGRICULTURE	1
CHAPTER 2 : CO-OPERATION AND COMMUNITY DEVELOPMENT	76
CHAPTER 3 : IRRIGATION, COMMAND AREA DEVELOPMENT AND FLOOD CONTROL	105
CHAPTER 4 : POWER	117
CHAPTER 5 : INDUSTRY AND MINERALS	131
CHAPTER 6 : VILLAGE AND SMALL INDUSTRIES	160
CHAPTER 7 : TRANSPORT, TOURISM AND COMMUNICATIONS	171
CHAPTER 8 : EDUCATION	191
CHAPTER 9 : SCIENCE AND TECHNOLOGY	216
CHAPTER 10 : HEALTH, FAMILY WELFARE PLANNING AND NUTRITION	232
CHAPTER 11 : URBAN DEVELOPMENT, HOUSING AND WATER SUPPLY	257
CHAPTER 12 : EMPLOYMENT, MANPOWER AND LABOUR WELFARE	267
CHAPTER 13 : WELFARE OF BACKWARD CLASSES AND SOCIAL WELFARE	274
CHAPTER 14 : BACKWARD AND SPECIAL AREAS INCLUDING, HILL AND TRIBAL AREAS	282
CHAPTER 15 OTHER PROGRAMMES	287



CONTENTS

	Page
CHAPTER I : AGRICULTURE INCLUDING ANIMAL HUSBANDRY, DAIRYING, FISHERIES, FORESTS AND LAND REFORM	1
I. Review of Progress in the Fourth Plan	1
Production of Foodgrains	1
Production of Commercial Crops	2
Production of Horticulture and Minor Plantation Crops	2
Agricultural Research	3
Agricultural Extension and Administration	3
Agricultural Inputs	4
Irrigation	5
Soil Conservation	5
Agricultural Credit	5
Agricultural Marketing	6
II. Targets and Strategy of Crop Production in Fifth Plan	6
Targets of Crop Production	6
Targets of Important Physical Programmes	8
Strategy of Agricultural Production in the Fifth Plan	8
Fifth Plan Outlays	9
III. General Programmes of Agricultural Development in Fifth Plan	9
Agricultural Research	9
Agricultural Education	10
Farmers' Training	11
Agricultural Extension and Administration	11
Agricultural Statistics	12
Agricultural Inputs—Fertilizers and Manures	12

	PAGE
Improved Seeds	13
Plant Production	13
Agricultural Implements and Machinery	14
Irrigation	15
Soil and Water Conservation	15
Agricultural Credit	15
Agricultural Pricing	16
Agricultural Marketing	17
Storage and Warehousing	17
IV. Special Programmes for Foodgrain Crops	17
Wheat	17
Rice	18
Maize	19
Jowar	19
Bajra	19
Pulses	20
V. Special Programmes for Commercial Crops	21
Oilseeds	21
Sugar Cane	22
Cotton	23
Jute and Mesta	24
Tobacco	25
VI. Special Programmes for Horticulture and Minor Plantation Crops	26
Horticulture	26
Cashewnut	26
Coconut	27
Pepper	27
VII. Animal Husbandry and Dairying	27
Review of Progress in the Fourth Plan	27
Approach and Strategy in the Fifth Plan	29
Targets of Livestock Products and Physical Programmes	30
Cattle Development	30
Fifth Plan Outlays	34

	PAGE
VIII. Fisheries	34
Review of Progress in the Fourth Plan	34
Approach to Fisheries Development in the Fifth Plan	35
Targets of Fish Production	35
Strategy for Fish Production	35
Targets of Fisheries Programmes	36
Inland Fisheries	36
Marine Fisheries	37
Fish Processing, Marketing and Transport	37
Fisheries Research, Education and Extension	38
Fifth Plan Outlays	38
IX. Forestry	38
Review of Progress in the Fourth Plan	38
Objectives of Forestry Development in Fifth Plan	39
Target of Fifth Plan	39
Strategy in the Fifth Plan	39
Programmes in the Fifth Plan	40
Commercial Plantations	40
Social Forestry	40
Forest Consolidation, Surveys and Statistics	41
Communications and Logging	41
Wild Life Conservation	41
Forest Research and Training	41
Forestry Administration and Planning	41
Financial Outlays in the Fifth Plan	42
X. Land Reform	42
Abolition of Intermediary Tenure	42
Reform of Tenancy	42
Ceiling on Agricultural Holdings	43
Consolidation of Holdings	43
An Overall Assessment of the Implementation of Land Reform	43
Strategy for the Fifth Five Year Plan	43
Programme for Institutional Changes	43
Operational Programmes	44

	PAGE
Administrative Set-up	44
Land Reform Tribunals	44
People's Involvement	45
Financing of Land Reform	45
Mass Campaign of Land Reform	45
Training of Field Officers	45

CHAPTER 2 : CO-OPERATION AND COMMUNITY DEVELOPMENT, INCLUDING SPECIAL PROGRAMMES OF RURAL DEVELOPMENT 76

I. Cooperation	76
Review of Progress in Fourth Plan	76
Approach in the Fifth Plan	78
Strategy and Targets of Cooperation Development	78
Cooperative Credit—General Programme in Fifth Plan	79
Cooperative Credit and Small Farmers	80
Cooperative Marketing	82
Cooperative Processing	82
Cooperative Distribution of Agricultural Inputs	82
Consumer Cooperatives	82
Cooperative Training and Education	83
Cooperative Management	83
Reduction of Inter-State Imbalances in Cooperative Development	84
Fifth Plan Outlays	85
II. Community Development and Panchayats	85
Review of Progress in Fourth Plan	85
Pilot Research Project in Growth Centres	85
Panchayati Raj	85
Objectives and Strategy for Fifth Plan	86
Whole Village Development Programme	87
Fifth Plan Outlays	87
III. Special Programmes of Rural Development	87
General Approach	87

	PAGE
IV. Small Farmers' Development Agencies	88
Review of Progress in the Fourth Plan	88
Approach and Programme in the Fifth Plan	89
V. Tribal Development Agencies	89
Review of Progress in the Fifth Plan	89
Approach and Programme in the Fifth Plan	90
VI. Drought Prone Areas Programme	90
Review of Progress in Fourth Plan	90
Development Strategy in Fifth Plan	91
Development and Management of Irrigation Resource	91
Soil and Moisture conservation	91
Livestock Development	92
Development of Small Farmers	92
Organisational and Financial Arrangements	92
VII. Pilot Intensive Rural Employment Projects	93
Review of Progress in the Fourth Plan	93
Approach and Strategy in the Fifth Plan	93
CHAPTER 3 : IRRIGATION, COMMAND AREA DEVELOPMENT AND FLOOD CONTROL	105
I. Irrigation	105
Water Resources	105
Irrigation Potential	105
Review of Irrigation Development	105
Major and Medium Irrigation.	106
Objectives and Strategy in the Fifth Plan	106
Inter-State Water Disputes	108
Research	109
Investigations	109
Proposal for Major and Medium Scheme	109
Benefits	109
Minor Irrigation	110
Proposals for Minor Schemes	110
Irrigation Statistics	111
II. Command Area Development	111
Pilot Projects for Integrated and Intensive Agricultural Development	112
Irrigation Laws	112
III. Flood Control	113
CHAPTER 4 : POWER	117
Review of the Fourth Plan	117

	PAGE
Fifth Plan Programmes—Target of Generating Capacity	118
Target for Rural Electrification	118
Strategy for the Fifth Plan	119
Generation	120
Availability of Major Plant and Equipment	121
Availability of Steel and Cement	121
Financing of Power Generation Programme	121
Development of Hydro Resources	122
Central Generation	122
Nuclear Power Generation	122
Regional Power Position over the Fifth Plan Period	123
Inter-State Lines	124
Rural Electrification	125
Consultancy and Construction Services	125
Manpower Training	126
Research and Development	126
Re-organisation of the Electricity Supply Industry	126
CHAPTER 5 : INDUSTRY AND MINERALS	131
I. Review of Programmes in the Fourth Plan	131
II. Fifth Five Year Plan	133
Objectives and Strategy	133
Policy Framework	134
Foreign Investment	136
Economies of Scale	138
Outlays	140
Public Sector	140
Public Sector Programmes	140
Private and Cooperative Sector	140
Targets	141
Industrial Programmes	141
Iron and Steel	141
Non-Ferrous Metals	142
Engineering Industries	143
Ship Building	145
Fertilisers	145
Petro-Chemicals	146
Petroleum Refining	146
Oil Exploration	147
Coal	147
Iron Ore	148

	PAGE
Paper and Newsprint	148
Other Industries	149
CHAPTER 6 : VILLAGE AND SMALL INDUSTRIES	160
I. Review of Progress	160
Small Scale Industries	162
Industries Estates	162
Khadi and Village Industries	162
Handloom and Powerloom Industries	163
Sericulture	163
Coir Industry	163
Handicrafts	163
Rural Industries Projects	163
II. Programmes for the Fifth Plan	164
Objectives and Strategy	164
Outlay	164
Small Scale Industries	166
Industrial Estates and Areas	167
Khadi and Village Industries	167
Handloom and Powerloom Industries	167
Sericulture	168
Coir Industry	168
Handicrafts	168
Rural Industries Projects	168
CHAPTER 7 : TRANSPORT, TOURISM AND COMMUNICATIONS	171
I. Transport	171
Outlays	172
Railways	173
Roads	175
Road Transport	177
Major Ports	178
Minor Ports	179
Shipping	180
Inland Water Transport	181
Lighthouses and Light Ships	181
Civil Air Transport	181
Indian Meteorological Department	183
II. Tourism	183

	PAGE
III. Communications	184
Postal Services	185
Telecommunication Services	185
Indian Telephone Industries	186
Overseas Communications Services	187
Hindustan Teleprinters Limited	187
Monitoring Organisations	187
Television and Broadcasting	187
Science and Technology	188
CHAPTER 8 : EDUCATION	191
I. General Education	191
Review of the Fourth Plan	191
Other significant Programmes	192
Outlay	192
II. Fifth Five Year Plan	192
Directions of Development	192
Pre-School Education	194
Elementary Education	194
Secondary Education	196
Teacher Preparation	198
University Education	198
Scholarships	199
Language Development	200
Social Education	200
Physical Education, Games and Sports and Programmes of Youths	201
Cultural Programmes	201
Planning and Implementation Machinery	202
Educational Research and Development	202
III. Technical Education	203
Review of the Fourth Plan	203
IV. Linkage with Science and Technology Plan	204
V. Education of the Scheduled Castes, Scheduled Tribes and other Backward Classes	205
^p Fourth Plan Review	205
Outlays	206
CHAPTER 9 : SCIENCE AND TECHNOLOGY	216
I. A Comprehensive Science and Technology	216
Science and Technology Objectives	216
Strategic Features of the Fifth Plan	216

	PAGE
Implementation	217
Research in Higher Educational/Training Institutions	218
Research and Development in Industry	218
Collaboration between Education, Industry and Research	218
Monitoring and Evaluation	219
Research and Development in the States	219
II. Sectoral Programmes	219
Agriculture	219
Irrigation.	220
Fuel and Power.	220
Heavy Engineering	220
Steel, Mines and Metallurgy	220
Electronics	221
Chemical Industries	221
Special Materials	221
Natural Resources	221
Marine Resources	221
Family Welfare and Health	222
Housing and Environmental Improvement	222
Railways	222
Transport (Roads and Ports)	223
Telecommunication Research and Training	223
Meteorology and Allied Sciences	223
Universities/IITs and other Institutions of Higher Learning	224
Fifth Plan Outlays for DAE, DST, DOS and CSIR	224
Department of Science and Technology	225
Department of Atomic Energy (R & D)	227
Department of Space	228
Council of Scientific and Industrial Research	229
Anthropological Survey of India	230
III. Science and Technology Plan Outlays	231
CHAPTER 10 : HEALTH, FAMILY WELFARE PLANNING AND NUTRITION	232
I. Health	232
Review of Past Progress	232
Fifth Plan—Objectives and Strategy	234
Health Care.	234
Minimum Needs Programme	234
Communicable Diseases	235
National Malaria Eradication Programmes	235

	PAGE
National Smallpox Eradication Programme	235
National T.B. Control Programme	235
National Cholera Control Programme	236
National Leprosy Control Programme	236
Venereal Diseases and Trachoma	236
National Filaria Control Programme	236
Medical Care (Hospitals and Dispensaries)	236
Cancer	236
Rehabilitation Centres and Psychiatric Clinics	236
Levy of Cess for Augmentation of Resources and Homoeopathy	237
Under-graduate Education	237
Post-graduate Education	237
Dental Education	237
Training para-medical Personnel	237
Research in Medical Science and Technology	237
Indigenous Systems of Medicine	237
Other Programmes	238
Prevention of Food and Drug Adulteration	238
Child Welfare	238
School Health	238
Health Education	238
Aid to Voluntary Agencies	238
II. Family Welfare Planning	238
Family Planning Programmes during the Fourth Plan	239
Fifth Five Year Plan	240
Strategy in the Fifth Plan	241
Physical Inputs in the Fifth Plan under the Family Planning Programme	242
Rural Main Centres and Sub-centres	242
Urban Family Welfare Planning Centres	242
Post Partum Programme	242
Training	242
Research and Evaluation	242
Transport	243
Conventional Contraceptives	243
Maternity and Child Health	243
India Population Project	243
Mass Education	244
Outlays in the Fifth Five Year Plan	244
III. Nutrition Programme	244
Review of the Fourth Plan Schemes	244

	PAGE
Feeding Programmes	244
Production, Processing and Supply	245
Fortification of Wheat Atta	245
Nutrition Education	245
Health based Nutrition Programmes	245
Approach to the Fifth Plan	245
Integrated Approach	245
Locally Available Foods	246
Nutrition Development Cooperation	246
Research and Surveys	246
Evaluation	246
Coordination	246
CHAPTER 11 : URBAN DEVELOPMENT, HOUSING AND WATER SUPPLY	257
I. Regional and Urban Development	257
Fourth Plan—A Review of	257
Objectives and Strategy	258
Fifth Plan Proposals	259
II. Housing	260
Fourth Plan—A Review of	260
Existing Housing Shortage and the Magnitude of the Problem	260
Objectives and Strategy	261
Fifth Plan—Outlays and Proposals	262
Housing and Urban Development Corporation	262
New Building Materials—Production and Training	262
Research, Development and Extension of New Building Technology	263
III. Water Supply and Sanitation	263
Fourth Plan—A Review of	263
Objectives and Strategy	264
Outlays and Proposals	264
State and Union Territories Plan Scheme	264
Rural Water Supply	264
Urban Water Supply and Sanitation	264
Central Sector Projects	265
CHAPTER 12 : EMPLOYMENT, MANPOWER AND LABOUR WELFARE	267
I. Employment	267
Review	267
Objectives	268
Strategy	268

	PAGE
II. Manpower	269
Review	269
Engineering Personnel	269
Craftsmen Training	269
Agricultural Manpower	270
Medical Manpower	270
Nurses	271
Auxiliary Nurse Midwives	271
Teaching Personnel	271
Scientific Personnel	271
Managerial Personnel	272
Other Issues	272
III. Employment Service	272
IV. Labour Welfare	273
Financial Outlays in the Fifth Plan	273
CHAPTER 13 : WELFARE OF BACKWARD CLASSES AND SOCIAL WELFARE	274
I. Development of Backward Classes	274
Review of Fourth Plan	274
Objectives and Strategies in the Fifth Plan	275
Programmes	275
Outlays	277
II. Social Welfare	278
Review	278
Approach and Strategy in the Fifth Plan	278
Programmes	279
Outlays	280
CHAPTER 14 : BACKWARD AND SPECIAL AREAS INCLUDING HILL AND TRIBAL AREAS	282
Backward Areas	282
Review of Earlier Plans	282
Policy for Fifth Plan	283
Tribal Areas	285
Hill Areas	285
CHAPTER 15 : OTHER PROGRAMMES	287
I. Machinery For Planning	287
II. Information Services and Plan Publicity	290
III. Rehabilitation	291
IV. Statistics	292

Chapter 1

Agriculture

I

REVIEW OF PROGRESS IN THE FOURTH PLAN

Production of Foodgrains

ONE of the main objectives of the Fourth Plan, in the agricultural sector, was to create conditions necessary for a sustained increase of about five per cent per annum over the next decade. More specifically, in respect of foodgrains, the Fourth Plan assumed a production level of 98 million tonnes in the base year and set a target of 129 million tonnes for the terminal year of the Plan. The actual production of foodgrains in 1968-69 turned out to be lower than the assumed base level by about 4 million tonnes. As regards the production level in 1973-74, according to the State Governments' anticipation, the total for the country may reach 114 million tonnes. In the event of this level of production being actually realised, the Fourth Plan is likely to witness a growth rate around 3.9 per cent per annum. If, however, the increase in production is reckoned against the assumed base level, the growth rate works out to 3.1 per cent per annum as against the targeted growth rate of 5.6 per cent per annum.

1.2. The performance of individual foodgrains crops in the Fourth Plan period has been extremely uneven. At annexure I is a statement showing the assumed base, the target and actual/anticipated level of production for various foodgrains crops. It is evident that, in respect of wheat, the achieved growth rate is strikingly higher than the target. In regard to bajra, the progress is fairly satisfactory. In rice and maize, the achievement is much below the Plan expectations. In regard to pulses, the production level in the base year happened to be subnormal and hence the growth rate, likely to be achieved in the Fourth Plan period, gets exaggerated. If the anticipated production of pulses is compared with the targeted level for 1973-74, there will be a significant shortfall. In jowar, the growth rate for the Fourth Plan period is likely to be negative.

1.3. In the Fourth Plan, for enhancing production of foodgrains, major reliance was placed on high-yielding varieties programmes. Out of a total increase of 31 million tonnes that was envisaged 21 million tonnes of foodgrains was predicted on the success of high-yielding varieties programme. The following table summaries the targets and the like-

ly achievements, in respect of area coverage by high-yielding varieties :

Table 1 : Fourth Plan targets and achievements of High Yielding Varieties

(million hectares)

Crop	1968-69	fourth plan target	Area coverage				likely achievements 1973-74
			1969-70	1970-71	1971-72	1972-73 estimated	
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
rice	2.60	10.10	4.34	5.59	7.41	8.64	9.50
wheat	4.80	7.70	4.92	6.48	7.86	10.24	10.80
maize	0.40	1.20	0.42	0.46	0.44	0.50	0.60
jowar	0.70	3.20	0.56	0.80	0.69	0.90	1.10
bajra	0.70	2.80	1.16	2.05	1.77	2.25	3.00
total	9.20	25.00	11.40	15.38	18.17	22.53	25.00

1.4. Though the overall progress in coverage of area by high-yielding varieties is satisfactory, it is not uniform for all crops. The coverage under wheat has recorded a spectacular growth. The high-yielding varieties of wheat are beginning to spread even in non-traditional areas such as Bihar and West Bengal. The progress under maize and jowar however is much below the plan target, mainly due to susceptibility of the available high yielders to pests and diseases, lack of suitable varieties for different agro-meteorological zones and constraints resulting on account of irrigation and pricing problems. The coverage under bajra has progressed as envisaged in the Plan in spite of certain inhibiting factors like prevalence of pests and diseases.

1.5. The progress of area coverage under high-yielding varieties of rice has been satisfactory. However, its impact on production is not yet proportionate to the area expansion for several reasons. The crop is largely grown in kharif season which exposes it to vagaries of monsoon and presents serious problems in water management. Moreover, the vulnerability of the crop to pests and diseases in kharif season is more than during rabi/summer season. Application of fertilizers at much lower than the recommended dosages has been another important limiting factor. Summer paddy has shown relatively significant yields per hectare and the area at the end of the Fourth Plan under summer paddy is expected

to go up to 2.5 million hectares. Another significant feature is the success of the high-yielding varieties of paddy and their fast spread in the traditional wheat growing areas of North India. Also significant from the stand-point of its promise for the future is the development of a large number of new varieties with different characteristics giving a wise choice for adjustment to varying situations.

Production of Commercial Crops

1.6. At annexure II is a statement showing the assumed base level and the targets, the actual/anticipated level of production for selected commercial crops. It will be seen that, with the exception of sugarcane, the actual production of other crops in the base year was much below normal and hence the resultant growth rate gets exaggerated. If the anticipated production is compared with the targetted level for 1973-74, it will be seen that all the four crops, namely, oilseeds, sugarcane, cotton and jute are likely to record significant shortfalls.

1.7. In regard to commercial crops, the shortfall in production is the outcome of several factors. The development programmes, as originally embodied in the Fourth Plan, were on a somewhat limited scale. It is only as result of the mid-term appraisal of the Fourth Plan that a number of new programmes were introduced. Some of the important new programmes are listed below:

- (i) Intensive Cotton District Programme;
- (ii) Extension of Hybrid-4 Cotton;
- (iii) Development of cotton in Sunderbans of West Bengal;
- (iv) Intensive Jute District Programme;
- (v) Development of Soyabean; and
- (vi) Development of Sunflower.

The full impact of these new programmes is not likely to materialise until after the completion of the Fourth Plan.

1.8. In addition to the above general reason, there have been specific factors inhibiting increase in production of individual crops. In cotton, one of the basic reasons for uncertainty in production has been the preponderance of rain-fed cotton. The new varieties which have shown considerable promise have been attempted to be introduced in commands of selected irrigation projects only towards the later part of the Fourth Plan. The progress in popularisation of a suitable schedule of plant protection has been patchy in rain-fed areas. Lately, there have also been problems with regard to effective arrangements for marketing of cotton, particularly in new areas. In oilseeds, groundnut is the major crop in which there has yet to be a significant break-through in varietal improvement. The development of soyabean, which is a recent phenomenon, also did not make the envisaged progress, because of the problems connected with a suitable technology for seed production, varieties for different areas, marketing and processing facilities. In the case of sunflower

good progress was achieved even in the very first year of its introduction in 1972-73, when its commercial cultivation was taken up over an area of 1.18 lakh hectares which is likely to increase to 3.20 lakh hectares by the end of the Fourth Plan.

1.9. While jute production recorded a big spurt in 1973-74, the performance of the crop generally remained significantly below the Plan targets in the Plan period. This is attributable to several factors. Firstly, jute is mostly grown in the eastern States where the infrastructure in the form of credit institutions and input supply agencies continue to be markedly weak. Secondly, while research on jute is in progress, no significant break-through has been achieved. One of the factors that has contributed to instability in production is the vagary of pre-monsoon period. It is only in the later part of the Plan that attempt have been made to introduce jute as an irrigated crop. Finally, the various jute programmes have been characterised by rather indifferent quality of extension work. The progress in the use of inputs, such as improved seeds and fertilizers, continued to be low even in areas covered by the package programme.

Production of Horticulture and Minor Plantation Crops

1.10. In the base year of the Fourth Plan (1968-69), it was estimated that the area under horticulture was about 15 lakh hectares with a production level of about 86 lakh tonnes. The Fourth Plan contemplated that the area under orchards would go up by 4.4 lakh hectares. In addition, an area of about 2 lakh hectares of existing orchards was to be brought under intensive cultivation measures. Against these targets, it is now estimated that, by the end of 1973-74, the area under orchards would rise to 18 lakh hectares and the production level will be around 92 lakh tonnes. A significant shortfall against the target of new area to be brought under orchards is apprehended.

1.11. The Fourth Plan envisaged establishment of a Banana Development Corporation and a package programme for banana development covering about 12,000 hectares in coastal areas around nine major ports for production of exportable varieties of bananas. The progress in respect of these schemes has so far remained rather tardy. While the Banana Development Corporation has been organised, the coverage under the banana package programme is likely to reach only about 6,000 hectares. Another scheme envisaged in the Fourth Plan was to bring an additional area of about 4,000 hectares under walnuts for export purposes. This target is likely to be reached.

1.12. In respect of cashewnut, the Fourth Plan assumed a base level production of 1,31,000 tonnes and targetted an increase of 70,000 tonnes against this base. Actually, the production in the base year turned out to be substantially higher i.e. 1,86,000 tonnes. It is contemplated that, in the terminal year of the Fourth Plan a production level of 2,10,000 tonnes may be attained thus involving an increase of 24,000 tonnes over the actual base year production.

In other words the achievement in the Fourth Plan would be only about 1/3rd of what the Fourth Plan had targetted. The short fall has occurred mainly because the expansion in the area of private cashew plantation would be only about 0.93 lakh hectares as against the Fourth Plan target of 2.30 lakh hectares. The average yield per tree of the cashewnut plantation continues to be woefully low. Research has not yet been able to evolve a method of reproducing a good yielder on a large scale.

1.13. As regards coconut, the Fourth Plan assumed a baselevel production of 5600 million nuts and targetted an increase of 1,000 million nuts over this base level. Actually, in the base year *i.e.* 1968-69, the production of coconut turned out to be 5,546 million nuts. In the terminal year, a production equal to the target is anticipated. As regards physical programmes relating to coconut development, the main programme contemplated was distribution of hybrid coconut seedlings. Against a target of 1.75 lakh seedlings to be distributed, the likely achievement is estimated at a little over 1 lakh seedlings. Towards the close of the Fourth Plan, two new programmes have been approved. One of them relates to a package programme in about 39,000 hectares while the other programme concerns a pilot project for rejuvenation of diseased coconut plantations in Kerala. Unless the blightspreads in Kerala can be controlled and the plantations rejuvenated quickly, the yields may well go down further.

1.14. With regard to pepper, the Fourth Plan had envisaged a base level of 23,000 tonnes and targetted for an increase of 19,000 tonnes over this base. Actually, in the base year *i.e.* 1968-69, the production of pepper turned out to be about 24,000 tonnes. It is estimated that, in the terminal year of the Fourth Plan, a production level of about 30,000 tonnes would be reached. In other words, the increase is likely to be around 6,000 tonnes as against a target of 19,000 tonnes. The main reason for the shortfall is attributed to the fact that the projected increase in the yield of existing plantations did not materialise. A controversy about the export suitability of a good yielding new variety also adversely affected production programme. This controversy was resolved only recently.

Agricultural Research

1.15. In the Fourth Plan, while a limited provision for undertaking agricultural research was visualised in the State Plan, the main effort was envisaged in the Central sector of the Plan. The total provision made for agricultural research schemes, to be financed by ICAR, was initially placed at Rs. 57.5 crores and later increased to Rs. 61.23 crores. Against the above outlay, the pace of expenditure was extremely tardy in the initial years. In the first year of the Fourth Plan, the expenditure was only Rs. 3.5 crores. There were as many as 64 schemes in which no expenditure was incurred. In the second year, the pace of expenditure somewhat picked up to reach a level of Rs. 6.3 crores. Even so, as many as 16 research scheme did not get off the ground. This low rate

of implementation of research schemes was the result of a number of factors. In some cases, the formulation of the details of the new schemes had not been done sufficiently in advance. A number of schemes also ran into difficulties relating to organisational matters such as tie-up with the agricultural universities. A major inhibiting factor was the time-lag in the recruitment of personnel. Finally some of the research schemes were subjected to revision more than once before they were taken up for implementation. In the second half of the Fourth Plan, the pace of implementation of research schemes has picked up considerably. It is estimated that the expenditure for the Fourth Plan as a whole may be around Rs. 49 crores.

1.16. During the Fourth Plan, under a number of coordinated research projects, considerable progress has been recorded in respect of several crops more particularly, rice, wheat and cotton. The coordinated research projects in dry farming which made a rather belated start, has also picked up momentum. Other highlights of development in the sphere of agricultural research in the Fourth Plan include the establishment of a central institute for plantation crops in 1972. New schemes of research into humid and high rainfall agriculture have also been introduced. A scheme for setting up a research station in the north-eastern region has also been taken up.

1.17. There are certain high priority sectors such as pulses and horticulture where coordinated research projects did not record adequate progress. In this respect, perhaps, the most neglected sector has been that of animal sciences. The Fourth Plan made a provision of Rs. 11.79 crores for 33 schemes. However, in the first year of the Plan, no expenditure was incurred on as many as 27 schemes and the level of expenditure remained as low as Rs. 0.12 crore. Even in the second year of the Fourth Plan, the expenditure on coordinated research projects in the sphere of animal sciences did not go beyond Rs. 0.6 crore. While there has been some acceleration in subsequent years, the overall progress of implementation of these projects generally continued to be far from satisfactory.

Agricultural Extension and Administration

1.18. The Fourth Plan had noted with concern the observation of the Inter-Ministerial Group that "unsatisfactory administrative and organisational arrangement was by far, the most important single factor responsible for inadequate progress in the sphere of agricultural production". The Plan had visualised that steps would be taken to ensure close coordination between various State departments concerned with various programmes of agricultural production. No appreciable progress appears to have been recorded in this direction. In fact, in some States, there has been apparent deterioration. In the Fourth Plan, it was also visualised that the respective roles of the State Department of agriculture and State agricultural universities would be worked out so as to facilitate a proper functional collaboration between these two organisations. An interim report of the National Commission on Agriculture has brought out that this expectation of the Plan has not materialised. There has

been a growing tendency towards blurring of the line of responsibilities and function between the agricultural universities on the one hand and the State departments of agriculture on the other. These and other shortcomings in the agricultural administrative set-up have naturally had adverse impact on the effective execution of agricultural development programmes.

1.19. Agricultural extension work has generally remained inadequate. This has been the result of a number of factors. Firstly, despite various efforts, a gap in communication between research stations and extension workers has persisted in several areas. Secondly, while under specific schemes and programmes, additional staff has been sanctioned, there has been no systematic effort, except in a few States, to rationalise the field administration. Finally, the programme of farmers; training and field demonstrations did not receive the requisite attention. While the Fourth Plan visualised a comprehensive farmers' training programme to be taken up under a centrally sponsored scheme in 100 districts, the coverage did not exceed 80 districts.

Agricultural Inputs

1.20. The Fourth Plan had visualised the following base-level and targets in respect of fertiliser consumption:

Table 2 : Fourth Plan—Targets of Fertilizer Consumption

	assumed base-level 1968-69	target 1973-74
N	11.0	32.0
P ₂ O ₅	3.9	14.0
K ₂ O	1.6	9.0
<i>total NPK</i>	16.5	55.0

Against the above target that actual consumption in the base year 1968-69 and various years of the Fourth Plan is indicated below:-

Table 3 : Progress of Fertilizer Consumption

	1968-69 (base year)	1969-70	1970-71	1971-72	1972-73	1973-74 (anti- cipated)
N	12.08	13.56	14.79	17.98	18.40	19.70
P ₂ O ₅	3.82	4.18	5.41	5.58	5.81	6.20
K ₂ O	1.70	2.09	2.36	3.00	3.48	4.10
<i>total NPK</i>	17.60	19.83	22.56	26.56	27.69	30.00

1.21. It will be observed that the actual consumption in the base year 1968-69 was somewhat higher than what the Fourth Plan had assumed. As regards the likely consumption in terminal year of the Fourth Plan, the level reached would be significantly below

what the Fourth Plan targetted. The following table summarises the annual compound growth rate in consumption of fertilizer as targetted in the Fourth Plan and as likely to be achieved.

Table 4 : Growth Rate in Consumption of Fertilizer

plant nutrient	annual compound growth rate (%)	
	target	likely achievement
N	22.8	10.3
P ₂ O ₅	29.2	10.2
K ₂ O	41.3	19.3
<i>total NPK</i>	26.6	11.3

1.22. There are several reasons which account for the large short-all in the achievement of targets of chemical fertilizer consumption. In second half of the Fourth Plan, one of the major reasons has been a significant inadequacy of supplies resulting mainly from shortfall in indigenous fertilizer production and non availability in the international market. In the earlier part of the Fourth Plan, other factors operated to keep down consumption. These include inadequate fertilizer promotion measures, lack of adequate credit facilities in several areas and insufficiency of retail points at convenient distance from the various rural areas. According to broad estimates, in the high yielding varieties programme, the application of fertilizer has been around half of recommended dosage in terms of nitrogenous and about 1/3rd in terms of phosphatic and potassic fertilizers.

1.23. The Fourth Plan had visualised coverage of nearly 72 million hectares under the improved seeds about 25 million hectares under HYV programme and 15 million hectares under multiple cropping, about 8 million hectares in assured rainfall areas and 24 million hectares in dry areas. For the accomplishment of this programme, the Fourth Plan had visualised four main components, namely, supply of breeder stock, adequate arrangements for provision of improved seeds, arrangement for seed processing and storage and seed certification. The progress in respect each of these components has, on the whole, been far from satisfactory. While the three principal agencies, namely, National Seeds Corporation, the Tarai Development Corporation and the State Farms Corporation of India have expanded their operations during the Fourth Plan period significant gaps continue to exist in the arrangements for supply for adequate foundation and certified seeds. During 1971-72, the Central Seed Certification Board was set up. However, progress in the establishment of seed certification agencies in the States has not been significant.

1.24. In respect of plant protection, the Fourth Plan had visualised a target of 80 million hectares (Gross) being brought within the purview of various plant protection measures such as seed treatment, weed control and anti-rat operations. It is anticipated that

the likely achievement will not exceed 64 million hectares. Main shortfall has been recorded in respect of programmes relating to seed treatment and weed control operations.

1.25. In the sphere of agricultural machinery, the Fourth Plan envisaged a crucial role for agro-industries corporations. During the Fourth Plan, such Corporations were set up in Madhya Pradesh, Rajasthan, Gujarat, J&K and Himachal Pradesh, thus covering nearly all States in the country. Although one of the main activities of agro-industries corporations was expected to be in respect of custom service for agricultural machinery and implements, a number of corporations have not given priority attention to this aspect. So far only 116 machinery hiring centres with sub-centres have been established.

1.26. A scheme of establishing agro-service centres was launched from 1971 under the Special Employment Programme initiated by the Government of India. The scheme envisaged setting up of 14 training centres by the agro-industries corporations training of 2500 young underemployed graduate engineers, diploma holders, agricultural graduates and setting up of 2500 agro-service centres by the young entrepreneurs during the plan period. 10 training centres and 502 agro-service centres have been set up so far. About 2,000 entrepreneurs are expected to complete training under this scheme.

Irrigation

1.27. A detailed review of major irrigation programmes as also medium and major projects is presented in a separate chapter on Irrigation and Flood Control.

Soil Conservation

1.28. Upto the end of 1968-69, the total area treated under the soil conservation programme of agricultural lands throughout the country was estimated at 9.40 million hectares. The Fourth Plan target was to cover additional area of 5.39 million hectares of agricultural lands and 0.45 million hectares of non-agricultural lands with an outlay of Rs. 128.00 crores. The estimated achievement under the State Sector upto 1971-72 is 3.80 million hectares. It is estimated that the Fourth Plan achievement might be around 6.4 million hectares with an estimated outlay of Rs. 158.00 crores.

1.29. Upto end of 1968-69, nearly 0.70 million hectares were treated with soil conservation in the catchment areas of selected river valley projects. The Fourth Plan proposed to continue the programme so as to cover critical areas in 8 additional projects. The target of 0.60 million hectares at a total cost of Rs. 227.00 crores was fixed. The achievement is likely to be 0.48 million hectares with a total expenditure of about Rs. 22.00 crores. Among the several reasons attributed to the shortfall are inadequate data of hydrology and sedimentation, delays in obtaining aerial photographs absence of integrated approach towards treatment of agricultural and non-agricultural lands and lack of organisation to ensure protection and maintenance of the works.

Agricultural Credit

1.30. In the Fourth Plan, main reliance was placed on cooperative credit system for provision of agricultural credit. A detailed review in this regard has been presented in a separate chapter on Cooperation.

1.31. Next to cooperatives, the Fourth Plan had stressed the role of commercial banks in provision of agricultural credit. The outstandings of direct advances of commercial banks for agricultural programmes as on 30th June, 1969 were as little as Rs. 41 crores. There was a sharp increase in commercial banks direct advances to agriculture in the first year after the nationalisation of major commercial banks. Subsequently, however, the rate of increase in direct advances slowed down. This slowing down was due to operational problems faced by the banks as a result of indiscriminate and scattered lending over a wide area, inadequate recoveries, lack of experience in the field of agricultural finance and insufficiency of trained staff. The commercial banks were also facing difficulties as they were not treated at par with the cooperatives in direct lending for agriculture in the matter of right of recovery, exemption from stamp duty, registration fees, etc.. The recommendations of the Expert Group on State Enactments having a bearing on commercial banks' lending to Agriculture (Talwar Committee) are yet to be implemented in most of the States. It may be added that the distribution of commercial banks finance has so far remained very uneven in different States. Generally speaking, States which are weak from the point of view of cooperative credit, have also failed to attract adequate loans from commercial banks.

1.32. In the Fourth Plan, the Agricultural Refinance Corporation has made significant progress. As on 1-4-1969, A.R.C. had sanctioned 225 schemes involving an outlay of Rs. 179 crores. The number of such schemes increased to 929 by 31-7-1973 involving a financial outlay of Rs. 598.15 crores. Even though, in the aggregate, a significant expansion of refinance facilities from the A. R. C. has taken place during the Fourth Plan period, the share of different States for this operation has been extremely uneven. This unevenness is largely a reflection of the underdeveloped character of land development banking institutions in a number of States. This is particularly marked in the States of the Eastern region which have been able to draw only a limited amount of refinance facilities from A.R.C.

1.33. In the Fourth Plan, it was originally visualised that the total disbursements by A. R. C. would be of the order of Rs. 200 crores. At the time of the mid-term appraisal of the Plan, taking cognisance of the credit facilities flowing under various World Bank/IDA projects, the target of disbursement by A. R. C. was stepped up to Rs. 300 crores. The progress of disbursements so far year-wise has been as follows:

	(Rs. in crores)
1969-70 (July-June)	28.60
1970-71	30.04
1971-72	34.48
1972-73	91.14

1.34. It is expected that, taking into account the likely disbursements of 1973-74, the revised Fourth Plan target of A. R.C. would be substantially achieved.

Agricultural Marketing

1.35. At the beginning of the Fourth Plan, legislation for establishment of regulated markets was enforced in 13 States. So far 17 States and 3 Union Territories have enacted legislations to this effect. On the eve of the Fourth Plan, the number of markets and sub-markets yards that were regulated were estimated to be 1616. The Fourth Plan had visualised that the remaining 2100 markets/sub-market yards would be brought within the purview of regulation. The progress against this target has been rather slow. The number of additional market/sub-market yards that are likely to be regulated during Fourth Plan would be only about 850.

1.36. When the Fourth Plan started, 450 agricultural produce grading units were being operated by various agencies such as regulated markets, cooperative societies, central and State warehouses. The Fourth Plan had visualised a programme of adding 600 more grading units. Against this target the achievement is likely to be 500 additional grading centres. Despite the progress made in the setting up of grading facilities the share of agricultural produce which is sold after grading to the total marketed surplus still continues to be negligible. **Storage and Warehousing.**

1.37. On the eve of the Fourth Plan, the total owned storage capacity with public sector agencies and State Governments was of the order of 4.8 million tonnes. In addition, cooperatives had a capacity of 2.6 million tonnes. The Fourth Plan visualised that an additional capacity of 6.8 million tonnes of storage should be created. Of this additional capacity, 2 million tonnes was to be created in the cooperative sector and the balance in the public sector. It is anticipated that, against an overall target of 6.8 million tonnes of additional capacity, the achievement in the Fourth Plan is likely to be 5.7 million tonnes. The biggest shortfall has been in respect of the programmes of Food Corporation of India which is likely to add 3 million tonnes storage capacity as against the target of 3.8 million tonnes.

1.38. Certain measures were also initiated during the Fourth Plan period to improve storage facilities at the farm level. Three schemes were sanctioned under Central Sector to improve the farm level storage during the Fourth Plan period. First scheme, namely, "Save Grain Campaign" was sanctioned with the object of providing training in scientific methods of foodgrains storage and of popularising cheap and effective pest control techniques amongst farmers, traders, millers and cooperatives. Another scheme, namely, "Provision of Grain Storage Bins to Farmers" was also sanctioned. Under this scheme, bins were to be supplied to farmers in five States of Punjab, Haryana, Uttar Pradesh, Madhya Pradesh and Bihar. The third scheme, sanctioned during 1972-73, related to a project for improvement of storage facilities at

farmers level and popularisation of scientific techniques of foodgrain storage.

II

TARGETS AND STRATEGY OF CROP PRODUCTION IN FIFTH PLAN

Targets of Crop Production

1.39. In the Fifth Plan, unlike the previous Plans, the main targets of crop production have been conceived for the five year period as a whole. It is essentially for operational purposes that base level and peak level annual production targets have also been worked out. The intention behind this approach is to determine the tasks of the Plan against the time horizon of the entire plan period and thereby even out fluctuations on account of seasonal factors. Apart from the country as a whole, statewide five-yearly targets have also been worked out. The success of the Plan will be measured primarily by the extent to which these targets are fulfilled irrespective of the weather conditions in the terminal year of the Plan. The targets of important crops are presented below:

Table 5 : Fifth Plan-Targets of Crop Production

crop	unit	anticipated production for five years of fourth plan	targets for five years of fifth plan	assumed base level (1973-74)	peak targeted production (1978-79)
(0)	(1)	(2)	(3)	(4)	(5)
1. rice	m. tonnes	208.0	254.0	44.0	54.0
2. wheat	"	126.0	168.0	30.0	38.0
3. maize	"	30.0	37.0	6.5	8.0
4. jowar	"	42.0	51.0	9.5	11.0
5. bajra	"	30.0	37.0	6.5	8.0
6. other cereals	"	29.0	33.0	6.0	7.0
7. pulses	"	55.0	65.0	11.5	14.0
8. total foodgrains	"	520.0	645.0	114.0	140.0
9. oilseeds	"	41.5	55.0	9.4	12.5
10. sugarcane	"	635.0	775.0	134.0	170.0
11. cotton	lakh bales	285.0	360.0	65.0	80.0
12. jute and mesta	"	320.0	360.0	67.0	77.0

In working out the above targets, relevant demand and supply factors have been fully taken into account. It is envisaged that fulfilment of these targets will make the country not only self-sufficient in respect of foodgrains but also leave a cushion for building a buffer-stock. The dimensions of growth in commercial crops envisaged in the Plan are such as to take care of export requirement in addition to meeting indigenous needs by way of industrial raw material.

1.40. The following table gives the growth rates implicit in the Fifth Plan targets of various crops as compared to those projected in the Fourth Plan :

Table 6 : Compound Rate of Growth of Crops

crop	fifth plan targetted growth rate	fourth plan targetted growth Rate
(0)	(1)	(2)
1. rice	4.2	5.9
2. wheat	4.8	5.9
3. maize	4.2	5.2
4. jowar	3.0	8.5
5. bajra	4.2	6.5
6. other cereals	—	2.1
7. pulses	4.0	3.7
8. foodgrains (total).	4.2	5.6
9. sugarcane	4.9	4.6
10. oilseeds	5.8	4.3
11. cotton	4.3	5.9
12. jute and mesta	2.9	3.6

It will be seen that, for foodgrains as a whole, the targetted growth rate in the Fifth Plan (4.2 per cent) is distinctly less ambitious than that adopted in the Fourth Plan (5.6 per cent). The same is the position for most of the individual crops. Even so, the Fifth Plan targets, in respect of most of the crops, represent a bigger task than what would be actually accomplished in the Fourth Plan.

1.41. For achieving the targets of the Fifth Plan, one of the essential requirements will be that the growth in cropped area must be faster than in the recent past. In the decade of the Sixties, on an average, the gross cropped area had been increasing at the rate of nearly 1.2 million hectares per annum. In the Fifth Plan, through extension of irrigation by about 11.2 m. hectares and increased stress on intensity of cropping in existing as well as new irrigated areas, efforts will be necessary to step up the rate of increase in gross cropped area to an average of 2.2 million hectares per annum. Thus, over the Fifth Plan period, an increase of nearly 11 million hectares of gross cropped area is projected. This will raise the total gross cropped area from about 169 million hectares in 1973-74 to about 180 million hectares in 1978-79.

1.42. Apart from the overall increase in the gross cropped area, it will be necessary that various commercial crops such as cotton and oilseeds and pulses are enabled to get a share of the additional area substantially in excess of what is indicated by the beha-

viour in these crops since 1964-65. The following table brings out the crop-wise position :

Table 7 : Fifth Plan—Targetted Area Under Various Crops

crop group of crops	(area in million hectares)	
	1973-74 anticipa- ted area	1968-69 targetted
(0)	(1)	(3)
1. rice	38.50	40.00
2. wheat	20.00	22.00
3. maize	6.00	6.50
4. jowar	17.50	18.00
5. bajra	13.00	13.50
6. other coarse grains	9.00	9.00
7. pulses	22.50	24.00
<i>Foodgrains (total)</i>	126.50	133.00
8. sugarcane	2.80	3.20
9. cotton	7.80	8.60
10. oilseeds (five major oilseeds, sun flower and soyabean)	15.90	17.80
11. jute and mesta	1.10	1.20
12. other crops	15.00	16.20
<i>gross cropped area</i>	169.10	180.00

For attaining the above distribution of areas over different crops, various policies relating to pricing, "localisation" of irrigation and other aspects of crop planning will have to be given pointed attention. In particular, in the commands of new irrigation projects, efforts will have to be made to see that a suitable part of newly irrigated areas gets allocated to crops such as oil seeds and cotton. Besides agricultural extension work, the requisite efforts will cover provision of necessary facilities for marketing and processing of these crops. The pulse crops will have to be vigorously pushed as part of multiple cropping programme.

1.43. For all selected crops taken together, the growth rate in production envisaged is 4.4 per cent. While the growth in area is expected to contribute to the extent of about 1.2 per cent, much greater reliance will have to be placed on growth in productivity. For several crops, this will mean a very significant step-up in rate of increase in yield over what was attained in the recent past. For achieving the requisite growth in crop yields, a multipronged effort will be necessary. The main elements in this effort will be as follows :

- (i) Intensification of problem-oriented research :
- (ii) Strengthening of agricultural extension and administration :
- (iii) Expansion of the programme of multiplication and distribution of certified seeds :
- (iv) Increase in the consumption of chemical fertilizers and improvement in the efficiency of fertilizer use :

- (v) Water management :
- (vi) Expansion in institutional credit :
- (vii) Development of post-harvest facilities including expansion in the role of cooperative agencies in the marketing of crops : and
- (viii) Substantial expansion of storage to support marketing infra-structure.
- (ix) Effective operation of an agricultural price policy which provides requisite incentive for sustained and higher production.
- (x) Execution of land reforms measures as spelt out in a separate chapter on Land Reforms.

Targets of Important Physical Programmes

1.44. Some of the important programme targets envisaged for the Fifth Plan are indicated below :

Table 8 : Fifth Plan—Targets of Selected Physical Programmes

item	unit	1973-74 anticipa- ted	1978-79 tantative target
(0)	(1)	(2)	(3)
1. area under high yielding varieties			
paddy	m. hect.	9.50	16.50
wheat	"	10.80	15.00
maize	"	0.60	1.00
jowar	"	1.10	2.50
bajra	"	3.00	5.00
total	"	25.00	40.00
2. consumption of chemical fertilisers	m. tonnes		
nitrogenous(N)	"	1.97	5.20
phosphatics (P ₂ O ₅)	"	0.62	1.80
potassic (K ₂ O)	"	0.41	1.00
3. consumption of pesticides	tonnes	40.00	74.00
4. soil conservation on agricultural lands	mil. hect.	15.00	25.00
5. major and medium irrigation (utilisation level)	"	19.6	24.8
6. minor irrigation	"	23.5	29.5
7. short-term agricultural credit	"		
(a) cooperatives	Rs. in crores	650	1300
(b) commercial banks		75	400
total		725	1700

In respect of medium/long-term credit, the targets are for five year period. The following table indicates the Fifth Plan target and the comparative achievement in the Fourth Plan.

Table 9 : Fifth Plan Targets of Medium and Long Terms Credit

	(Rs. crores)	
	fourth plan likely achievement	fifth plan target
(0)	(1)	(2)
medium term loans by cooperatives	200	325
ordinary and special long-term loans by land development banks	900	1,500
term lending by commercial banks	200	575
<i>total</i>	1300	2400

Strategy of Agricultural Production in the Fifth Plan

1.45. The Fourth Plan strategy of agricultural production was based eminently on the exploitation of the high-yielding varieties of cereals and multi-cropping programme, both of which had been tried and found feasible in the Plan interregnum period of 1966-69. The other part of the strategy comprised involvement of as large a part of the rural population as possible especially the small farmer, the farmer in the dry areas and the agricultural labourers. The intensive production strategy has revealed certain deficiencies which are now sought to be corrected in the Fifth Plan. The second part of strategy was tried out in the pilot schemes of S.F.D.A. and M.F.A.L. and the pilot schemes of dry farming taken up during the latter part of the Fourth Plan. Out of this experience, the Fifth Plan is modifying the approach to the small and marginal farmers involvement in agriculture. The dry farming technique that has been learnt in the Fourth Plan is proposed to be applied on a large scale in the programme of S.F.D.A./M.F.A.L. and the new drought-prone areas programme. Administrative weaknesses that have been thrown up in the Fourth Plan in getting coordination in field programmes particularly between the research in the universities and the institutes and the extension wings of Government are being sought to be removed in the administrative reforms that will be an essential part of the implementation technique of the Fifth Plan.

1.46. High-yielding varieties programme in the Fourth Plan revealed that its impact was mainly in wheat and bajra and not so in rice and jowar. The progress of maize was patchy. The steps taken to identify the weaknesses in the rice programme have led to the introduction of new varieties developed for regional agro-climatic preferences. The main bottleneck was traced to the bad water management mainly in the irrigation commands of the major and medium irrigation projects in the country. A large programme of integrated development of irrigation commands in 50 major irrigation projects covering 14 million hectares is being put through in the Fifth Plan. This will help not only the rice programme but also the multi-cropping programme with special emphasis on the

cash crops particularly oilseeds and pulses which are in serious short supply. New varieties have been developed in jowar to serve the agro-climatic variations in various regions and the Fifth Plan has been hopefully based on the success of the breeding programme. At the same time, the success of the bajra programme is being utilised to enlarge the bajra areas even at the expense of the jowar areas so as to stabilise and augment production to achieve the overall target of production of minor cereals. The multi-cropping programme is being systematized by the coordination of surface and ground water exploitation so as to change the cropping pattern in the irrigated areas and add to the gross acreage. Among the commercial crops, cotton has shown promise with the introduction of Hybrid-4 cotton of Gujarat varakalakshmi and MCU-5 of Tamil Nadu. Another important hybrid is under trial in Tamil Nadu and several other high-yielding varieties are under various stages of trial elsewhere. The Fifth Plan will work to extend these varieties in the irrigation commands.

1.47. The small farmers and marginal farmers schemes are proposed to be unified and enlarged in the Fifth Plan. The new programme will cover not only irrigated agriculture but also dry farming on a large scale following the techniques so far learnt in the pilot projects on dry farming. The reoriented scheme has also got a large programme of local construction mainly in earthwork, thereby giving employment to a large labour population in the off season. In addition, the growth in the agricultural sector is expected to generate more employment opportunities through intensive farming in the command area.

1.48. The drought-prone areas are being tackled in a systematic way during the Fifth Plan period, aiming at preparing a strong production base and a drought immunisation base. The integrated programme is mainly developed out of the experience gained in the Fourth Plan. Animal husbandry along with a proper fodder economy has been found generally more sure under the drought conditions than a grain economy. This knowledge is being translated into suitable fodder and animal husbandry programmes. This will require a supporting programme in grain supply to the area from the regular grain surplus areas through fair price shops so as to prevent the urge to grow the risky cereal crop. An important part of the drought-prone area programme is the attempt to provide at least a minimum, say ten per cent, of the cropped area in each district with irrigation support, if possible by bringing water from another catchment. The details of the drought-prone area programme are spelled out in a separate chapter on Rural Development.

1.49. Jhum prevention and proper land utilisation of the jhum lands will be an important part of the Fifth Plan strategy. Ravines will be first established and then pilot schemes developed to reclaim the ravines. Amelioration of alkaline and saline soils and improving the agriculture thereon will also be an important aspect of the Fifth Plan. Desert land rehabilitation will be attacked from several sides such as irrigation, forestry, fodder development and animal husbandry.

1.50. Horticulture will be developed on a substantial scale in the hills particularly in the Himalayan region and the Malnad area in the south. Plantations will be developed in the hill areas of North-East, Malnad in the South and in some areas of the Himalayan zone. Marketing and processing will be an important adjunct to the production programme in horticulture.

Fifth Plan Outlays

A statement indicating the outlays for agriculture and allied programmes is given at annexure XIV.

III

GENERAL PROGRAMMES OF AGRICULTURAL DEVELOPMENT IN FIFTH PLAN

Agricultural Research

1.51. In the Fifth Plan, the broad objectives motivating agricultural research are conceived as follows:

- (i) Growth and stability of food production through a significant increase in the yield of crops per unit of area and time;
- (ii) Scientific land and water use leading to crop planning based on ecology-cum-economics;
- (iii) Soil care and fertility;
- (iv) Water management; and
- (v) Improvement in the quality and yield of export crops.

1.52. The precise research strategy and priorities will differ in various types of areas, such as arid areas, semi-arid areas, humid tropics, high altitude areas and irrigated areas. For the arid areas, more work on grasses, horticultural plants and forestry species is contemplated. Attention will also be given to evolve cheap and efficient methods of utilisation of solar energy. A major programme of research for arid areas will relate to evolution of intensive production systems under air inflated polythelene houses such as those adopted in some of the desert areas in the Persian Gulf.

1.53. For the semi-arid areas, an all-India co-ordinated research project on dryland farming is already in progress. This will be further strengthened during the Fifth Plan. Under this project, a technological package involving water harvesting through farm ponds, mulching, etc. appropriate tillage, fertiliser application, crop substitution, varietal planning, plant protection and post-harvest technology is being developed for each area and tested and demonstrated in the adjoining pilot project area. In addition, crop life saving research designed both to save a crop when it runs into aberrant weather and to develop alternative cropping strategies to effect mid-season corrections in cropping pattern, will be intensified. While attempts will be made to develop techniques for saving available water for human, animal and crop use, cooperation will be extended by the Indian Council of Agricultural Research to other agencies like

India Meteorological Department, CSIR and Department of Atomic Energy in exploring possibilities for harnessing non-conventional sources of water, like artificial rain and desalinated water. Research will also be stepped up for deriving full benefit from the capacity possessed by black soils for retaining moisture and for maximising the retention and use of dew by crop canopies.

1.54. For humid tropical areas such as Kerala, north-east region and some areas of the coastal belt, priority in research will be given to plantation crops and special problems like acidity and micro-nutrient deficiency. There is also need for developing flood avoiding varieties of crops. A different priority will be adopted in relation to research for high altitude areas. Here the research effort will be primarily directed towards identification of suitable land use pattern particularly in the context of the local problems of soil erosion and shifting cultivation. Temperate horticulture and floriculture will also require attention. Finally for the irrigated area research programme will mainly focus on measures for increasing efficiency of water use. For this purpose, stress will be laid on development of multiple and relay cropping techniques.

1.55. In the recent past, basic research in agricultural sciences has tended to be somewhat neglected. In the Fifth Plan, greater stress will be laid on basic research. The National Commission on Agriculture has recommended creation of chairs of distinguished professorships for enabling gifted scientists to do basic research. This recommendation is proposed to be implemented in the Fifth Plan.

1.56. Alongside basic research, stress will continue to be laid on applied research. As at present, such research will be carried out essentially through a National grid of cooperative experiments under co-ordinated projects and programmes. The major aim would be to bring about inter-disciplinary and inter-institution collaboration. At present, a large number of coordinated projects are in operation. These are proposed to be reviewed and rationalised in the light of the following criteria recommended by the National Commission on Agriculture :

- (i) the projects should envisage problem-oriented applied research of known knowledge under different broad agro-climatic conditions with marginal short-term basic research ;
- (ii) the problems to be studied should be of national importance and they may belong to a single discipline or may be multi-disciplines;
- (iii) the problems should be such as to warrant the concentration of efforts of a number of scientists on a single problem ; and
- (iv) the projects should aim at developing recommendations in the shortest time for increasing production.

1.57. In the Fifth Plan, apart from strengthening existing central institutes of agricultural research,

provision is proposed to be made for establishment of two new institutes. One of these will be the central institute on cotton in which the existing cotton technological research laboratory in Bombay will be merged. The second institute will be concerned with agricultural engineering and post harvest technology.

1.58. In the Fifth Plan, increased efforts will be made towards international cooperation in agricultural research. In addition to forging close links between an all-India coordinated dryland farming project and International Crop Research Institute for Semi Arid Tropics, it is proposed to further strengthen the bonds between our national research institutes during the Fifth Plan period through mutually agreed memoranda of understanding. Apart from collaboration with international organisations, further progress is also expected in bilateral cooperation. Specific agreements already exist with some countries for cooperation in several areas of agricultural research. It is proposed to further expand such bilateral relations during the Fifth Plan.

1.59. While a broad indication of the directions of research has been given above, the specific objectives of research in relation to individual crops are indicated in some details in separate sections of this chapter dealing with foodgrain and commercial crops.

Agricultural Education

1.60. There are at present 72 agricultural colleges, 22 veterinary colleges, 2 dairy colleges and 8 agricultural engineering colleges. During the Fifth Plan period the number of agricultural, veterinary and agricultural engineering graduates is estimated at 25,500, 4,200 and 1,400 respectively. It is estimated that this will be sufficient to meet the agricultural man-power requirements of the Fifth Plan. Hence, in the coming years, there will generally be no need for expansion in the number of institutions concerned with agricultural education. The main emphasis in the Fifth Plan would be on improvement of standard and quality of education, consolidation of post-graduate education, orientation of curricula and courses to suit the changing needs of agricultural development, strengthening of inter-institutional collaboration and development of centres of excellence.

1.61. So far 19 agricultural universities have been set up. While some of these universities have already reached significant stage of development, a number of them are at a nascent stage. In the Fifth Plan, while older universities will aim at further development in selected fields, the newer universities will have to be enabled to build up requisite facilities. For this purpose each agricultural university will be required to work out an appropriate plan of academic and campus development. It is also contemplated that agricultural universities will give pointed attention to development programmes involving work experience and practical training so as to make the students not only more employable but also capable of earning through self-employment.

1.62. The avowed objective of establishing agricultural universities was to facilitate integration of research, teaching and extension education. However, in

actual practice significant deviations from this basic concept have taken place. In the Fifth Plan it will be necessary for I.C.A.R. to formulate requisite criteria and make financial assistance to the agricultural universities conditional upon observance of such criteria.

1.63. One of the disquieting aspects of the prevailing agricultural educational structure concerns regional imbalances. Three States, namely, U.P., Maharashtra and Rajasthan, account for nearly two-thirds of the annual intake for higher agricultural education. About one-third of the total agricultural colleges in the country are located in U.P. A number of them are sub-standard. In the Fourth Plan an indication was given about the need for upgrading some of these colleges and re-organising others as farmers training centres. However, not much progress appears to have been recorded in this direction. In the Fifth Plan it will be necessary to pursue this matter more vigorously.

1.64. Another aspect which needs attention is the abnormal student wastage. There are practical difficulties in the estimation of precise wastage rate in agricultural education owing to variations in the length of courses of study. There is, however, enough evidence to show that the student wastage rate is significantly higher than 10 per cent which is considered a tolerable limit in professional institutions. It will be necessary to take corrective measures in this regard.

1.65. In the Fifth Plan, a programme of setting up agricultural polytechnics is proposed to be taken up. These institutions will be run by either agricultural universities or I.C.A.R. institutions. They are intended to provide in-service training to the extension staff of the departments of agriculture, animal husbandry and fisheries and public/private sector corporations and to impart technical skills to selected farmers. These krishi vigyan kendras will cater to the needs of those who are either already in employment or self-employed. No diplomas will be awarded by these Kendras. The stress will be on imparting practical training in techniques which are of immediate relevance to the region concerned.

1.66. In the Fourth Plan, a beginning has been made in providing training in project formulation to senior officers of agriculture and allied departments. In the Fifth Plan, it is proposed to establish a national staff college in agriculture which will provide in service training courses to senior personnel of such departments and universities etc.

Farmers' Training

1.67. In the Fourth Plan, a centrally sponsored programme of farmers training was contemplated for 100 districts. Actually the programme has been operational in only about 80 districts. The following main shortcomings have been observed in the current programme :

- (i) The choice of the districts for location of the programme was generally ad-hoc,
- (ii) Out of 80 centres, full complement of staff was not present in 21 districts.

(iii) The programme coverage was too thin. A farmer has a chance of attending one of the training courses only once in three or four years,

(iv) There has been inadequate involvement of district level functionaries.

In the Fifth Plan, the first task will be to seek to rectify the various operational snags. It is also contemplated that the programme will be extended to another 100 districts. In doing so, care will have to be taken to see that the additional districts conform to a proper set of criteria. In particular, districts covered by important programmes for development of commercial crops and pulses will have to be given priority.

1.68. A programme of national demonstrations to be laid out directly by scientists was initiated in 1965. In the Fourth Plan the programme was widened in scope. Its coverage currently extends to about 100 districts but the quality and effectiveness of demonstrations has been rather uneven. In the Fifth Plan, the number of districts is proposed to be reduced to 50. The endeavour will be to see that the demonstrations are in the vicinity of agricultural universities/institutes and the staff of the universities and the institutes is enabled to give guidance to specialists engaged in the national demonstrations.

1.69. While the above programmes will figure essentially in the central/centrally sponsored sector of the Plan, it is contemplated that, in the State plan sector, suitable provisions will be made for farmers' training programmes and also for local verification trials and demonstrations. It will also be necessary for the States to strengthen existing arrangement for farm information.

Agricultural Extension and Administration

1.70. In the Fifth Plan, a proper restructuring and strengthening of the machinery for agricultural extension and administration is conceived as a task of primary importance. Extension is an invisible agricultural input in any programme of agricultural development. In recent years, some steps towards developing up the machinery for extension and administration have been taken but these have been largely on an *ad-hoc* basis. In the Fifth Plan, the machinery will have to be upgraded at various levels, *i.e.* State, districts, block and village. While no increase in the number of village level workers is envisaged, efforts will be made to impart higher agricultural skills to existing VLWs. At the block level, in a discriminating manner, increase in the number of agricultural extension officers is proposed to be carried out. At the district level, the team of subject matter specialists would be suitably strengthened in the light of local needs. This expansion of personnel will be accompanied by an enlarged programme of extension training. Finally, the State departments of agriculture will be sought to be strengthened in regard to their role in respect of quality control of various inputs such as chemical fertilisers, seeds and pesticides. This is

because, the existing arrangements for enforcement of Seed Act or Pesticide Act are found to be unsatisfactory.

1.71. As already indicated, at present in several States, there is a blurring of responsibility between the State departments of Agriculture and the State agricultural universities. In the Fifth Plan, it is contemplated that the agricultural universities will concentrate on research, teaching and extension education. The State directorates of agriculture will be concerned with technical services to the farmers, farmers' training, general coordination and quality control over agricultural inputs. A growing functional collaboration between the two sets of organisations will be sought to be promoted through various measures. This will include exchange of personnel at suitable levels between agricultural universities and State departments of agriculture from time to time.

1.72. For certain homogenous areas, it would be necessary to set up area development organisations. For example, for development of command area of a major irrigation project, such an organisation will be necessary. This organisation may be invested with a suitable corporate status thereby enabling the officers of various concerned departments to operate with greater flexibility and in a more coordinated manner.

1.73. In the Fifth Plan, it is contemplated that the efforts of the State in the propagation of agricultural technology will be sought to be supplemented by non-governmental organisations. Cooperative organisations and commercial banks will be encouraged to provide farm advisory service in selected areas. Private consultancy on self-employment basis is also increasingly envisaged.

Agricultural Statistics

1.74. During the Fourth Plan, a scheme was initiated for timely reporting of estimates and area of production of principal crops. The schemes aim principally in providing estimates of area immediately after sowings and of production immediately after harvest. During the Fifth Plan, this scheme is proposed to be continued and enlarged in scope and coverage. Another Fourth Plan scheme which will be continued in the Fifth Plan, relates to studies of cost of cultivation of crops so as to provide comprehensive data on a continuing basis for helping in the formulation of price policies for agricultural commodities. One of the major developments proposed in the Fifth Plan relates to the establishment of a regular primary crop reporting agency in Kerala, Orissa and West Bengal where, at present, statistics of area and productions of crops are framed on the basis of sample surveys only. Another important scheme envisaged in the Fifth Plan relates to supervision of area enumeration and crop cutting experiments with the twin objective of furnishing reliable advance estimates through supervised samples and of providing the basis for effecting improvements in the studies, procedures of collection and compilation of area and production statistics. This scheme will be operated

under the auspices of the National Sample Survey organisation. The Fifth Plan also contains provisions for an extended programme of agro-economic research. Agricultural Census on a complete enumeration basis with 1970-71 agricultural year as reference was carried out during the Fourth Five Year Plan. A provision has been made in the Fifth Five Year Plan to repeat this on quinquennial basis so as to provide data available for the succeeding five years period.

Agricultural Inputs—Fertilizers and Manures

1.75. The consumption of chemical fertilizers in the base year of the Fifth Plan (1973-74) is estimated to be around 19.7 lakh tonnes of N, 6.2 lakhs tonnes of P_2O_5 and 4.1 lakh tonnes of K_2O . By the end of the Fifth Plan, the level of consumption is proposed to be raised to 52 lakh tonnes of N, 18 lakh tonnes of P_2O_5 and 10 lakh tonnes of K_2O . This order of increase will imply an annual compound growth rate of nearly 21.5 per cent in the case of N, 23.7 per cent in the case of P_2O_5 and about 19.5 per cent in the case of K_2O . The overall growth rate of NPK will be 21.7 per cent per annum.

1.76. For increasing the user of fertilizers, demonstrations and other programmes are currently in operation under the auspices of the State Governments as well as fertilizer manufacturers. In the Fifth Plan, much larger effort is envisaged in promoting the use of fertilizers. In this effort, the public sector, the co-operative sector and the private sector will all to be expected to play their part.

1.77. For promoting the balanced fertilizer use, substantial expansion of facilities of soil testing is envisaged. Presently there are 79 soil testing laboratories each with a capacity of 20 to 30 thousand samples per year. There are another 40 small laboratories each with a capacity of 3 to 10 thousand sample per year. In addition there are about 41 private soil testing laboratories. In the Fifth Plan, apart from strengthening of existing laboratories and improving their utilisation, another 150 static soil testing laboratories are envisaged. Mobile soil testing laboratories are also proposed to be added.

1.78. In the Fifth Plan, strengthening of distribution arrangements for chemical fertilizers is proposed to be given pointed attention. Under the cooperative development plan, it is envisaged that every primary multi-purpose society, having a wholtime secretary, will be enabled to operate a fertiliser retail depot. Strengthening of arrangements at the wholesale level is also envisaged. In the Fifth Plan, it is estimated that transportation, port handling and coordinated allocation in respect of nearly 20 million tonnes of domestic and imported fertilisers will have to be organised by Fertiliser Pool. Apart from development of adequate rail transport facilities, considerable expansion of port handling facilities will be essential. Increasing efforts will be made to switch over from part to bulk shipments for as many type of fertilisers as possible. Accordingly, provision has been made in the Plan for instalation of mechanised and semi-mechanised equipment for handling of bulk fertilisers at the concerned ports.

11.79. A substantial programme for development of local manurial resources is envisaged in the Fifth Plan. In respect of urban compost, a programme of **setting up of mechanical compost plants in 10 selected cities** is envisaged. In other urban centres also, a compost production programme will be taken up. It is also proposed to undertake sewage utilisation schemes during the Plan period. In respect of rural compost, it is proposed to implement a programme involving maximum utilisation of manurial resources in the rural areas. The Fifth Plan has provided for Rs. 9 crores for the development of local manurial resources in the Centrally sponsored sector of the Plan. This will be supplemented by provisions made in the State Plans.

Improved Seeds

11.80. In regard to improved seeds, in the Fifth Plan considerable attention is proposed to be paid by way of research work on seed technology. Alongside the variety evaluation trials, studies relating to important seed production aspects such as number of generations for seed renewal, germination behaviour, isolation requirements etc., are proposed to be undertaken.

1.81. The present arrangements for production of high quality breeder seeds continue to be inadequate. It would be necessary to identify the institutions where, under the supervision of selected breeders, the production of breeders' stock would be organised. In the Fifth Plan, additional facilities are proposed to be provided at such institutions. With regard to production of foundation seeds, the general policy so far has been to recognise the National Seeds Corporation as the principal agency in respect of hybrids and varieties of All-India importance. It is felt that the National Seeds Corporation will not be in a position to produce **adequate quantity of foundation seeds of hybrids and varieties of all-India importance**, especially of self pollinated crops like wheat, paddy and groundnut. While the major responsibility will continue to lie with the National Seeds Corporation, other agencies such as State Seed Corporation will also have to be increasingly involved in this work. In doing so, however, care will have to be taken to see that there is no deterioration in the quality of the foundation stock which must necessarily be the first generation progeny of breeders stock.

1.82. As present, except for six States, the National Seeds Corporation also acts as the seed certification agency. It is envisaged that, in the Fifth Plan, seed certification agencies will be set up in various States. In the initial stages, such agencies are not likely to be self-supporting financially. Hence it is visualised that in the Fifth Plan financial assistance may be provided to such seed certification agencies by the Central Government on the advice of the Central Seed Certification Board.

1.83. Another aspect which will need pointed attention in the Fifth Plan relates to arrangement for seed processing. It is estimated that, at the end of the Fourth Plan, the total capacity of seed processing plants will be about 1 lakh tonnes. In the Fifth Plan,

an additional capacity of about 4 lakh tonnes is proposed to be created. These plants will be mainly in the public and co-operative sectors.

1.84. One of the important lacunae in the seed programme has been the absence of suitable organisations in the States charged with responsibility for seed production and distribution. While the State directorates of agriculture have a number of seed multiplication farms, the quality of their operation has been markedly uneven. It is contemplated that, in the Fifth Plan, States will set up Seed Corporations in which the National Seeds Corporation may also be share holder.

1.85. In the Fifth Plan, a scheme will be taken for building up reserve stock of seeds to be drawn upon in the event of natural calamity. Such reserve stock will be maintained at the State level by the State Seeds Corporations and, at the central level by the National Seeds Corporation, as agents of Government. Provision to this effect have been made in the Central and State Plans.

1.86. In the Fifth Plan, while the activities of State Farms Corporation of India will be expanded, it is envisaged that its production should be increasingly geared towards multiplication of certified seeds. Hence a suitable tie-up between the National Seeds Corporation and the State Farms Corporation of India is proposed to be considered for adoption. It is also contemplated that, with assistance of ICAR scientists, SFCT will play a part in pre-release seed multiplication.

1.87. While seed programmes in respect of cereals have gathered some momentum, the production of vegetable seed will have to be given much greater attention in the Fifth Plan. One of the difficulties in the production of quality seeds have been the lack of foundation and breeder seeds. A plan scheme is being proposed for the production of breeder seed and vegetable seeds in which the NSC and the ICAR institutions will collaborate.

Plant Protection

1.88. In the Fifth Plan, a significant step-up in the plant protection programmes is envisaged. It is estimated that, on the eve of the Fifth Plan, the level of pesticide consumption would be around 45,000 tonnes. In the Fifth Plan, this will be sought to be raised to 74,000 tonnes of annual consumption of pesticides. The achievement of this target will necessarily entail much more intensive extension work.

1.89. During the Fourth plan, a beginning was made in setting up a pest surveillance, forecasting and warning service. Seven districts were chosen where this was to be taken up as pilot project. Scientific collection of data for recording pest build up with the pest surveillance forecasting and warning service will enable the farmers to take appropriate plant protection measures at the right time. This will enable not only the minimum use of pesticides and thereby contributing to lessening of pollution but will render the plant protection measures far more effective in the control of pests and minimizing the damages

caused by such of these pests or diseases. During the Fifth Plan, it is considered necessary to provide for a viable pest surveillance and forecasting and warning service all over the country.

1.90. The most important element in plant protection effort will be the adoption of prophylactic measures. One of the draw backs has been that plant protection measures have not been taken up on institutional basis. It would be essential, therefore, in the Fifth Five Year Plan to set up adequate ground spraying organisations which could be built around co-operative societies, agro-service centres, registered societies or through self-employment schemes for agriculture graduates. Financial assistance for setting up such units would be necessary and will be provided under the State Plans. It is only through organised ground spraying institutions that meaningful results can be achieved for plant protection measures.

1.91. Aerial spraying of pesticides has been strengthened in the Fourth Five Year Plan and the area so treated increased to 2.73 million acres in 1971-72. For some crops like cotton, sugarcane, etc. when the plants are fairly tall, plant protection can be best achieved through spraying of pesticides from the air. Aerial spraying also becomes necessary where control of pests, appearing in epidemic scale, is required to be achieved in the shortest possible time in largest areas. The small aerial units established under the Directorate of Plant Protection Quarantine and Storage was converted into a full-fledged Directorate of Agricultural Aviation for doing commercial aerial spraying operations or in the alternative to set up a public sector agro-aviation corporation. Roughly about 25-30 per cent of aerial spraying operations would be done in the public sector through such fleet. Some of the State Governments have also encouraged-quasi-Governmental institution like Agro-industries Corporation or the Cooperative Marketing and supply Fedration to take up aerial spraying. The Indian designed fixed wing agricultural aircraft will also be available in large numbers in the Fifth Five Year Plan.

Agricultural Implements and Machinery

1.92. In the Fifth Plan, a policy of selective mechanisation is proposed to be adopted. The general objective would be to increase cropping intensity and farm productivity. The present availability in terms of power is estimated at 0.4 H.P. per hectare (of which machine power is only one-fourth) in the country. This is extremely inadequate and will need stepping up. There is also the allied consideration that the new agricultural technology requires faster farm operations as well as accuracy and timeliness in undertaking them. Finally, there is the emerging problem of increasing cost of purchasing bullocks and their recurring maintenance. While all these factors underlie the need for farm mechanisation, the rate and form of mechanisation will have to be determined keeping in view other relevant factors such as the size of holdings as well as the impact of mechanisation on agricultural labour employment situation. The last consideration would be particularly relevant with regard to combine harvestors. Their introduction would be confined to areas where there is a perceptible scarcity of labour during harvest season.

1.93. It is estimated that the current demand of tractors is 35,000 to 40,000 a year. By the end of the Fifth Plan, it is likely to rise to 80,000 units annually. As regards power tillers, the demand is expected to rise from about 3500 units to about 20,000 units. On the basis of these projections, the population of tractors in the country will move from 200,000 to 500,000 in the course of the Fifth Plan. Similarly, the number of power tillers will increased from about 10,000 to 100,000. In the context of expansion of the programme of agricultural implements, and machinery, both the research and the training aspects will have to be given pointed attention. For intensification of research efforts, the Fifth Plan visualises a new central institute of agricultural engineering. With regard to training of operators and machanics, the existing facilities are proposed to be strengthened. Training facilities in the use of tractors at the Budni and Hissar centres are being increased to train more than 350 persons earlier envisaged. The centres have to be considerably strengthened. Special course on operation, maintenance and repair of agricultural machinery have to be organised for engineering students. Establishment of an additional fourth tractor training centre in addition to three existing ones is also envisaged. Expansion of workshop wing at the Extension Education Institute, Nilokheri which is imparting practical training to village artisans in manufacture, repair and maintenance of agricultural machinery is also visualised.

1.94. The introduction and popularisation of improved tools and implements have also to be given greater stress, specially in the interest of small farmers. For improved implements, special schemes for trials and demonstrations of implements like seed-cum-fertilizer drills would have to be undertaken. Further, organisation of a prototype production designing centre, spread of the knowledge of design features and functional performance of the equipment under various crops and soil conditions, needs to be undertaken.

1.95. A scheme for establishment of agro-service centres has been recently taken up under the Fourth Plan. Besides offering employment and services to the farmers, the scheme has created impact to generate entrepreneurship among the qualified technical personnel. In the long run, it is envisaged to generate adequate training facilities by establishing 14 training cells with agro-industries corporations in different States. In the Fifth Plan period, the scheme is proposed to be continued by:

- (i) Strengthening the existing training cells with regard to equipment and staff;
- (ii) establishment of additional training cells in six other States not covered at present by the schemes; and
- (iii) providing incentives to entrepreneurs and other personnel working for the scheme.

1.96. During the Fourth Plan, agro-industries corporations have been set up practically in all major States in the country. The corporations were designed primarily to provide custom service facilities

for the use of agricultural machinery and implements in addition to undertaking distribution of farm equipment. In some cases, the corporations have tended to accord a somewhat lower priority to this aspect and engage themselves in various other activities. It will be desirable that, in the Fifth Plan, the activities of these corporations are re-oriented with a view to focussing on the main purpose for which the corporations have been set up. Apart from the custom service centres which individual entrepreneurs would set up there is a very large scope for the role to be played by the agro-industries corporations in this regard. This is particularly so in regard to the expanded programme envisaged, for small farmers development agencies in the Fifth Plan.

Irrigation

1.97. The Fifth Plan visualises a significant expansion of irrigation facilities. The details in respect of the minor irrigation programmes as well as major and medium irrigation projects are given in a separate chapter on Irrigation, Command Area Development and Flood Control.

Soil and Water Conservation

1.98. One of the major problems in regard to land and soil management concerns the present lack of adequate knowledge about these resources. No proper nation-wise survey has been carried out so far. About 4 per cent of the total area is understood to have been subjected to a detailed survey and about 27 per cent under a reconnaissance survey. During the Fifth Plan, attention will be given towards building up soil survey organisations in the States for undertaking detailed and semi-detailed surveys in problem areas as a pre-requisite for proper land and soil management programmes. It is also proposed to build up a strong central soil survey organisation which will aim at collection and interpretation of the data for the country as a whole. The data thus compiled is proposed to be utilised for preparation of a soil map of India at 1 : 1 million scale.

1.99. In the Fifth Plan, soil and water conservation is proposed to be undertaken in an area of about 9 million hectares. Thus, by the end of the Fifth Five Year Plan, total area benefiting from soil and water conservation measures will increase from 18 million hectares to 25 million hectares. During the Fifth Plan, this programme will be executed on the watershed basis treating all types of lands in the watersheds by suitable soil conservation measures. Land levelling and shaping will be an important component of the programme where land treatment measures like contour bunding and terracing are undertaken. In the hill areas, the major programme will consist of bench-terracing with inward slope and will be restricted to 35 per cent sloping land. Construction of farm ponds, silt detention tanks above the gully plugs will be utilised for water harvesting. In the low rainfall area, the programme will be oriented for conservation and maximum utilisation of the conserved water for crop production. Bench terracing will be the main

programme in areas where 'Jhum' (shifting) cultivation is being practised. It will also provide permanent base for development of agriculture, horticulture, forestry and rehabilitation in such areas. On non-agricultural land emphasis will be on grassland management and improvement, horticulture development and plantation of economic species.

1.100. In the Fourth Plan, in the centrally sponsored sector, a programme for soil conservation in the catchment area of 21 major irrigation projects has been in operation. In the Fifth Plan, it is proposed to continue the work in these catchments and take up nine new catchments. In this programme, priority will be given for treatment of all the critically eroded areas.

1.101. In the Fourth Plan, pilot projects were introduced for reclamation of ravine lands with a view to determine the technical and economic feasibility of ravine land for agricultural purposes. Based on the experience gained in these pilot projects, States would now have to take up developmental programme with the assistance of institutional finance. Reclamation of ravine lands does not in itself go to the root of the problem. It is necessary to see that the table lands are prevented from degenerating into ravines. Accordingly, during the Fifth Plan, the emphasis will be on stabilisation of the table lands. For this purpose, pilot projects are proposed to be taken up in Gujarat, Rajasthan, Madhya Pradesh and Uttar Pradesh.

1.102. Significantly large areas in the country are estimated to have been affected by salinity and alkalinity. In the Fifth Plan, pilot projects are proposed to be taken for reclamation of such lands. These projects will involve use of suitable soil conditioners, such as gypsum coupled with suitable crop varieties and agronomic practices.

Agricultural Credit ..

1.103. It is estimated that, by the end of the Fifth Five Year Plan, the annual short-term production credit requirements for the country as a whole would be around Rs. 3000 crores. One of the endeavours in the Fifth Plan would be to increasingly institutionalise such production credit. Accordingly it is contemplated that, during 1978-79, the volume of short-term credit advanced by co-operatives and commercial banks would be about Rs. 1700 crores. As far as investment credit is concerned, for the five years of the Fifth Plan, the target contemplated is Rs. 2400 crores with the following as the break-up.

	(Rs. crores)
(i) cooperatives	
(a) medium term	325
(b) long term	1500
(ii) commercial banks	575
<i>total</i>	2400

1.104. A major objective in Fifth Plan would be to ensure a substantial increase in the flow of institutional credit to small farmers, marginal farmers and

other weaker sections of the society. The investment policies and the procedures of the financing institutions would be sought to be suitably modified to achieve these objectives. It is expected that about 40 per cent of the short-term production credit to be provided by various financing institutions will be in favour of small farmers. In other words, out of Rs. 1700 crores of short-term credit to be provided by co-operatives and commercial banks during the last year of the Fifth Plan, about Rs. 680 crores will be in favour of small farmers. Further the specific programme of Farmers Service Societies, recommended by the National Commission on Agriculture, oriented in favour of small and marginal farmers will be tried out in areas where programmes for small and marginal farmers are being undertaken.

1.105. As far as the programmes relating to co-operative credit are concerned, these are dealt with in detail in the separate chapter on Cooperation. Next to co-operatives, the most important source of agricultural financing in the Fifth Plan will be commercial banks. It is expected that the commercial banks will be providing in the terminal year of the Fifth Plan a sum of Rs. 400 crores as short term loans and about Rs. 575 crores as term loans during the Fifth Plan period.

1.106. During the Fifth Plan, the commercial banks will follow the policy of opening more rural branches in the States where investment from such banks has been low during the Fourth Plan period. In regard to 'village adoption' and such other specific measures that are to be taken by commercial banks, stress will be laid on areas where the effect of commercial banks finance on agriculture has been comparatively weak. The commercial banks would also require attitude transformation in gearing up their machinery to look after the needs of small and marginal farmers in a large measure than hitherto possible. Specific measures in regard to recruitment and training of personnel to achieve this end will be planned adequately in advance.

1.107. Apart from the administrative and legislative measures that have been recommended by the Talwar Committee for adoption by the State Governments, more vigorous measures would need to be initiated by the State Governments to rationalise some of the laws relating to alienation of land in favour of financing agencies, maintain up-to-date land records, introduce agricultural holding credit cards for all individual farmers and ensure better rural communications, ensure better means of storage and transport of agricultural commodities, arrange for adequate and timely supply of inputs and ensure purposeful rapport with institutional credit agencies at all levels. This would be necessary in order to ensure that the commercial banks can achieve the targets proposed above.

1.108. The Agricultural Refinance Corporation is expected to provide refinance facilities for agricultural development programmes exceeding Rs. 600 crores during the Fifth Plan period. To reduce the existing wide regional imbalances, deliberate efforts will be

made to accelerate the rate of investment in the weaker States. To facilitate larger investment in weaker States particularly in the Eastern region consultancy services are proposed to be set up which would assist in the formulation, implementation and appraisal of the A.R.C. schemes in the areas falling within their regions. Greater attention is proposed to be paid by the State Governments in strengthening the State ground water organisations and in building up expertise for preparation, appraisal and evaluation of special schemes refinanced by Agricultural Refinance Corporation.

1.109. Financing of small farmers would assume greater importance in the Fifth Plan period. The Agricultural Refinance Corporation presently provides 100 per cent refinance facility in respect of viable schemes of agricultural development initiated by the Small Farmers Development agencies as against 90 per cent for minor irrigation schemes and 75 per cent for other schemes. This facility is proposed to be continued during the Fifth Plan period. It is further contemplated that instead of providing 90 per cent refinance facility for minor irrigation schemes and 75 per cent for other schemes, a uniform approach will be followed and refinance facility in respect of all viable schemes will be of the order of 90 per cent. Further the Agricultural Refinance Corporation will give pointed attention to diversification of investment particularly animal husbandry, fisheries and forestry.

Agricultural Pricing

1.110. In the Fifth Plan, the policy governing agricultural prices is proposed to be carefully designed. In designing this policy, two main considerations are intended to be pointedly kept in view. Firstly, while price policy is recognised as having a role in providing incentive for sustained and higher production, it can be effective essentially as a complementary measure to other programmes for increasing the agricultural production. Secondly, a discriminating manipulation of inter-crop price relationship can help to induce the farmers to plan the production of different crops in line with the estimated demand. The price policy has to be particularly tailored with care in respect of such crops as to have too high supply elasticity.

1.111. By and large, if the targets of production visualised in the Fifth Plan fructify, there will be a balance between demand and supply in respect of individual crops. Even so, a growing volume of procurement and distribution through public and co-operative agencies is visualised in respect of several agricultural commodities to protect the interests of consumers particularly the vulnerable sections. This is another important aspect which will need to be kept in view while structuring the agricultural price policy from time to time.

1.112. It is contemplated that, in respect of food-grains, a distinction between minimum support price and procurement prices would be sought to be maintained in the Fifth Plan period. Minimum support prices based on cost of production and other relevant factors would be announced for all important food-grains crops prior to the sowing season. The procurement prices which may be announced later will usually

be fixed in terms of a premium over and above the minimum support price. The procurement prices thus fixed will naturally take into account the size of the anticipated crop in addition to the requirements of public distribution and buffer stocking.

1.113. As regards commercial crops, it is contemplated that, in the Fifth Plan, minimum support prices will continue to be fixed for cotton, jute, important oilseeds and other crops. From time to time, fixation of purchase prices by the public sector organisation will also be necessary. These purchase prices may be fixed in terms of premium over and above the minimum support price. This would be necessary for building up a buffer stock of individual commercial crops. Such a buffer stock may be used in conjunction with the import and export policies, as an instrument of price stability in commercial crops.

Agricultural Marketing

1.114. In the Fifth Five Year Plan, there is need to hasten the legislation in the States where there is no Act to regulate the markets. The objective of the Fifth Plan would be to regulate about 670 assembling markets out of about 800 such markets which remain to be regulated. Assistance from the institutional agencies for development of markets is likely to be forthcoming in a bigger way. During the Fifth Plan, Central Sector scheme of providing margin money to market committees is intended to be continued.

1.115. Existing Agmark laboratories need to be strengthened considerably. New regional Agmark laboratories are proposed to be set up in places like Jaipur, Bhopal, Chandigarh, Bhubaneswar and Shillong. It is also intended to have a Consultative Committee with the representatives of various expert bodies in the country to help in the formulation of suitable standards and advise the Central Agmark Laboratory. A great deal of extension work has to be done to undertake consumer education in the Fifth Plan to popularise Agmark goods. Farmers also need to be educated about the importance of grading.

Storage and Warehousing

1.116. In the Fifth Plan it is contemplated that the total storage capacity with various institutions, should be increased from about 131 lakh tonnes at the beginning of the Plan to about 218 lakh tonnes at the end of the Plan period. The following is the agency-wise distribution :

	(in lakh tonnes)	
	(1)	(2)
	owned storage capacity likely at the end of the 1973-74	1978-79 tentative target
	(0)	(2)
Food Corporation of India	56.0	83.0
Central Warehousing Corporation	10.0	27.0
State Warehousing Corporation	9.0	22.0
State Governments	18.0	18.0
Co-operatives	38.0	68.0
Total	131.0	218.0

1.117. During the Fifth Plan period, Food Corporation of India will be expected to raise about 1/3 of its financial requirements for storage capacity from financing institutions and out of its own surplus resources. The total cost of 2.7 million tonnes of storage capacity assigned to Food Corporation of India will be about Rs. 67 crores. Of this, the Food Corporation of India will seek to arrange about Rs. 27 crores through financing institutions and out of its own surplus resources and the balance of Rs. 40 crores may be provided out of the budgetary resources. Similarly, the Central Warehousing Corporations will be required to resort to institutional financing for a part of their investment funds. The total cost of warehousing programme to be undertaken by these institutions during the Fifth Plan period will be Rs. 65 crores. Of this, the budgetary support is proposed to be restricted to Rs. 55 crores.

1.118. During the Fourth Plan period, certain measures have already been taken to improve storage facilities at the farm level. However, the results obtained so far are quite inadequate to match the problem. During the Fifth Plan period larger effort will, therefore, be necessary to improve storage conditions at farm level by strengthening the Save Grain Campaign and supply of storage bins to the farmers. A sum of Rs. 10 crores has been provided for this programme.

IV

SPECIAL PROGRAMMES FOR FOOD GRAIN CROPS

Wheat

1.119. The production of wheat in the five years of the Fourth Plan is likely to be around 126 million tonnes. As against this, the five-yearly target of production for the Fifth Plan is placed at 168 million tonnes. For operational purposes, the Fifth Plan peak level target for production of wheat is set at 38 million tonnes in 1978-79 against the base level production of 30 million tonnes assumed for 1973-74. Wheat production is thus envisaged to grow at an annual compound rate of 4.8 per cent, comprising increase in area at the rate of 2 per cent and growth in productivity at the rate of 2.8 per cent. This is as against the following historical growth rates:

(growth rates in per cent)

	production	area	yield
1949-50 to 1959-60	4.5	3.5	0.7
1960-61 to 1971-72	8.76	3.41	5.17
combined (1949-50 to 1971-72)	5.44	2.65	2.72

1.120. The bulk of additional wheat production is expected to be contributed by the high yielding varieties programme. The area under HYV wheat is targeted to grow from 10.80 million hectares at the beginning to 15.00 million hectares at the end of the Fifth Plan. Besides extension of area, growth in wheat output will be sought to be obtained by securing

increased yield from existing area under high yielding variety of wheat. The overall productivity of wheat has still a considerable scope for improvement. In this connection, pointed attention is proposed to be given in the Fifth Plan to the emerging seed problems, namely, new strains of rust, insufficient availability of pure seeds of newly released varieties and deficiency of micr-nutrients.

1.121. Alongside programmes of extension and development, wheat will continue to receive research support during the Fifth Plan period. It is proposed to intensify work on the breeding of wheat for rainfed conditions which prevail in major areas in Central and Western region of the country. Quality tests will be increased in number and scope in order to identify varieties suitable for making bread, biscuits, cakes and macroni. Much of the baking industry has been depending upon imported wheat which must be replaced by home grown wheat. Detailed tests have shown that Sharbati Sonara, Hira, U.P. 302 and U.P. 303 are suitable for bread making. The extension of area under these varieties will be attempted with a view to meet the needs of the baking industry in the country. Work on diseases of wheat will be greatly intensified, specially on rust, for which it is proposed to develop a major centre at the Indian Agricultural Research Institute, New Delhi, besides organising a wheat rust survey.

Rice

1.122. The production of rice over the Fourth Plan period is likely to be about 208 million tonnes. The total production of rice during the Fifth Plan period is targetted at 254 million tonnes. For operational purposes, the Fifth Plan envisages a production level of 54.0 million tonnes at the end of the Plan over the assumed base level production of 44.0 million tonnes in 1973-74. Production of rice is visualised to move at an annual compound growth rate of 4.2 per cent per annum. While the area is expected to register a compound growth rate of 0.8 per cent, productivity is required to increase at the rate of 3.4 per cent per annum. The following are the historical growth rates in respect of rice :

growth rates in per cent

	production	area	yield
1949-50 to 1959-60	3.3	1.0	2.2
1960-61 to 1971-72	1.88	0.77	1.10
combined (1949-50 to 1971-72)	2.88	1.15	1.71

It will be seen that the task in the Fifth Plan is much bigger than the accomplishment in respect of rice in the past.

1.123. The major portion of the additional production of 10.0 million tonnes envisaged during the Fifth Five Year Plan will be contributed by the high yielding varieties programme. The area under HYV paddy is targetted to increase from 10 million hectares to 16.5 million hectares during the Fifth Plan period. So far, the HYV programme has not made

a significant impact on rice production and its yield mainly due to the fact that the new rice varieties required adequate attention to pest control and water management practices and other associated technology. Moreover, the adoption of new agronomic practices has not been generally to the desired extent at the cultivator's level. Through an expanded programme of demonstrations and trials on new varieties of HYV rice, it is proposed to expand the cultivation of rice varieties ideally suited for different agro-climatic zones. As a supplemental measure, arrangements for seed multiplication and plant protection will also be strengthened. Considerable emphasis will be given to extension of paddy during rabi and summer season which have provided better yield than in Kharif. Technological base for rice production will be strengthened by expanding rice cultivation in controlled irrigation areas.

1.124. The All-India Coordinated Rice Improvement Project (AICRIP), charged with the responsibility of initiating a common national programme and integrating the research efforts, made an effective thrust in the programme of breeding high yielding varieties of rice since its inception in 1965. Research efforts under this All India Coordinated Project, having 7 zonal, 12 regional and 5 testing centres, will be intensified. The rice growing area of the country has been organised into 7 zones taking into account the agro-climatic differences.

1.125. The research, involving multi-disciplined approach, has resulted in the release of 14 varieties of dwarf habit and high yielding ability. 14 more varieties have been identified as high yielding and have been recommended for pre-release multiplication or adaptive tests in order that the best of them could be selected for final release. These varieties represent a duration of about 90 to 170 days and some of these have excellent grain quality and may rapidly replace the order high yielding varieties like Vijaya and IR-8. Notable of these varieties are Krishna, Sabarmati, Jamuna, Ratna, IET 1039, IET 1136, IET 1991, New Sabarmati, IR-20 and Jagannath. Particular attention is being given to breeding of rice varieties resistant to gallmidge and for testing varieties against bacterial leaf blight.

1.126. By crossing some of the best dwarf varieties with floating rices, an attempt will be made to have dwarf floating varieties which can withstand deep water conditions also. The varieties presently available are suitable mainly for conditions of water drainage and water control which do not obtain in many of the important rice-growing areas. On of the directions in which experiments will receive emphasis in the coming years will be in identification, breeding, and testing of varieties suitable for direct seeding, under rainfed, irrigated, upland as well as wetland conditions.

1.127. Considerable progress yet needs to be made in the breeding of varieties resistant to pests and diseases. Currently available good strains, having varying degrees of resistance, have to be carefully screened under conditions which require the use of green houses or insect chambers which will be added at

suitable research centres. Some strains already identify as highly resistant to gallmidge are now ready for large scale tests. Resistance to tungro virus and leaf hopper in a fair measure is available in Vijaya and IR-20 but it needs to be increased still further with the help of breeding material developed in India and elsewhere. Similar measures for breeding varieties resistant to bacterial leaf blight will also be undertaken by addition of facilities at the suitable centres.

1.128. A pilot project on biological control of paddy pests will be taken up in addition to intensification of the present modest programme and pest survey and surveillance.

Maize

1.129. The production of maize over the five years of the Fourth Plan is likely to be 30 million tonnes. As against this, the target for the five years of the Fifth Plan is set at 37 million tonnes. Operationally, the Fifth Plan peak level target for production of maize is 8.0 million tonnes over the base level production of 6.5 million tonnes in 1973-74. The production of maize is expected to grow at an annual compound growth rate of 4.2 per cent during the Fifth Five Year Plan. The bulk of the additional production is expected to come mainly through increase in the productivity per unit of area. Growth rate in productivity of maize is visualised at 2.6 per cent per year and growth in area at 1.6 per cent. This envisaged growth rate in production of maize is against the following historical growth rates:

(growth rate in per cent)

	production	area	yield
1949-50 to 1959-60 . . .	4.3	3.0	1.3
1960-61 to 1971-72 . . .	3.52	2.99	0.53
combined (1949-50 to 1971-72)	3.74	2.81	0.91

The additional production of maize will be realised mainly by expanding the area under HYV and with proper management of agronomic practices and fertilizer application in non HYV areas. The estimated area coverage under HYV maize at the end of the Fourth Plan is 0.60 million hectares and it is targeted to increase to 1.0 million hectares at the end of the Fifth Plan period.

1.130. An All-India Coordinated Maize Breeding Project has been operating as 17 centres representing different maize growing regions of the country. Research efforts under the project will be directed during the Fifth Plan particularly for evolving varieties most suitable for different agro-climatic zones. Efforts will be made to breed composite varieties possessing the desired earliness as well as resistance to downy mildew, stalk rot, and leaf blight which threaten the growth of crop frequently. Suitable composites, possessing requisite characteristics, may help farmers to cut down cost on plant protection measures. With the production costs becoming reasonable and short early maturing maize composites or varieties finding a place in more intensive cropping pattern than what is followed now, there is possibility of producing

enough maize including for use as livestock feed. Introduction of dent varieties which are acceptable for livestock feed can pump up yields substantially. Attention will, therefore, be paid also to breed varieties which are most suitable for this purpose.

Jowar

1.131. Over the five years of the Fourth Plan, the total production of jowar is likely to be 42.0 million tonnes. As against this, the five yearly target for Fifth Plan is placed at 51.0 million tonnes. For operational purposes, the Fifth Plan envisages a peak production level of 11.0 million tonnes over the assumed base level production of 9.5 million tonnes in 1973-74. During the Fifth Plan, production of jowar is targeted to grow at an annual compound growth rate of 3.0 per cent per annum. Productivity increase is visualised at 2.4 per cent and growth in area at the rate of 0.6 per cent. The following are the historical growth rates in respect of jowar:

(growth rate in per cent)

	production	area	yield
1949-50 to 1959-60 . . .	2.8	1.1	1.6
1960-61 to 1971-72 . . .	(-) 0.73	(-) 0.43	(-) 0.30
combined (1949-50 to 1971-72)	1.48	0.54	0.93

The additional production of jowar is expected to be contributed mainly by increase in the area under HYV and by improvement in the agronomic and crop management practices. The area under HYV jowar at the end of the Fourth Plan is expected to be 1.15 million hectares and is targeted to go up to 2.50 million hectares at the end of the Fifth Plan period.

1.132. Research efforts in respect of jowar are in progress under the All-India Coordinate Research Project for improvement of sorghum at 10 main Centres and three Sub-Centres. The research programme on diseases and new pests would be strengthened. One of the problems in respect of HYV/Hybrid jowar has been the inability of the present varieties to meet the consumer demand and also suit the agro-climatic conditions in large areas of production. Research efforts will, therefore, be directed and intensified for improving the quality of grain and fitting the varieties of the agro-climatic requirements. HYV and Hybrids having a long duration than already released varieties and possessing a fair degree of tolerance to shoot fly will also be evolved particularly to meet the needs of heavy rainfall areas.

Bajra

1.133. Over the Fourth Plan period, the total production of bajra is expected to be around 30 million tonnes. As against this, the target for the five years of the Fifth Plan is placed at 37.0 million tonnes. For operational purposes, a base level production of 6.5 million tonnes is assumed and a peak level production of 8 million tonnes is targeted. The production of bajra is envisaged to grow at an

annual compound rate of 4.2 per cent during the Fifth Plan. Much of the increase in production will be through higher productivity. The growth rate in productivity is visualised as 3.4 per cent and the growth rate in area at 0.8 per cent. This is as against the following historical growth rates :

	(growth rate in per cent)		
	production	area	yield
1949-50 to 1959-60	3.2	2.0	0.7
1960-61 to 1971-72	5.39	1.10	4.56
combined (1949-50 to 1971-72)	3.14	1.04	2.03

The additional production will be realized mainly by expansion of area under HYV, combined with improvement in crop management practices and fertilizer use. The estimated area coverage under HYV bajra at the end of the Fourth Plan is 3.0 million hectares and it is targeted to increase to 5.0 million hectares at the end of the Fifth Plan period.

1.134. With intensity of cultivation and high yield potential of hybrids, the problems of pests and diseases have assumed serious proportion in respect of bajra. Research efforts are in progress under the Coordinated Project having a nucleus of coordinated unit and 7 centres. An integrated strategy for control of downy mildew and ergot by suitable management practices, change in dates of sowing, seed treatment and spray of fungicides is in progress. It is proposed to strengthen the existing programme during the Fifth Five Year Plan by improving the technical support in the Coordination Unit and by strengthening the research programme on disease and new pests. Bio-chemical and physiological measures, and other techniques providing resistance in strains to drought and disease will be evolved under the research efforts, Chemical control of vectors of viruses of bajra and ragi capable of infecting other cereals will also be attempted. Multiplication of breeders and nucleus seed free from seed borne diseases will be paid special attention. Research relating to testing procedures and intensification of prophylactic and chemical control measures against shoot fly midge, and white grubs in the traditional areas of bajra cultivation will also be intensified.

Pulses

1.135. In the Fifth Plan a significant increase in production of pulses is proposed to be aimed at. Over the five years of the Fourth Plan the total production of pulses anticipated is around 55.0 million tonnes. Against this, the target for the five years of the Fifth Plan is placed at 65.0 million tonnes. For operational purposes, a base level production of 11.5 million tonnes is assumed and a peak level production of 14 million tonnes is targeted. These targets imply an annual compound growth rate of 4.0 per cent. This return, is composed of area growth of 1.3 per cent and productivity growth of 2.7 per cent. This is against the following historical growth rates :

	(growth rates in per cent)		
	production	area	yield
1949-50 to 1959-60	3.1	3.0	0.1
1960-61 to 1971-72	(-) 0.48	(-) 0.94	(-) 0.55
combined (1949-50 to 1971-72)	0.72	0.79	0.11

It is obvious that the task envisaged in the Fifth Plan is unprecedented. This is, however, necessary from the point of view of nutritional requirements of the mass of the people. It may be added that the peak production level of 14 million tonnes will still be short of the demand for pulses which is estimated at 16 million tonnes by the end of the Fifth Plan.

1.136. While the past performance of pulses is very discouraging, the Fifth Plan targets have been fixed on the basis of some promising development. Even the limited research work done so far has helped to locate or develop pulse varieties which, by virtue of their early maturity or non-photo sensitiveness, can be grown in non-conventional seasons or inserted in the present day pattern of agriculture adopted in well endowed lands without disturbing the high yielding cereal or other economically dominant components of the rotation. Thus the identification of short duration in varieties of arhar makes it possible to take a crop of arhar before the Rabi crop of wheat. The identification of non-photo sensitive varieties of moong, urd and lobia which can be grown in summer in the vast areas of land lying fallow in North India opens up great potentialities. Another important promising approach is through inter-cropping. There are also distinct possibilities of increasing pulse yield by phosphatic fertilization and control of pests and diseases.

1.137. In the Fifth Plan, it is proposed to exploit the above research indications through suitable development programmes. Towards the close of the Fourth Plan, a programme of intensive pulses district programme has been initiated. This programme will be continued and intensified in the Fifth Plan. The programme will aim at adoption of package of practices involving use of improved seeds, phosphatic fertilizers, rhizobial culture and plant protection campaigns. In area outside this intensive district programme, minikit programme for major pulses crop is proposed to be taken up. Another direction in which efforts to increase production will be made will concern extension of pulses to additional areas. For this purpose, pulse crops will be sought to be introduced by catch cropping, inter-cropping and mixed cropping with cereals, millets, cotton, groundnut and sugarcane etc.

1.138. Alongwith development programmes, research on pulses is proposed to be stepped up in the Fifth Plan. An all India Coordinated Research Period on pulse crops is currently in operation at ten centres. This project is proposed to be strengthened and will aim at tackling the following programmes :

- (i) Investigation of the possibilities of pulses varieties for conditions under which cereals or millet crops give low yields
- (ii) Breeding of varieties suitable as catch crops to replace monsoon fallows
- (iii) Standardization of techniques for fertilizers application
- (iv) Development of pest control schedules
- (v) Development of suitable bacterial culture

- (vi) Development of more effective agronomic practices

1.139. Another direction in which efforts will be made in the Fifth Plan will concern improvement in the facilities for processing of pulses. At present, there are over ten thousand dal mills, but their out-turn is satisfactory. Modern methods of processings are known to increase the out-turn by about 10 to 20 per cent. In the Fifth Plan, measures are contemplated for initiating a programme of modernisation of dal milling industry.

V

SPECIAL PROGRAMMES FOR COMMERCIAL CROPS

Oilseeds

1.140. The demand for vegetable oils by the end of the Fifth Plan is estimated about 43 lakh tonnes. This includes a requirement of about 23.5 lakh tonnes for liquid edible use. The rest of the demand is on account of other purposes including a provision for export of castor oil as well as 75,000 tonnes of HPS groundnut. Against the total demand, it is contemplated that, through appropriate policies, about 8.7 lakh tones of edible oil supply may be secured from various miscellaneous sources such as cotton seed, rice bran and coconut. This will leave the balance demand of about 35 lakh tonnes to be met by cultivated oilseeds. For this purpose the required level of oilseeds production (five major oilseeds plus soyabean and sunflower) is estimated at about 12.5 million tonnes.

1.141. In order to aim at self-sufficiency in edible oils, a big step-up in the production of oilseeds in the Fifth Plan is contemplated. It is proposed to aim at a production of 55.0 million tonnes of oilseeds over the five years of the Fifth Plan as against an anticipated production of about 41.5 million tonnes in the course of the five years of the Fourth Plan. For operational purposes, a base level production of 9.4 million tonnes of oilseeds is assumed and this is targetted to increase to a peace level production of 12.5 million tonnes in the course of the Fifth Plan.

1.142. The annual compound growth rate envisaged in the above targets is 5.8 per cent. This is composed of growth in area of 2.4 per cent and growth in productivity of 3.4 per cent. This is as against the following growth rates :

	(growth rate in per cent)		
	production	area	yield
1949-50 to 1959-60	3.4	2.7	0.7
1960-61 to 1971-72	1.8	0.4	0.8
combined (1949-50 to 1971-72)	2.76	1.92	0.25

It is obvious that the task visualised for the Fifth Plan involves a far greater effort than what has been accomplished in the past.

1.143. For achieving a growth rate in production of 5.8 per cent, it is contemplated that a growth rate of about 2.4 per cent in area and 3.4 per cent in yield will have to be sought. The following table

gives the crop-wise position :

Table 10 : Fifth Plan—Targets of Production and area of oil seeds

crop	base year (1973-74)			target for fifth five year plan		
	area (mill. hect.)	yield (kg./ hect.)	prodn. (mill. tonnes)	area (mill. hect.)	yield (kg./ hect.)	prodn. (mill. tonnes)
1. groundnut	7.50	800	6.00	8.00	961	7.65
2. rape-mustard	3.30	576	1.90	3.50	629	2.20
3. sesamum	2.50	208	0.52	2.70	251	0.65
4. linseed	1.70	276	0.47	1.70	288	0.49
5. castor	0.40	350	0.14	0.50	460	0.23
6. soyabean	0.10	700	0.07	0.43	930	0.40
7. sunflower	0.35	857	0.30	0.93	970	0.90
total	15.85	593	9.40	17.76	707	12.52

1.144. Among the programmes for development of oilseeds, one of the priority programmes relates to extension of oilseeds in non-traditional areas. The Sunderabans of West Bengal where a vast area of 400,000 hectares remains fallow during the summer season offers good scope for the introduction of sunflower. Exploratory demonstrations have shown that they can be successfully cultivated in the area. Large scale introduction of sunflower will, therefore, be taken up in Sunderbans. The targets fixed for the end of the Fifth Plan are 100,000 hectares of sunflower.

1.145. The percentage of irrigation area under oilseeds, which is at present barely 5 per cent, needs to be considerably increased, in order to enhance the production and also to enable the production to be stabilised. For this purpose, special emphasis is proposed to be given in the Fifth Plan on the development of oilseeds under major irrigation projects. It is estimated that there are possibilities of extending irrigation facilities to about two million hectares of oilseeds during the Fifth Plan as against one million hectares likely to be reached by the end of the Fourth Plan. Out of one million hectares of additional irrigated area proposed to be developed during the Fifth Plan, about 275,000 hectares of potential area, mostly of groundnut, lies in the command area of the following major irrigation projects.

Table 11 : Fifth Plan—Additional Irrigated Area to be Developed Command Area

state	project	district	potential area that could be developed (hect.)
Andhra Pradesh	Nagarjuna-sagar	Guntur & Nalgonda	80,000
Karnataka	Pochampad Tungabhadra	Karimnagar Raichur	60,000 18,000 (groundnut) 26,000 (sunflower)
Orissa	Hirakud delta Irrigation	Cuttack	25,000
Rajasthan	Rajasthan Canal	Ganganagar	20,000 (groundnut) 40,000 (rape-muster)

1.146. One of the important programmes visualised in the Fifth Plan relates to the development of non-traditional oilseeds. In the later half of the Fourth Plan, centrally sponsored schemes for development of sunflower and soyabean have been taken up. Sunflower has shown promising results in Andhra Pradesh, Karnataka and Tamil Nadu. In the Fifth Plan, it is contemplated that the total area under sunflower will be increased to 933,000 hectares as against a likely base of 350,000 hectares. As regards soyabean, for a variety of reasons, it has not so far been widely established but its cultivation is being promoted in Madhya Pradesh and Uttar Pradesh. It is contemplated that the area under soyabean will be increased from 100,000 hectares to 430,000 hectares by the end of the Fifth Plan.

1.147. Among the programmes which have a bearing on increasing the yield in traditional oilseeds crops, the pride of place is proposed to be given in the Fifth Plan to the Intensive Oilseeds District Programme. The Intensive Oilseeds District Programme will figure in the centrally sponsored sector of the Plan. In addition, it is contemplated that, in the State sector, provision will be made for undertaking a package programme for compact areas so as to cover about 20 lakh hectares of groundnut and about 9 lakh hectares in respect of other oilseeds.

1.148. One of the reason for shortfall in production of oilseeds in the Fourth Plan is that arrangements for supply of pure seed of improved varieties were found to be extremely inadequate. Even systematic stage-wise multiplication has been lagging in groundnut where the rate of multiplication is only 1.5. In the Fifth Plan, attention is proposed to be given towards production and distribution of seeds of selected varieties, particularly of groundnut and castor. The role of the National Seeds Corporation in respect of non-traditional varieties such as soyabean and sunflower will also be enlarged.

1.149. Alongside various development programmes outlined above, the research effort in respect of oilseeds is proposed to be intensified in the Fifth Plan. Under an all-India coordinated oilseed improvement Project, research is presently being conducted at 16 main centres and 22 sub-centres. This project will be continued in the Fifth Plan and its scope would be suitably amplified. In particular, the following problems will be given attention under the research programmes :

- (i) Development of oilseed production technology for rainfed areas ;
- (ii) Evolution of drought-resistant varieties;
- (iii) Fixation of mode and time of application of fertiliser;
- (iv) Problems of micro-nutrient deficiency in the oilseed Crop;
- (v) Intensification of research on sunflower safflower and niger.

1.150. In the context of various characteristics of oilseed economy, particularly its market fluctuation,

the marketing system in respect of these crops continues to be speculative and consequently acts as a deterrent to higher production. In the Fifth Plan, an oilseeds corporation is proposed to be set up as a public sector agency to provide requisite marketing support particularly in the non-conventional oilseeds such as sunflower and soyabean.

Sugar Cane

1.151. The demand for sugarcane by the end of the Fifth Plan (1978-79) has been estimated at 170 million tonnes on the following basis :

(million tonnes)	
(i) sugar for internal consumption at 8.68 kgs. per capita	55.3
(ii) sugar for bufferstock and export	5.0
(iii) gur and khandsari at 14 kgs per capita	89.2
(iv) seed requirements, chewing etc.	20.5
	170.0

1.152. In working out the above demand, note has been taken of the fact that in the Fifth Plan, in addition to sugarcane, sugarbeet is also proposed to be developed as raw material for manufacture of sugar. From the current level of about 30,000 tonnes, the sugarbeet production is proposed to be raised to about three million tonnes. This is estimated to be capable of producing about 3.7 lakh tonnes of sugar.

In order to broadly match supply with demand, a significant increase in production of sugarcane is postulated for the Fifth Plan. While in the Fourth Plan, the production of sugarcane over the five-year period was about 635 million tonnes, the Fifth Plan target for the corresponding five years is proposed at 775 million tonnes. For operational purposes, the base level production is assumed at 134 million tonnes and the peak level is targetted at 170 million tonnes annually.

1.153. The annual growth rate implicit in the above target works to 4.6 per cent which in turn is predicted on the basis of 2.8 per cent area growth and 2.1 per cent productivity growth. This is as against the following historical growth rates :

	(growth rates in per cent)		
	production	area	yield
1949-50 to 1959-60	4.0	2.7	1.0
1960-61 to 1971-72	1.67	0.64	1.04
combined (1949-50 to 1971-72)	3.71	0.50	1.19

For achieving the requisite growth rate in production, reliance in the Fifth Plan is primarily placed on increase in area. The growth in area for sugarcane is postulated from a base of 2.8 million hectares to 3.2 million hectares. The yield in area is postulated from about 48 tonnes per hectare in 1973-74 to about 53 tonnes in 1978-79. The following are the

main sources of increase in production of 36 million tonnes of sugarcane envisaged in the Fifth Plan.

(million tonnes)

(i) additional production due to additional area	21.2
(ii) additional production due to plant protection and seed replacement etc. in areas	4.3
(iii) additional production due to increase in yield in package programme areas	10.5
<i>total</i>	36.0

1.154. In the Fifth Plan, the total cropped area for all crops taken together, is expected to increase by about 11 million hectares. of this, it should not be difficult for sugarcane to capture 0.4 million hectares. The more difficult part of the programme relates to increase in the yield of sugarcane. For this purpose intensive development in the yield of sugarcane is proposed to be taken up in the sugar factory areas. It is contemplated that a block of 2,000 hectares of compact cane area, around each sugar factory in the sub-tropical region and about 1,000 hectares in the tropical region will be selected for intensive development of sugarcane to increase the cane yield as well as improve the cane quality. In these blocks, emphasis will be laid on the following measures :

- Supply of healthy and nutrient rich cane seed. For this purpose, a programme of raising seed nurseries with heat treated material will be taken up.
- Plant protection in the entire selected area against pests and diseases.
- A vigorous programme of demonstration for new innovation such as companion cropping of sugarcane and wheat, sugarcane and potato etc.
- Extension of irrigation facilities in the factory zone.

1.155. The above development programmes relating to sugarcane are proposed to be reinforced by intensification of sugarcane research work. An All India Coordinated Research Project in sugarcane was started rather late in the Fourth Plan. It is now operating at seven main centres and seven sub-centres. In the Fifth Plan, it is proposed to intensify search work under this project. In addition, the various central institutes dealing with sugarcane at Lucknow and Coimbatore will also be further strengthened. The following research problems in receipt of sugarcane are proposed to be given pointed attention :

- Companion cropping schedules for different regions;
- Suitable agro techniques both for main and ratoon crops;
- Breeding of early maturing high-yielding varieties;
- Increasing the multiplication capacity of sugarcane;

- Biological control of sugarcane borers; and
- Development of agronomic practices particularly in respect of inter-cropping.

Cotton

1.156. After taking into account the requirements for various purposes including export and ex-factory consumption, the total demand for raw cotton is estimated at 82 lakh bales by the end of the Fifth Plan. This includes eight lakh bales in respect of extra long staple cotton against which about 2-3 lakh bales of superfine quality are usually imported from abroad. As cottons of comparable quality may not be available in the country for commercial production during 1978-79 and also for maintaining bilateral trade relations, an import of about 2-3 lakh bales annually in the Fifth Plan may be continued. Having regard to this fact, the total requirements of cotton is estimated at about 80 lakh bales by the end of the Fifth Plan.

1.157. To attain self-reliance in cotton, a substantial increase in cotton production is visualised in the course of the Fifth Plan. Against the likely production of 281 lakh bales of cotton in the Fourth Plan period, the Fifth Plan target is postulated at 360 lakh bales production in five years of the plan. For operational purposes base level for the Fifth Plan is assumed at 6 lakh bales and the target of annual production is set at 80 lakh bales.

The compound growth rate implicit in the above target is 4.3 per cent per annum. This, in turn, is composed of 2.0 per cent on account of area growth and 2.3 per cent on account of growth in yield. This is as against the following historical growth rates :

(growth rates in per cent)

	production	area	yield
1949-50 to 1959-60	4.9	4.1	0.23
1960-61 to 1971-72	0.75	(--)	0.90
combined (1949-50 to 1971-72)	3.19	1.33	1.81

1.158. The cotton area of the country falls broadly into three contrasting cultural situations. Nearly sixty per cent of the total cotton area is under Desi varieties which have an average, yield of about 70 kgs. per hectare. Consequently 60 per cent of the total cotton area accounts for only about 30 per cent of the total cotton production. At the other end of the spectrum is the area under irrigated American cotton, which accounts for nearly 21 per cent of the area but about 49 per cent of the total cotton production. The rest of the area is under rain-fed American cotton which yields on an average about 135 kgs. per hectare as against about 320 kgs. in irrigated American cotton area. In the above context, the strategy for increasing cotton production in the Fifth Plan has a three-fold direction, namely :

- to increase the area under irrigated cotton to about two million hectares and increase the

yield from about 320 kgs to about 450 kgs per hectare;

- (ii) improve the yield of rainfed American cotton from about 135 kgs to about 225 kgs per hectare;
- (iii) increase the yield of Desi cotton from about 70 kgs per hectare to about 90 kgs per hectares.

The above parameters do not represent immodest targets. Of all the countries in the world, India today has the largest area planted to cotton crop but the yield per hectare is among the lowest. In recent years, the productivity per unit area has shown some improvement but there are many inhibiting factors. These factors include poor quality of seed material, lack of maintenance of varietal purity and inefficient cultural practices. All these aspects will have to be given attention in the Fifth Plan if the increased targets of production are to be realised. The measures contemplated in the Fifth Plan fall broadly in to three categories, namely, research, development and marketing. These are broadly outlined below.

1.159. In recent years, some significant results have been obtained in the sphere of research on cotton. During the period 1968—72, 15 new cotton varieties have been released. Of this, Hybrid-4 cotton and MCU-5 constitute significant mile-stones in cotton research. Despite these advances, it will be necessary to intensify research, efforts in respect of cotton in the Fifth Plan. On the northern States varieties like 320-F have been too long in the field. These varieties need to be restructured and new varieties developed. Hybrid 4 cotton variety usually takes about ten months. It is necessary to develop improved varieties which can be harvested within six months under irrigated conditions. In most of the rainfed areas, varieties are needed where flowering flush will occur between 7-10 weeks after planting. Such varieties should be designed to take about 3-1/2 to 4 months from germination to main picking.

1.160. In the Fifth Plan, for research on cotton a new central institute is proposed to be set up by upgrading one of the existing ICAR laboratories. The All-India Coordinated Research Project is also proposed to be continued and enlarged. This project is currently operating at 11 main centres, 10-sub-centres and 30 testing centres located in different agro-climatic conditions of principal cotton growing States.

1.161. Alongside research efforts, the programmes of cotton development are proposed to be given high priority in the Fifth Plan. Among these programmes, the most important is the intensive cotton district high priority in the Fifth Plan. Among these programmes, the most important is the intensive cotton district programme. This programme is already in operation in parts of six irrigated and seven rainfed predominantly cotton districts. In the Fifth Plan, it is contemplated that its coverage will be extended to about 11.2 lakh hectares consisting of 6.8 lakh hectares of irrigated cotton area and about 4.4 lakh hectares of rainfed cotton area. The main focus of this programme will be on adoption of package of practices along with use of improved variety seed, fertilizers and plant protection. This will be mainly achieved

by supply of pure seeds and demonstration. The objective of the intensive cotton district programme will be to add extra cotton production of about 8.4 lakh bales in the final year of the Fifth Plan.

1.162. Another important programme envisaged for the Fifth Plan, relates to extension of cotton cultivation to non-traditional areas. This is proposed to be taken up in command areas of selected major irrigation projects as well as in rice fallows. In a few States, action in this direction has already been initiated in the Fourth Plan. In the Fifth Plan, it is proposed to extend cotton cultivation to an area of about 5.6 lakh hectares in the commands of Rajasthan Canal, Nagarjunasagar, Tungabhadra, Malaprabha, Jaikwadi etc. About 1.8 lakh hectares are intended to be brought under cultivation by double cropping on paddy lands in Andhra Pradesh, Tamil Nadu and West Bengal. Necessary facilities will be provided to the farmers to take up cotton cultivation in these areas. Adequate extension staff will also be provided. This programme is calculated to produce about 6.7 lakh bales of extra cotton. It will also help to stabilise production of cotton by increasing the area under irrigated cotton which is at present only about 18 per cent of the total cotton area. The programmes outlined above will figure in the centrally sponsored sector of the Fifth Plan. In addition, under the States plan sector, it is contemplated to continue a package programme in selected areas. It is proposed to progressively increase the area under the package programme so as to cover about 13.6 lakh hectares by the end of 1978-79. The additional production expected from this programme is about 3.8 lakh bales.

1.163. The seed production of both the hybrids as well as composite varieties would be given greater stress and assistance of specialised agencies like the National Seeds Corporation and the Cotton Corporation of India would be enlisted for this purpose. The effective implementation of the Seed Act would also be given due emphasis. Efforts would be made to ensure that at least the area under the various intensive cultivation schemes is fully covered by certified seed.

1.164. In the sphere of marketing, it has been found that efforts to increase the production of extra-long staple cotton varieties such as Sea Island and Sujata have been handicapped for want of adequate marketing arrangements. Recently, the cotton Corporation of India has entered this particular field. In the Fifth Plan a much bigger role is envisaged for the Cotton Corporation which will operate in conjunction with cooperative marketing organisations. Strengthening of cotton ginning and pressing facilities in the new irrigated areas is also envisaged under the Fifth Plan.

Jute and Mesta

1.165. For the final year of the Fifth Plan, the demand for raw jute has been varyingly estimated, the estimates ranging from 70 to 80 lakh bales. For operational purposes, the demand has been taken to be about 77 lakh bales. The base level production for the Fifth Plan has been assumed at 67 lakh bales while the peak level production has been targetted at 77 lakh bales. The Fifth Plan five-years target for

jute and mesta production is proposed at 660 lakh bales as against anticipated production of about 320 lakh bales of jute and mesta in the five years of the Fourth Plan.

1.166. The annual compound growth rate implicit in the above targets is 2.9 which, in turn, is composed of 1.8 for area and 1.1 for yield. The historical growth rate in respect of jute has been as follows :

	produc- tion	area	yield
1949-50 to 1959-60	2.7	2.7	Negligible
1960-61 to 1971-72	(-) 0.6	(-) 0.7	0.1
combined (1949-50 to 1971-72)	1.95	1.61	0.37

1.167. The present production of jute is characterised by two striking features, namely extreme instability in production and very low yields. Hence the main strategy in the Fifth Plan will be to undertake intensive development in concentrated areas combined with extension of irrigation to those areas. An intensive jute/mesta district programme has already been initiated in the Fourth Plan. This programme covers three districts of West Bengal and one district each in Orissa, Bihar, Assam and Andhra Pradesh. By the end of the Fifth Plan, the area covered by this programme is proposed to be extended to 4 lakh hectares of which 1.5 lakh hectares will be irrigated and 2.5 lakh hectares would be rainfed. The activities to be undertaken will include demonstrations as also saturation of the area with improved seed, pest control fertiliser application excluding foliar spraying. Special programmes for introducing irrigation in new areas where intensive jute will be grown will also figure in the drive.

1.168. One of the inhibiting factors in relation to jute production has been the inadequacy of arrangements for seed production and distribution. At present, Jute Agriculture Research Institute, Barrackpore produces about three quintals of nuclear seeds and about 16 quintals of foundation seeds annually. The resultant certified seed which is about 100 tonnes is sufficient to cover only about 1.9 lakh hectares. For wider coverage, extension of facilities at JARI is contemplated for larger production of breeder seed and foundation seed. The main responsibility for multiplication of certified seed will be assigned to the National Seeds Corporation.

1.169. At present, about 44,000 hectares of jute is irrigated. It is the intention of the Fifth Plan to extend this area to 2.3 lakh hectares. Of this, about 1.43 lakh hectares is already under jute cultivation. 80,000 hectares will be new jute areas added in multiple cropping sequences. Bulk of the irrigated jute area will fall within the jurisdiction of the intensive jute district programme.

1.170. In the Fifth Plan, alongside development efforts, research efforts in respect of jute will be enlarged. An All-India Coordinated Research Project in respect of jute is currently operating at all centres.

In the Fifth Plan, besides strengthening the central institute at Barrackpore, the coordinated research project on jute is proposed to be continued.

1.171. In the Fourth Plan, a new public sector agency, namely, the Jute Corporation of India has been set up to provide requisite marketing support for jute crop. The operations of this corporation have so far remained rather limited. In the Fifth Plan, it is contemplated that the Corporation would play a substantial role to provide requisite underpinning to the jute production programme.

Tobacco

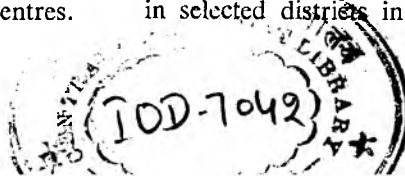
1.172. It is estimated that per capita consumption of Virginia flue cured tobacco has increased by 4.13 per cent (compound annual growth rate) during the period 1960-61 to 1970-71. Similarly, the consumption of other cigarette types has also increased by 2.04 per cent during the same period. The consumption of other types of tobacco *i.e.*, bidi, chewing, hukka, Cigar and snuff, has declined. The net result is that during the said period the overall consumption of tobacco per capita has registered a compound annual growth rate of (—) 1.79 per cent *i.e.*, it has actually declined. It is expected that the present trend in consumption of various types of tobacco will continue in the Fifth Plan and the total requirement of raw tobacco for domestic consumption during the year 1978-79 will be about 286 thousand tonnes. In the case of V.F.C. tobacco the requirement is estimated at 71 thousand tonnes. As regards exports, these have been stagnating more or less at 55 thousand tonnes. The level of export projected for the year 1978-79 is 73 thousand tonnes.

1.173. Based on the requirements of tobacco for domestic consumption and exports, the production target for different types of tobacco for 1978-79 will be as follows :

type of tobacco	(thousand tonnes)	
	1973-74 (base level)	1978-79 target
virginia	120	160
other cigarette-type of tobacco	40	45
bidi tobacco	100	110
others	110	110
<i>total</i>	370	425

1.174. In the Fifth Plan, it is proposed to accelerate the present programme of extending the cultivation of V.F.C. tobacco to light soil areas in different States. It is expected that, by the end of the Fourth Plan, an area of about 28 thousand hectares would be covered under this programme. It is proposed to cover an additional area of 50 thousand hectares by 1978-79 under the scheme in the States of Andhra Pradesh, Karnataka, Tamil Nadu, Gujarat and Uttar Pradesh.

An intensive district programme will be taken up in selected districts in Andhra Pradesh, Gujarat and



Karnataka to cover an area of 70 thousand hectares already under cultivation of V.F.C. tobacco. Similar programme is proposed to be taken up in the areas producing natu and bidi tobacco to cover additional area of 30 thousand hectares under natu and 80 thousand hectares under bidi tobacco. It is expected that the programme will result in increasing the yield levels by about 10 per cent. The programme will include conducting demonstration trials with improved nursery and field practices, provide incentives for undertaking the ploughing in black soils etc. Assistance to the grower will also be given in the grading of tobacco.

1.175. Besides extending cultivation of V.F.C. tobacco to new light soil areas, it is proposed to make intensive effort to improve the quality of tobacco produced in the traditional areas. For this purpose, an intensive district programme will be taken up in two selected districts of Andhra Pradesh to cover an area of 70,000 hectares in respect of V.F.C. tobacco. Similar programme is proposed to be taken up in the areas producing natu tobacco in Andhra Pradesh to cover an area of about 30,000 hectares and bidi tobacco in the States of Gujarat and Mysore over all area of 80,000 hectares. It is expected that the programme will result in increasing the yield levels by about 10 per cent.

VI

SPECIAL PROGRAMMES FOR HORTICULTURE AND MINOR PLANTATION CROPS

Horticulture

1.176. For the Fifth Plan, a base level production of 92 lakh tonnes of fruits is assumed. The target of the Plan is to raise it to an annual production level of 102 lakh tonnes. While a part of the increased production is expected from new area to be brought under orchards (targetted at about 3 lakh hectares), main reliance will be placed on increasing the yield in the existing plantations.

1.177. As part of the programmes for increasing the yield in the existing plantations, stress will be laid on more effective orchard management practices. Recently some of the fruit growing States have enacted laws for compulsory plant protection measures. Action would be taken to enforce these laws vigorously. Finally, in order to ensure a more discriminating fertiliser application, it is proposed to build up leaf analysis surveys to identify the nutritional status of the plant. For undertaking these measures, two main schemes are contemplated. The first scheme which will figure in the centrally sponsored sector of the Plan will cover an area of three lakh hectares and will aim at introducing a package programme of export-oriented fruit crops. This scheme will aim at high density planting as one of the main measures to be undertaken for increasing the yield. The second scheme which figure in the State plan sector is likely to cover another two lakh hectares and will be concerned with rejuvenation and intensification of existing plantations.

1.178. Along side programme aiming at the increased production, in the Fifth Plan, considerable

stress is proposed to be laid on improving the market facilities for horticultural products. For this purpose, provision is being made for market service as well as expansion and development of infrastructure facilities such as transport, packaging and processing arrangements. On the institutional side, efforts will be made to build up fruit growers cooperative organisations at various levels.

1.179. As far as vegetable production in the Fifth Plan is concerned, stress will be laid on development of vegetable cultivation in areas around large cities. Several States have already taken up various measures such as supply of seed technical assistance, demonstrations etc. for this purpose. It will be necessary in the Fifth Plan to step up these activities by intensification of vegetable production around urban areas. Another programme relates to production of off season vegetables in hill areas. Besides arrangements for demonstrations, this will require availability of good quality certified seeds for additional areas to be taken up. Tentatively, the Fifth Plan visualised an area of about 5000 hectares being brought under this programme.

1.180. In regard to research support for fruit and vegetable production, it may be stated that under the Fourth Plan, nine All-India Coordinated Projects have been taken up for implementations. While in the Fifth Plan, a number of these projects will be reorganised and rationalised, the research effort will be intensified by strengthening research facilities at the Indian Institute of Horticultural Research and also by continuing selected coordinated projects. The main problems to which research efforts will be mainly directed are indicated below:

- (i) Irrigation Technology
- (ii) Evolving an integrated pest control programme
- (iii) Folliar nutrition
- (iv) Hybrid seed production
- (v) Post harvest pathology
- (vi) Standardisation of relay and companion cropping systems
- (vii) Breeding of varieties particularly to meet the needs of processing industry for purpose of export, such as dehydrated opinion, peas, chilly, mashroom, mango for canning, pineapple for canning etc.

Cashewnuts

1.181. For the Fifth Plan, the assumed base level in respect of cashewnut production is fixed at 2.10 lakh tonnes. The target of the Fifth Plan is to raise the level of production to 2.80 lakh tonnes by the end of 1978-79. This will still be short of the demand of the country for indigenous consumption as well as export requirements by over one lakh tonnes. The

increase in cashew production is sought to be brought about by the programmes indicated below :

	additional production tonnes
(i) package programmes on 50,000 hectares of departmental plantations	18750
(ii) plant protection over 80000 hectares in non departmental plantations	7500
(iii) demonstration plots over 30,000 hectares	9000
(iv) increase from fourth plan plantations fructifying the fifth plan	36000
<i>total</i>	71250

1.182. The main strategy for the Fifth Plan centres around the establishment of State Cashewnut Development Corporations to look after the departmental plantations in the major cashew growing States. The Corporations may take up intensive maintenance of cashew plantations and also area expansion. The Corporation will avail of the assistance of institutional finance. The Centre will participate in these corporations by subscribing to the equity share thereof under the Central sector. In private plantations, a network of demonstration plots and mass plant protection measures have been proposed under the Centrally sponsored sector while the distribution of quality planting materials and area expansion including intensive cultivations will be looked after in the State sector.

Coconut

1.183. In respect of coconut, it is visualised that in the Fifth Plan, the level of production will go up from a base of 6,600 million nuts to 7,700 million nuts annually. This supply target broadly approximates to the demand production for the end of the Fourth Plan. The increase in the production of coconut in the Fifth Plan is primarily expected from two sources. Firstly, certain plantations undertaken in the Fourth Plan will fructify in the Fifth Plan and these are expected to increase the production of coconut by about 400 million nuts. The balance of the increase is principally expected from increase in the yield of existing plantations over an area of about 140,000 hectares. The present estimated yield is about 15000 nuts per hectare. Through a package programme including supply of hybrid planting material, this is proposed to be raised to 20,000 nuts per hectare. This programme is expected to contribute an increase production of 700 million nuts annually.

Pepper

1.184. For the Fifth Plan, it is visualised that the level of production of pepper will be sought to be raised from about 30,000 tonnes in the base year *i.e.* 1973-74 to about 38,000 tonnes. This will place the supply target in balance with the demand projections for the end of the Fifth Plan. Among the programmes contributing to increased pepper production, the most important will be a package programme which will focus on plant protection measures. This programme will be taken up over 40,000 hectares. It is expected

that the yield will go from about 250 kgs per hectare to about 350 kgs. per hectare on average. As a result, the increased production from this programme is estimated at 4000 tonnes. The next important programme of pepper development relates to the extension of hybrid pepper to an area of 4800 hectares. This is expected to increase the production by about 3000 tonnes. Finally, there is the programme of replanting about 5000 hectares of existing diseased plantations. The contribution from this programme is rather limited *i.e.* about 6000 tonnes at the end of the Fifth Plan. Finally, some contribution will also be made by the Fourth Plan plantations which will go into production in the Fifth Plan.

VII

ANIMAL HUSBANDRY AND DAIRYING

Review of Progress in the Fourth Plan

1.185. The Fourth Plan visualised an increase in egg production from 5,300 million in the base year of the Plan to 8,000 million at the end of the plan. This target is likely to be achieved substantially. It is estimated that, by the end of the Fourth Plan, the annual level of egg production will rise to 7,700 million. As regards milk, the progress recorded in the Fourth Plan has been comparatively unsatisfactory. The Plan targeted an increase in the level of milk production from 21.20 million tonnes to 25.86 million tonnes. The level of milk production anticipated for 1973-74 is only 23.20 million tonnes. For wool, the short fall is even more disquieting, as the annual level of production expected by the end of the Fourth Plan is only of the order of 30.10 million kgs, as against the target of 41.50 million kgs.

1.186. The following table shows targets in respect of important physical programmes of animal husbandry included in the Fourth Plan and the likely achievements against these targets:—

Table 1: Fourth Plan—Programme Targets and achievements.

programme	base level	targeted level	likely achievement
	1968-69	1973-74	1973-74
	(1)	(2)	(3)
1. intensive cattle development projects	30	67	63
2. key village blocks	528	619	621
3. fodder seed production farms	16	39	38
4. intensive egg and poultry production-cum-marketing centres	53	86	81
5. sheep and wool extension centres	547	611	835
6. wool grading and marketing centres	9	23	13
7. veterinary hospitals and dispensaries	7044	7938	9495

It will be observed that, for most of the programmes, quantitatively the various targets would be substantially achieved. Nevertheless the targets of livestock products have not been accomplished because of serious shortcomings in the qualitative implementation of these programmes.

1.187. One of the important programmes included in the Fourth Plan related to intensive cattle development projects. Towards the close of the Plan, the total number of such projects is likely to be 63. At annexure XV is a statement indicating the progress of selected items in these projects. The gap between the desirable levels and the actual performance in respect of some items is striking. It appears that, on the whole, there has been considerable dilution of inputs and this explains why these projects have not made an adequate impact on the level of milk production in the concerned areas.

1.188. In the Fourth Plan, a reference was made to the new cattle breeding policy in which the main emphasis was on cross-breeding. So far, only limited progress has been achieved in this direction. Apart from a frozen semen bank, which has been set up at the Jersey Cattle Farm, Hessarghatta (an Indo-Danish Project), a programme of establishing 5 frozen semen banks has been initiated. These banks are being located at Amritsar, Karnal, Indore, Bangalore and Luknow. Another significant development has been the establishment of exotic cattle breeding farms, whose number has increased from 5 to 25 during the Fourth Plan period. A scheme for production of cross-bred heifers has also been taken up at the National Dairy Research Institute, Karnal.

1.189. The following table indicates the main targets and likely achievements of the Fourth Plan in respect of the dairy development programmes :

Table 2 : Fourth Plan Dairy Targets and Achievements

programme	base level 1968-69	targetted level 193-74	likely achievement 1973-74
(0)	(1)	(2)	(3)
1. liquid milk plants in operation	48	124	90
2. milk product factories and creameries in operation	7	25	18
3. rural dairy centres . . . . .	..	43	52

The Fourth Plan had visualised that the number of liquid milk plants in operation would go up by 76. This comprised 35 spill-over schemes and 41 new ones to be taken up in the Fourth Plan. All the 35 spill-over schemes are likely to be commissioned. As regards the setting up of 41 new milk supply schemes, 7 are likely to be commissioned. Out of the balance of 34 schemes, work has been initiated on 24, which are spilling over into the Fifth Plan. The remaining 10 new schemes visualised in the Fourth Plan have not so far been initiated. As regards milk product factories, the Fourth Plan had

visualised an increase of 18 factories. This comprised 7 spill-over projects and 11 new projects. As far as the spill-over projects are concerned, all the milk product factories will be commissioned by the end of the Fourth Plan. As regards the programme of 11 new milk product factories, a major shortfall is anticipated. Only 4 new milk product factories are likely to be commissioned. Three milk product factories will spill-over to the Fifth Plan. Work on the remaining 4 factories is still to be initiated.

1.190. One of the continuing problem in the dairy sector has been the inadequate utilisation of installed capacity. It is anticipated that the throughput for all the milk plants taken together will increase from 19 lakh litres to 30 lakh litres per day in the Fourth Plan period. Since, however, the installed capacity of the industry will move from 22 lakh litres to 59 lakh litres, the extent of under-utilisation of the installed capacity will further increase. As regards individual plants, the data is given in Annexure XVI. From this annexure, it will be seen that, while through put in a number of plants has improved, there are quite a few cases, where the utilisation continues to be unsatisfactory.

1.191. One of the important programmes taken up in the Fourth Plan is known as the Operation Flood. Under an agreement signed in March, 1970 World Food Programme authorities agreed to supply, free of cost, 1.26 lakh tonnes of skimmed milk powder and 0.42 lakh tonnes of butter oil, which when reconstituted into milk by the four metropolitan dairies, was to generate funds worth about Rs. 95 crores. To implement this programme, the Indian Dairy Corporation was set up by the Government of India. It was planned to increase milk processing facilities of the metropolitan dairies from 1.00 million litres in 1970-71 to 2.75 million litres per day by 1973-74; to stimulate milk production and procurement in the milk-shed areas of about ten States and to salvage about one lakh high yielding milch animals from the metropolitan cities. The generated funds were to be utilised for providing grant and loan assistance on the basis of 30 per cent and 70 per cent respectively to the State Governments for the expansion of milk processing facilities and for more milk production and procurement programmes.

1.192. During the period July 1970 to May 1973, the total quantity of skimmed milk powder and butter oil received by the Indian Dairy Corporation was 28,550 tonnes and 8,450 tonnes respectively. With the sale of these commodities, the funds generated by the Indian Dairy Corporation have been Rs. 17.8 crores and the expenditure has been about Rs. 14 crores. It is anticipated that, by the end of the Fourth Plan, the corresponding figure will move to Rs. 36 crores. According to the schedule, the relevant figure should have been about Rs. 80 crores. In other words, there has been a significant lag between the targets of the Indian Dairy Corporation and its actual performance. This has been largely due to the delay in the expansion of four metropolitan dairies in respect of their recombining equipment. Broadly speaking, the project

"Operation Flood" is behind schedule by nearly two years. A more unsatisfactory aspect is the lack of emphasis on the indigenous milk production programme, which is vitally necessary to maintain the metropolitan supplies when the gifts of butter oil and milk powder are stopped at the end of the programme period.

1.193. In the Sphere of sheep husbandry, to produce quality stud rams of important indigenous and exotic breeds of sheep, the Fourth Plan envisaged eight large sheep breeding farms, expansion and reorganisation of 35 existing State farms and the establishment of nine new State farms. The progress in large sheep breeding farms has been poor. Only four farms will become operational, while the remaining will spill-over to the next Plan. As regards the State Sheep Farms, better progress has been recorded. Thirty-five existing farms have been expanded and 9 new farms have been set up. In addition, two large sheep farms have been taken up in Gujarat and Maharashtra, at the initiative of the woollen textile industry.

1.194. Another important programme in respect of sheep and wool development in the Fourth Plan related to the establishment of sheep and wool extension centres. The Plan had visualised the establishment of 64 new centres. Compared with this target, the achievement is likely to be around 288 centres. Under an allied programme the Fourth Plan had visualised the establishment of 14 wool grading-cum-marketing centres. A shortfall is expected in this programme as the achievement is not likely to exceed four centres.

1.195. As regards poultry, the Fourth Plan envisaged the setting up of 33 intensive egg and poultry production-cum-marketing centres. The actual number expected to be established is 28. It was proposed to take up 28 new poultry breeding farms and to expand 81 existing ones. Against this, 19 new farms are likely to be set up and 92 expanded. During the Fourth Plan period, a number of poultry feed manufacturing units were set up, both in the private and public sectors. However, due to the shortage of essential feed ingredients and high cost of maize and fish meal, the price of feed remained high. This posed a serious problem. Another bottleneck, which the poultry industry continued to face, related to the lack of proper marketing facilities.

1.196. The programme relating to the modernisation of slaughter houses envisaged in the Fourth Plan recorded very slow progress. Out of the 14 targeted, only two corporations at Goa and Durgapur have been set up. Another two corporations at Bangalore and Hyderabad may be taken up in the terminal year of the Plan.

1.197. As regards animal health programmes, the progress in the Fourth plan has been fairly satisfactory. It was proposed to set up 894 veterinary hospitals and dispensaries and to upgrade 331 existing dispensaries into hospitals. Against this, 2451 hospitals and dispensaries were established and 520

dispensaries upgraded. The campaign for the eradication of rinderpest gained considerable momentum. It is expected that, by the end of the Plan, 60 vigilance units and 64 check posts will be functioning in different States. As regards the programme for establishing five quarantine stations, the progress was extremely slow. So far, sites for only three centres have been selected. The schemes relating to the expansion of biological products stations and the improvement of disease investigation and diagnostic units envisaged in the State Plans did not make much progress. However, in the Central Plan, a new scheme for the establishment of a Central Foot and Mouth Disease Vaccine Laboratory at Bangalore was taken up.

Approach and Strategy in the Fifth Plan

1.198. As the demand for milk, eggs and meat is income elastic, a high rate of growth of these commodities will be required in the coming years. The Fourth Plan milk development programmes were not successful in yielding the requisite increase in milk production because of two basic factors. Firstly, the cattle improvement programme including the cross-breeding programme was generally patchy as the facilities for insemination were not usually made available to the farmers at their doorsteps. Secondly, the farmer was not given proper incentives for increased milk production in the form of a fair price as the marketing system was not properly developed. The Fifth Plan will seek to correct these lacunae. The Fifth Plan also aims at adopting substantially the recommendations of the National Commission on Agriculture in their Report on Milk Production through Small and Marginal Farmers and Agricultural Labourers, which seeks to propagate the integrated approach developed by the Cooperative union at Anand in the district of Kaira, Gujarat.

1.199. The intensive poultry development programme has been more successful in giving an economic return to the participating farmer. In order to meet the large requirements of poultry and eggs, large scale intensive poultry development programmes, based on the small and marginal farmers, will be developed in districts, which have got suitable demand centres in the nature of large urban areas.

1.200. The sheep rearing programme also suffered from the basic defect of a lack of coordination between the several components of the programme. In the Fifth Plan, a coordinated programme approach will be taken up on the lines recommended by the National Commission on Agriculture in their report on 'Poultry, Sheep and Pig Production through Small and Marginal Farmers and Agricultural Labourers' for supplementing their income through cross-breeding of sheep for wool and mutton in suitable districts in the country. As fodder has been a constraint in proper sheep development in the traditional areas of sheep rearing, like the Himalayan ranges and Rajasthan, special programmes of fodder production and fodder improvement will be built into the scheme.

1.201. Pig-rearing of pure exotic breeds can give useful occupation to the scheduled tribes and scheduled castes, mainly in the North-Eastern part of the country and in various other parts where there is at present a good demand for piggery products. Intensive pig development programmes based on the recommendations of the National Commission on Agriculture in their report on "Poultry, Sheep and Pig production through Small and Marginal Farmers and Agricultural Labourers" for supplementing their income will be developed in selected districts, where a demand for pig meat exists and where bacon factories have been located.

1.202. In the Fifth Plan, it is intended to develop animal husbandry as an important economic occupation for the small and marginal farmers and agricultural labourers. As with proper investments the commercial programmes of animal husbandry can be quite remunerative, there is a temptation for the richer classes to enter into these occupations to the detriment of the traditional classes dependent on animal husbandry. It will be a major aim of the Fifth Plan to ensure that the traditional classes get a lion's share of the new programmes of animal husbandry development. For this purpose, provision has been made in the State and Central Plans for giving assistance to small farmers and agricultural labourers for rearing cross-bred heifers and for raising poultry, sheep and pigs.

Targets of Livestock products and Physical Programmes

1.203. A growth rate of 5 per cent is projected for the Fifth Plan as against the likely achievement of 2 per cent in the Fourth Plan. The following table indicates the targets for the principal livestock products :

Table 3: Fifth Plan Targets of Livestock Products

item	unit	assumed base level 1973-74	targets for 1978-79
(0)	(1)	(2)	(3)
1. milk	million tonnes	23.20	28.60
2. eggs	million numbers	7700	12440
3. wool	million kgs.	30.10	34.30

Statewise Targets of livestock products are indicated in Annexure—XVII.

1.204. The following table indicates the targets of important Animal Husbandry and Dairying programmes proposed to be taken up during the Fifth Plan:

Table 4: Fifth Plan Targets of Selected Physical Programme

item	unit	assumed base level 1973-74	targeted level 1978-79
(0)	(1)	(2)	(3)
1. intensive cattle development projects	nos.	63	114
2. key village blocks	"	621	713
3. no. of annual inseminations with exotic semen	million	1.40	5.70
4. no. of cross-bred cows in production	"	1.00	2.95
5. exotic cattle breeding farms	nos.	25	35
6. liquid milkplants	"	90	154
7. milk product factories including creameries	"	18	52
8. rural dairy centres	"	52	132
9. frozen semen banks	"	8	18
10. fodder seed production farms	"	38	71
11. integrated sheep development projects	"	1	14
12. wool grading & marketing centres	"	13	26
13. intensive egg and poultry production cum-marketing centres	"	81	142
14. veterinary hospitals/dispensaries	"	9495	11195
15. mobile veterinary units	"	178	461
16. installed capacity of milk plants in the organised dairy sector	million litres/day	5.93	12.30

State-wise Targets of selected physical programmes are given in Annexure XVIII & XIX.

Cattle Development

1.205. As noted above in the Fifth Plan, it is visualised to increase the level of annual milk production by about 5.4 million tonnes as against an increase of nearly 2.0 million tonnes estimated in the Fourth Plan. In other words, the increase in milk production targeted for the Fifth Plan is nearly three times the achievement in the Fourth Plan. For such a massive increase in milk production, an aggressive cross-breeding programme is contemplated in the Fifth Plan. At present, the total number of inseminations with exotic semen is placed at about 1.40 million per annum. It is envisaged that in the final year of the Fifth Plan, the number of such inseminations would be around 5.70 million. To facilitate this activity it is proposed to import 3.5 million doses of frozen semen, 5960 bulls and 2000 heifers of exotic breeds. The number of exotic cattle breeding farms is proposed to be increased from 25 to 35.

1.206. On the eve of the Fifth Plan, 63 intensive cattle development projects will be in operation. However, as already noted, most of the technical inputs in these projects are far below the desired levels. One of the main tasks in the Fifth Plan will be to ensure that these cattle development projects are made truly intensive in character by ensuring all the requisite technical inputs. In addition, 51 new intensive cattle development projects are proposed to be initiated in the Fifth Plan.

1.207. It is contemplated that in about 50 districts, where 'Operation Flood' is operating, the Indian Dairy Corporation will intensify its efforts in the direction of milk enhancement and procurement programmes. These districts essentially constitute the milk shed areas of the four metropolitan city dairies. In the Fifth Plan, large sized integrated cattle-cum-dairy development projects are proposed to be taken up with focus on six big cities, namely Kanpur, Bangalore, Bhopal, Hyderabad, Nagpur and Jaipur. Suitable Corporations/Federations will be organised for undertaking a massive cross-breeding programme with semen from exotic proven stock. Various other inputs like feeds, forage, drugs, prophylactics, credit, storage and marketing facilities will be organised by these corporate bodies. At the field level, milk producers' societies are proposed to be set up. It is contemplated that each of these projects may serve about 10 lakh breedable milch animals.

Buffalo Development

1.208. While in the Fifth Plan, considerable stress is being laid on cross-breeding of cows for enhancing milk production, buffaloes will continue to be a significant source of milk production. It is estimated that, in the terminal year of the Fifth Plan, the contribution of buffaloes will be around 50 per cent of the total milk production. Hence the Plan visualises programmes of research as well as development relating to buffaloes. The All India coordinated Research Project for Buffaloes, initiated in the Fourth Plan, will be continued and strengthened to improve the production potential of buffaloes. Programmes are also envisaged for improving the well-recognised breeds of buffaloes through selective breeding and to upgrade the non-descript types with recognised breeds, especially Murrah and Surti. In the Fourth Plan, a Central Buffalo Breeding Farm had been established at Anleswar for propagating Surti Breed. In the Fifth Plan, a similar farm is contemplated for the Murrah breed.

Dairy Development

1.209. As noted above, there is a significant gap between the installed capacity of the existing milk plants and their utilisation levels even in the flush season. One of the main tasks in the Fifth Plan will be to take steps aimed at increased milk production in the milk sheds of these schemes and also to strengthen the arrangements for procurement and transport. In the Fourth Plan, it was visualised that, in order to facilitate efficient operation of these schemes, their management should be transformed from departmental to corporate character. Only limited progress has taken

place so far. In the Fifth Plan, it will be necessary to ensure that these milk plants are no longer operated departmentally and suitable agencies are created for their management and operation. It is also visualised that these agencies will be increasingly involved in the supply of inputs and other services concerned with milk production in their respective areas.

1.210. Among the programmes contemplated for the Fifth Plan, first priority will be given to the completion of 27 spill-over milk schemes, consisting of 24 milk plants, 2 milk product factories and one creamery. The organised dairy programme will be extended by taking up 40 new milk plants for towns with a population of 50,000 and above. In addition, 31 milk product factories will be established in potential milk producing areas. The programme of rural dairy centres, which proved to be of considerable benefit for augmenting milk production in isolated milk pockets is proposed to be extended to another 80 areas. Annexure XX indicates targets of selected physical programmes.

Indian Dairy Corporation

1.211. As has been noted above the project 'Operation Flood' being undertaken by the Indian Dairy Corporation is substantially spilling over to the Fifth Five Year Plan. The principal task of the Corporation in the Fifth Plan will, therefore, be to take steps towards the fulfilment of the project. Since, as a result of this project, the installed capacity of the four metropolitan dairies will go up quite considerably, it will be necessary to ensure that in the Fifth Plan, simultaneous stress is laid on milk enhancement and milk procurement programmes, so that the dependence of these dairies on imported SMP and butter oil is eliminated as early as possible. The Indian Dairy Corporation is at present operating in about 59 districts. In the Fifth Plan, a marginal increase in this regard is envisaged with a view to adding those districts, which are essentially part of the milk shed areas of the four metropolitan dairies. It is also contemplated that, during the Fifth Plan, the Indian Dairy Corporation will diversify its operations by taking up a unit for the manufacture of dairy equipment. It is also contemplated that in respect of some of these items, such as the encouragement and development of milk producers cooperatives, development of long distance milk haulage etc., the Indian Dairy Corporation would be directly responsible. For other items, it would provide financial assistance to the State Governments.

Sheep and Wool Development

1.212. At present, wool worth Rs. 21 crores is being imported to feed the woollen textile industry. As there is a long way to go in attaining self-sufficiency in wool an aggressive programme of sheep development in the Fifth Plan has assumed considerable importance. It is proposed to step up cross-breeding with woolly type sheep, preferably Rambouillet and Russian Merino breeds in Jammu & Kashmir, Himachal Pradesh and hills of Uttar Pradesh and also in Selected areas of Gujarat, Rajasthan and other States for the production of apparel type wool. Research will also be intensified in an effort to evolve

woolly strains of sheep with the least proportion of hair fibre in the fleece. For production of medium quality wool, **corriedale rams will be used in selected areas** of Punjab, Haryana, Rajasthan, Madhya Pradesh, Andhra Pradesh, Karnataka and Tamil Nadu. In this context, the various programmes proposed relate to the setting up of integrated sheep development projects, import of about 20,000 exotic sheep and the establishment and completion of 7 large exotic sheep breeding farms in the Centrally sponsored sector. It is also proposed to strengthen about 40 State Sheep Farms for the production of rams.

Poultry Development

1.213. The Fifth Plan visualises a growth rate of about 10 per cent per annum to achieve the target of 12,440 million eggs in 1979 from a base of 7,700 million. Since the major contribution will be from commercial farming, the population of improved hens is expected to grow to 60 million with 30 million growing stock by 1979. Thus, the requirement of quality chicks will be around 50 million against 20 million at present. The poultry development programmes in the Fifth Plan have been tailored accordingly.

1.214. At present, most of the State poultry farms are multiplication farms with little or no scientific work being undertaken. The hatcheries in the private sector, set up with foreign collaboration, have also been dependent on the foreign firms for the continuous supply of stock. This situation, to some extent, has been rectified by encouraging a few private farms to procure original breeding lines of known combinations for the reproduction of stock within the country, adopting a scientific breeding programme on 29 Central and State farms and evolving several inbred lines for different physiological characters. These programmes will be intensified to attain self-sufficiency.

1.215. The Fifth Plan envisages a qualitative improvement in the inputs required for successful poultry farming. It is proposed to establish 3 Central Regional Poultry Breeding Farms, each with a capacity of 5,000 layers, 3 random sample laying test units, 61 intensive poultry production-cum-marketing centres and the expansion of 3 Central farms, 14 State farms and 55 existing intensive egg and poultry production-cum-marketing centres. Another significant programme envisaged is intensive broiler production around 17 poultry dressing plants. Lack of marketing facilities, which has acted as a serious bottleneck in the expansion of the poultry industry is proposed to be remedied by establishing a national egg marketing grid based on cooperative structure. For this purpose, poultry producers' cooperative societies will be organised.

Piggery Development

1.216. In the Fifth Plan, it is proposed to establish intensive piggery development projects around bacon factories and pork processing plants. A programme of establishing 23 pig breeding farms is also visualised. With the assistance provided by the

North-Eastern Council, a pig breeding station for maintaining a genetic pool of high quality imported stock is proposed to be established. As an adjunct to this station, facilities for in-service training in swine husbandry will be provided.

Feed and Fodder Development

1.217. At present, poor performance of livestock is largely due to the lack of proper feeding. Accordingly, it is planned to give special attention to the feed and fodder problem. In this context, the various programmes proposed are : establishment of 33 fodder seed production farms, expansion of 25 existing farms, seed production through 2,000 registered growers, setting up of 6 fodder banks and promotion of forage conservation activities. The area under cultivated fodders, at present, accounts for 6.7 million hectares of which 1.4 million hectares is irrigated. In the Fifth Plan, it will be envisaged to bring additional area under forage crops and, at the same time, encourage the cultivation of improved fodder crops.

1.218. Considering that the Fifth Plan places a heavy reliance on 2 million cross-bred cows and 2 million high yielding buffaloes, it is estimated that the total requirement of concentrate feed will be around 4 million tonnes in the terminal year of the Fifth Plan. The production of feed is, at present, organised in the private, public and cooperative sectors. According to available information the total number of plants in existence is around 184 in 1972. Their installed capacity is of the order of 22.6 lakh tonnes per annum. Most of the plants are currently operating much below their installed capacity. In the Fifth Plan, besides utilising the installed capacity of existing plants, action will be necessary to set up a number of plants, primarily in the public and cooperative sectors.

1.219. Over-grazing and constant neglect have resulted in the deterioration of existing grazing lands. At present, approximately 13 million hectares are under permanent pastures and other grazing lands not classified under forests. Of this, it is proposed to develop about one lakh hectare of pasture land for maintaining 5 lakh good quality sheep. Similarly, suitable measures will be taken to regenerate grasses in the alpine pastures for migratory sheep. There are about 61 million hectares of forest land. It is envisaged to develop in close collaboration with the Forest Department, a portion of this area for the production of grasses, which could be cut, dried and baled. This area will be developed by reseeding and the application of suitable fertilisers for the proper growth of grasses.

Animal Health

1.220. Since, in the Fifth Plan, considerable stress has been laid on cross-breeding, it will be necessary to give increased attention towards providing adequate animal health cover. One of the main elements to which special attention needs to be given is vaccination against foot and mouth disease. It is estimated that for an effective programme, nearly 6.5

million doses of vaccine would be needed in the terminal year of the Plan. For this purpose, apart from the units already set up, both in the public and private sectors, new manufacturing units will be necessary. The Fifth Plan also visualises the establishment of a public company to manufacture foot and mouth and other vaccines.

1.221. In the Fourth Plan, measures have already been taken to establish or strengthen biological products stations. In the Fifth Plan, considerable strengthening of these stations is envisaged. For this purpose, provision has been made both in the State and Central Plans. Another aspect requiring serious attention is the development of animal disease reporting and surveillance and intelligence service. Under the auspices of the North-Eastern Council, a biological products station and disease investigation unit is also proposed to be set up.

1.222. In the Fourth Plan, a programme for the establishment of Inter-State and International checkpoints for rinderpest is underway. This programme is proposed to be continued in the Fifth Plan. The provision of checkpoints, both at the Inter-State and International borders is to be increased substantially. Other important programmes contemplated in the Fifth Plan relate to diagnostic laboratories, animal quarantine stations and certification services. Lastly, it is visualised that besides increasing the number of veterinary hospitals/dispensaries, action will be taken to establish about 300 mobile veterinary clinics in the Fifth Plan.

Administrative Organisation

1.223. In the Fifth Plan, the task to be undertaken in the sector of animal Husbandry and Dairying is an unprecedented one. A great deal of technical know-how already exists and will be further developed in the course of the Plan. The main thrust of the effort will have to be on the operational side. At present, among the various Departments of the states, the Departments concerned with Animal Husbandry and Dairying are almost the weakest. It will, therefore, be necessary in the Fifth plan to strengthen the administrative machinery at various levels and also to upgrade their scales. For effective functioning, all aspects pertaining to these programmes will have to be brought within the purview of a single administrative organisation. The present arrangements for the collection of statistics relating to livestock are rather poor. During the Fifth Plan, it is proposed to strengthen the machinery for compilation and analysis of such statistics.

Animal Husbandry Research

1.224. Considerable research is required to determine the increase in milk production, which can be obtained through the cross-breeding of indigenous cattle with exotic animals. These studies are being conducted through a research programme of the Indian Council of Agricultural research on improving the cattle breeds. Simultaneously, studies are being carried out on the nutritional requirements, efficiency of feed-conversion and the best combination of feeds, fodder and nutritional supplements that will enable the cattle to produce the optimum quantity of milk at the most reasonable cost. A study on the reproductive efficiency of the various cross-breeds and their

physiological reactions to environmental factors such as radiation, heat, wind and humidity will also be undertaken in the Fifth Plan. Studies are also proposed to be undertaken to determine the ability of the various crosses to withstand parasites and to resist the diseases caused by bacteria, viruses and other agents.

1.225. The population of milch buffaloes in the country is estimated to be 23.36 million, contributing annually about 11.81 million tonnes of milk. The all India coordinated research project on buffalo breeding aims at pooling the best of the germ-plasm in the medium and large breeds and further improvements by selection, milk production potential and other economic traits. Besides this, frozen semen of progeny tested sires will be made available for dissemination and genetic improvement in allied buffalo herds in the country and for developing the export market.

1.226. It is estimated that about 16 million day-old chicks are distributed annually for the poultry development programmes in the country. A sizeable proportion is from commercial hatcheries set up with foreign collaboration. During the Fifth Five Year Plan a 10 per cent per annum increase in egg production is envisaged. To achieve this objective, it will be necessary to considerably increase the supply of superior strains of chicks to the farmers. The two All-India coordinated research projects on poultry, one for eggs and the other for meat, will be continued, in order to develop indigenous high producing strains capable of laying about 220 eggs per annum and the meat strains of poultry which will attain over one kg. body weight in eight weeks. It is proposed to develop inbred lines of hybrid chicks and to study their performance under different environmental and agroclimatic conditions. A number of poultry farms belonging to the State Governments and the universities will be associated in the programme with each unit acting as an associate hatchery and experimental station for quick study for production potential, multiplication and distribution of improved strains.

1.227. Of the current wool production, nearly 43 per cent is of apparel quality and 57 per cent of carpet quality. In order to support the sheep development activities in the country, aimed at increasing wool production, the Indian Council of Agricultural Research has taken up a multi-disciplinary research project for the improvement of fine wool sheep. The main objective of the project for improving sheep for fine wool is to evolve breeds of sheep suitable for major wool producing areas in the country. The research programme also envisages the improvement of carpet wool breeds of sheep, viz. Magra, Marwari, Pugal, Jaisalmeri to meet both the internal requirements of carpet wool, and export needs. In the context of improving the mutton productivity of sheep, the Indian Council of Agricultural Research has undertaken a sheep breeding programme for evolving new mutton breeds of sheep suitable for different agro-climatic regions of the country. The work proposed to be carried out through the cross-breeding of indigenous breeds with South Down and Dorset envisages the determination of breed combination and the level of exotic inheritance, which will attain a body

weight of 30 kgs at six months of age. The performance of different crosses is proposed to be studied in respect of growth, carcass yield, reproductive efficiency and feed efficiency.

Fifth Plan Outlays

1.228. As compared with an anticipated expenditure of Rs. 154.00 crores in the Fourth Plan, the Fifth Plan visualises public sector outlay of Rs. 522.4 crores. The sector-wise break-up is as follows :

Table 5: Fifth Plan public Sector outlays for Animal Husbandry & Dairying

	Rs. crores
states	233.74
union territories	12.01
central sector	210.15
centrally sponsored sector	66.50
Total	522.40

The above outlays do not include the provision for I.C.A.R. research schemes relating to animal husbandry and dairying, as these have been separately included in the overall provision for the I.C.A.R. Plan in the Agricultural sector.

VIII FISHERIES

Review of Progress in the Fourth Plan

1.229. The base level of fish production was estimated at 15.00 lakh tonnes and the Fourth Plan target was originally fixed at 19.70 lakh tonnes. However, as a result of consultations with State Governments in May 1970, these figures were revised to 17.69 lakh tonnes and 24.10 lakh tonnes, respectively. Against these targets, the production of fish in the terminal year of the Fourth Plan is likely to be of the order of 22.69 lakh tonnes. Of this, 7.84 lakh tonnes is expected to be in the inland sector and 14.85 lakh tonnes from marine resources.

1.230. During the Fourth Plan, there were substantial shortfalls in respect of various programmes of inland fisheries. Against the target of 3165 million for collection/production of spawn the achievement is likely to be about 1888 million. As regards the distribution of fry and fingerlings, against a target of 629 million, the level by the end of 1973-74 is likely to be about 483 million. In respect of the nursery area, it is expected that by the end of the plan, there would be only 923 hectares against the target of 1643 hectares.

1.231. In the marine sector, the most important programme related to the mechanisation of boats. There were about 7000 such boats on the eve of the Fourth Plan. The Plan proposed to introduce another 5500 mechanised boats. After making allowance for the number of boats that are likely to be decommissioned, it is estimated that there would be 9300 boats in operation by the end of the Plan period. For off

shore and deep sea fishing, the Fourth Plan had visualised the introduction of 300 trawlers and large fishing crafts. There has been a major shortfall in this respect. Only 76 trawlers are likely to be introduced in spite of the fact that a subsidy was offered to provide an incentive for indigenous vessels.

1.232. The Fourth Plan visualised the establishment of 8 deep sea fishing stations and the procurement of 25 survey vessels. By the end of the third year of the Plan, only 13 vessels had been received and bases at Port Blair, Calcutta and Kandla had been set up. Thereafter, action was accelerated for the organisation of additional survey bases at Veraval, Goa, Mangalore, Madras and Paradeep, which are expected to be functional by the end of the Plan. As far as survey vessels are concerned, another 8 vessels are likely to be added in the last two years of the Plan.

1.233. The Fourth Plan had visualised the provision of landing and berthing facilities, both at major and minor harbours. Fishing harbours at 9 major ports were planned at a total cost of Rs. 13.50 crores. In the first four years of the Plan, the expenditure was only about Rs. 1.16 crores. The expenditure by the end of the Plan period is not likely to exceed Rs. 2 crores. The main reason for the slow progress was the undue time lag between the preparation of blue-prints and the initiation of works. The design for the Madras fisheries harbour had to be changed because of construction problems concerning the break water.

1.234. The Plan provided an outlay of Rs. 6 crores for the development of minor fishing ports as a Centrally sponsored programme. Survey of potential sites were proposed to be carried out by the 'UNDP project for Pre-investment Survey of Fishing Harbours.' Over the Plan period, the expenditure is likely to be of the order of Rs. 5.00 crores. The developmental work under this programme suffered a slight setback due to the non-availability of the requisite number of dredgers.

1.235. During the Fourth Plan, it was envisaged under the public sector programmes to set up 10 composite refrigeration plants, 73 ice plants and cold storages and introduction of 20 refrigerated rail vans. The targets are likely to be achieved except for the last item. At present, 12 refrigerated vans are in operation, and orders for 6 have been placed.

1.236. The Fourth Plan envisaged the expansion and strengthening of three ICAR institutes, namely, the Central Inland Fisheries Research Institute, Barrackpore, the Central Marine Fisheries Research Institute, Cochin and the Central Institute of Fisheries Technology, Cochin. In addition, the Plan provided for 7 All-India Coordinated Research Projects under the supervision of the Indian Council of Agricultural Research. Of these, 4 projects deal with various aspects of inland fisheries, one is on marine prawn biology and resources and 2 deal with fish technology. All these projects commenced operation during the later half of 1971.

Approach to Fisheries Development in the Fifth Plan

1.237. In the Fifth Plan, a special boost will be given to the fisheries sector. This approach is derived from a number of considerations. Firstly, as a source of protein rich food fisheries have been inadequately exploited. There is the need and scope for an immense increase in production both in marine as well as inland fisheries. Secondly, whilst marine fisheries are already an important foreign exchange earner there is considerable potential for further increases in these earnings. Finally, fisheries development is intimately related to the improvement of the socio-economic conditions of fishermen, who are usually among the most under-privileged sections of the population.

1.238. The principal objectives of the Fifth Five Year Plan in respect of fisheries development would be the following:

- (i) to significantly step up the annual level of fish production;
- (ii) to improve the socio-economic conditions of fishermen and to increase the employment potential of this sector; and
- (iii) to improve the system of marketing of fish and fisheries products in the domestic market.

Target of Fish Production

1.239. The following table indicates the target of fish production in the Fifth Plan:

Table 6: Fifth Plan target of Fish Production

item	unit	base level 1973-74	target 1978-79
(0)	(1)	(2)	(3)
1 Inland.	lakh tonnes	7.84	10.55
2 marine.	-do-	14.85	20.25
<i>Total</i>		22.69	30.80

At Annexure XXI is a statement indicating the State-wise break-down of the above mentioned target.

Strategy for Fish Production

1.240. In the inland fisheries sector, the ultimate production potential is estimated to be about 35 lakh tonnes. The achievement so far has been rather poor. In the Fourth Plan, it is anticipated that the production may increase from a base level of 6.20 lakh tonnes to about 7.84 lakh tonnes. In the Fifth Plan, a much more ambitious effort is contemplated. Tentatively it is proposed to plan for an increase of about 2.70 lakh tonnes. Of this, an increase of about 1.75 lakh tonnes will be sought to be achieved by the adoption of intensive fish culture methods in water areas which are already under fish culture. By intensive methods, it is proposed to increase the production from about 600kgs per hectare to about 900 kgs per hectare annually. For this purpose, a number of measures are proposed to be taken. These will include a significant addition to the nursery area for fish seed production. At present, seed production is confined only to the departmental fish farms. In the

Fifth Plan, measures will be taken to interest the private sector to rear spawn to fingerlings. Other measures will include the establishment of fish farmers' development agencies in selected districts and changes in policy governing the lease of fresh waters. The objective will be to ensure that the fisherman who really labours for the production gets the due share of the profits and hence has the incentive to further increase the yield of fish. In addition, it is proposed to reclaim about 0.5 lakh hectare, which will bring an additional production of about 0.9 lakh tonne. It is hoped to link up a self employment programme for educated youth, from the fishermen class with the reclaimed fresh water areas, instead of trying to do the fish rearing through departmental units. The same approach will be followed in future projects of reclamation which will be started for brackish water fisheries. Other programmes of increasing fish production will relate to capture fisheries, such as the development of reservoir fisheries and riverine water fisheries.

1.241. In marine fisheries, the sector of traditional coastal fishing with the use of country boats has hitherto remained rather neglected. In the Fifth Plan, this sector is proposed to be given pointed attention for two reasons. Firstly, this sector accounts for about 60 per cent of marine fish production and is capable of achieving considerable additional production. Secondly, it is this sector which accounts for nearly 10 lakh fishermen and is, therefore, of obvious importance from the point of view of improvement of the Socio-economic conditions of fishermen. In the Fifth Plan, the main endeavour will be to undertake various measures, such as an improvement in the design of country boats, more extensive use of synthetic twine, the provision of ice and cold storage facilities and fish curing yards at various centres.

1.242. As regards mechanised fishing in coastal areas, by the end of the Fourth Plan, about 9,300 boats are expected to be in operation. The target for the Fifth Plan will be to take requisite measures to facilitate the introduction of an additional 4750 mechanised fishing boats throughout the country. In some States, particularly Andhra Pradesh, Orissa and West Bengal, the progress in introduction of mechanised boats, has so far remained unsatisfactory. There is both need and scope for stepping up the programme in these States. In other States, the increase in the number of boats in the Fifth Plan is likely to be more or less of the same level as in the Fourth Plan. The introduction and re-distribution of the mechanised boats will have to be with the objective of preventing over fishing in some of the coastal areas. This requires provision of landing facilities along the coast in a large number of places and suitable communications to the nearest marketing centres. Steps will have to be taken to ensure that the larger fishing vessels do not poach in the areas within the range of mechanised boats and mechanised boats do not poach in the areas which the country boats can exploit. This division of areas of operation is imperative to prevent over-fishing in the coastal areas and consequent economic crisis for the poorer classes.

1.243. One of sectors in which the Fifth Plan will seek to make a dent is that of deep sea fishing. This will require a three-fold approach, namely, the enlargement of survey and exploration efforts, the introduction of an adequate number of large fishing vessels and the development of fisheries harbours along with ancillary facilities for processing and marketing. So far, fisheries resources have been effectively surveyed only to a depth of 25 fathoms. There are large gaps in the information, between 25 and 40 fathoms, while there is hardly any information regarding fisheries resources beyond the 40 fathom line. It is proposed in the Fifth Plan to extend the work of fisheries survey through the Deep Sea Fishing Organisation which would be provided with larger vessels having a wider range of operations. For commercial deep sea fishing, it is contemplated that about 200 additional large fishing vessels will be introduced in addition to about 100 such vessels likely to be available on the eve of the Fifth Plan. Finally, the programme of major fisheries harbours which did not record significant progress in the Fourth Plan will be sought to be completed. The programme will have to be suitably phased, so that the location of resources in the sea precedes heavy investment in the trawlers and the investments already made in fishing harbours are properly utilised before we spread out to the new areas.

1.244. In the marine sector, nearly half of the additional fish production is expected as a result of the extension of modern technology to the traditional methods of fishing using non-powered boats. The importance of extension even in the mechanised segment of the marine sector cannot be under-estimated. The only difference is that extension advice here would be of a more specialised nature. In the inland sector, nearly 70 per cent of the additional production is expected to come through intensive fish farming techniques, requiring the flow of modern techniques down to the fish farmers. Thus extension will be given a very important role in the fisheries development programmes visualised in the Fifth Plan.

Targets of Fisheries Programmes

1.245. The following table indicates the targets of important fisheries programmes proposed to be taken up during the Fifth Plan :

Table 7: Fifth Plan Targets of Fisheries Programmes

item	unit	base level 1973-74	targets 1978-79
(0)	(1)	(2)	(3)
1. mechanised boats in operation	nos.	9300	13300
2. large fishing vessels . . . . .	..	100	300
3. refrigerated/insulated rail vans . . . . .	..	12	53
4. spawn	million	1888	4257
5. fry and fingerlings . . . . .	..	483	1215
6. nursery area	hectares	923	1780

Annexure XXII to XXV indicate Statewise break up of the base levels and targets of the selected physical programmes.

Inland Fisheries

1.246. During the Fifth Plan, the level of spawn production proposed to be achieved is estimated to be 4257 million against the assumed base level of 1888 million. In respect of fry and fingerlings, the level sought to be achieved is 1215 million, against the base level of 483 million. For achieving these targets, two schemes have been proposed, namely, 'river fishery management and spawn production' and the 'setting up of district level fish seed farms and block level nurseries'. The former proposes to step up the availability of fish seed by intensifying the collection of spawn from natural sources on the one hand and a massive induced breeding programme on the other. It is also proposed to provide more protection to the brood fish by adopting certain regulatory measures.

1.247. Induced breeding would be undertaken both at the existing fish seed farms as well as at the district level fish seed farms and nursery units at block level, which are expected to come up under the latter scheme. The district level farms would supply fish seed to fish farmers as well as impart training to them so as to enable them to undertake the production of fish seed. It is also proposed to set up fish farm construction and design cells in each of the States/Union Territories to improve the fish farm designing as well as to facilitate construction of these farms.

1.248. For optimum utilisation of water areas, measures proposed in the Fifth Plan relate both to maximising the production from existing culturable waters as well as to increase the water area under fish culture. Intensive fish cultural techniques will be extended primarily to the small water areas where the level of fish production is high and it requires relatively less investment. The modern cultural practices will be popularised through demonstration centres and extension services. It is also proposed to undertake the development of medium and large water areas including reservoirs.

1.249. Schemes for the reclamation of derelict water areas and development of fisheries in silted up water systems subserve the objective of increasing the extent of culturable waters. The major developmental work would relate to dewatering, desilting and reclamation of derelict areas into areas fit for fish culture. Specific organisations will be required for large scale development of beels, mans and jheels.

1.250. The establishment of Fish farmers' development Agencies would seek to bring about the required coordination and integration which is a pre-requisite for the spread of intensive fish culture practices. These should be developed as functional cooperative societies on the pattern of the Milk Cooperatives developed by the Kaira District Cooperative Milk Union Ltd. It is proposed to set up 30 agencies in various States

and Union Territories. To begin with 1 to 3 agencies in suitable districts will be set up in each of the States, keeping in view the size of the State and the extent of culturable areas. On the basis of the experience thus gained such agencies will be set up in other districts as well, in a phased manner. These agencies would also channelise institutional finance for the development of inland fisheries.

1.251. In the Fifth Plan, brackish water fish farming will receive special attention. Attempts will be made to utilise the technology developed at the Central Inland Fisheries Research Institute. In addition foreign expertise may also be availed of to achieve a quick break-through. It is estimated that there are around two million hectares of brackish water area available in the country. Of this about 200 hectares will be taken up for development in the first instance on a pilot basis. If the projects justify the prognostications of growth and economics, suitable functional corporations may be started to reclaim the brackish water areas and their exploitation by educated young men of the fishermen class.

Marine Fisheries

1.252. Marine fisheries can broadly be classified under three heads: traditional non-mechanised fishing, coastal mechanised fishing and deep sea fishing. The various developmental activities proposed under these fields would be oriented not only towards augmenting fish production but also towards the economic betterment of the fishing community.

1.253. Traditional non-mechanised fishing accounts for nearly 60 per cent of the total marine catch. The major part of the additional marine fish catch contemplated in the 5th Plan is expected to be contributed by this sector. Under this head, the fishermen will be given assistance primarily for the preservation of craft material, improving the designs of the boats and provision of onboard storage facilities, use of out-board motors for motorisation, provision of improved types of sails, assistance in the procurement of marine gear and gear material, provision of mechanised facilities for fishing by traditional methods, assistance to fisheries cooperative societies and provision of ice at important fish landing centres. A scheme for developing the infrastructure in coastal fishing villages is also visualised. Fishing villages will be linked by approach roads and will be assured the supply of potable water. This would help in improving both the socio-economic conditions of the fishing community as well as ensure a more rational disposition of their catch.

1.254. It is proposed to introduce 4750 additional mechanised boats during the Fifth Plan. Taking into account 750 boats, which would be de-commissioned over the period, the net addition would be of the order of 4,000 boats. The programme for the "Assistance to the mechanised fishing crafts" entails the supply of mechanised boats, the establishment of fully equipped service stations, workshops and boat building yards. Efforts would also go in the direction of reducing the cost of mechanised boats and improving

their operational efficiency. Further more, it is visualised that increasing recourse will be taken to institutional finance to give a fillip to this programme.

1.255. It is envisaged that about 200 large deep sea fishing vessels would be introduced over the Plan period. The programme for 'Assistance to deep sea fishing', is being undertaken with the objective of attracting private enterprise, for which an important role is chalked out as far as fishing in deeper waters is concerned. The scheme for the subsidy to indigenously constructed vessels, which was in operation during the previous plan, would be continued in the Fifth Plan. The idea of organising fisheries cooperatives to undertake deep sea fishing would also receive attention. With the introduction of larger fishing vessels and mechanised boats, a clash of interests is emerging between non-mechanised boats, mechanised boats and larger fishing vessels. Regulation of fishing by different categories of vessels should be effected through suitable measures, which may include legislation.

1.256. In the field of exploration and survey, certain schemes would be carried over from the Fourth Plan and continued in the ensuing Plan. They are the Indo-Norwegian Project, Deep Sea Fishing Organisation for survey and experimental fishing and UNDP Project on Pelagic Fisheries. A new scheme in this field is proposed to be taken up, namely Exploratory Survey Programme for the North-West and East Coast. The main accent in these schemes is two-fold: firstly, to fill the gaps in surveying the fisheries potential and secondly, to follow it up with the popularisation of commercial fishing in deeper waters through the introduction of larger vessels and improved operational methods.

1.257. As regards fishing harbours at major ports, work on the harbours at Madras, Bombay, Cochin, Roychowk, Vishakhapatnam and Paradeep will be completed and the preliminary work and investigations for Goa will be taken up. Fishing harbours at minor ports recommended by the UNDP project for pre-investment survey will be taken up, whereas at other smaller landing centres, facilities will be added as and when the need arises depending on the pace of the introduction of small mechanised boats. The U.N.D.P. project has recommended and prepared project reports for Malpe, Honnavar, Ratnagiri, Dighi, Dhamara, Narsapet, Kakinada and Nizamapatnam. These cities together with six others likely to be recommended by the project are proposed to be taken up for development in the Fifth Plan.

1.258. Other important schemes, which are proposed to be taken up in the marine sector are: Establishment of ship building yards and certain pilot projects. One of the pilot projects relates to demonstration of fish processing, whereas the other will be concerned with the demonstration of economic and technical feasibility of new processes, techniques/vessels or material/equipment utilisation.

Fish Processing, Marketing and Transport

1.259. As regards fish processing, a scheme to demonstrate improved methods of handling, salting and dehydration is proposed to be taken up on a

pilot basis. In addition, schemes like the setting up of fish sausages and ham plants for the utilisation of trash fish, large ice plants and plants for fish meal and oil extraction are proposed to be taken up.

1.260. In respect of marketing the present emphasis on export will continue during the Fifth Plan. In order to meet the demand for fresh fish as well as processed fishery products, it is proposed to establish a cold chain with processing units at important fishing centres and storage units, at both production and distribution centres. These facilities will be specially developed from the ports, where deep sea trawlers operate, to the inland cities so as to market the various types of marine fish caught by the trawlers on a remunerative basis. In the marketing enterprises, filleting and freezing techniques will be used at minimum transport costs and transit loss of quality. It is also proposed to strengthen cooperative societies and corporations by giving them extensive assistance.

1.261. In the field of transport, all routes so far taken up for refrigerated rail transport will be provided with daily services, for which about 15 additional insulated rail vans will be required. It is proposed to introduce 20 refrigerated rail vans for the movement of frozen fish. It is also proposed to introduce road vans to facilitate the movement of ice to fishing villages and fish from these villages.

Fisheries Research, Education and Extension

1.262. At the Central Inland Fisheries Research Institute, Barrackpore, emphasis will be laid on the development of aquaculture techniques, both in fresh and brackish water systems and the intensification of frog farming. At the Central Marine Fisheries Research Institute Cochin it is proposed to undertake the refinement of methodology for collection of marine fish landing data, preparation of detailed fisheries maps and conducting studies on pelagic and demersal fisheries. At the Central Institute of Fisheries Technology, priority would be accorded to the investigations relating to fishing craft and gear. It is also proposed to design suitable bottom trawls, effect improvements in the indigenous boat seines and cast and drag nets using synthetic fibre. Seven coordinated research projects were taken up during the Fourth Plan. Works relating to almost all of them will spill-over to the Fifth Plan. In addition to these, a new project on Brackish water fish farming is proposed to be undertaken during the Fifth Plan.

1.263. The formulation of the programmes in the field of education and training will be based on the recommendations of the Evaluation Committee of the Central Institute of Fisheries Education, Bombay. It is proposed to establish more fishermen training centres as well as expand the existing ones. Steps will also be taken to provide advanced training at the Central Institute.

1.264. Under Fisheries Extension, the schemes would relate primarily to the provision of specialised and consultancy services. It is envisaged that a panel of specialists in fish farm designing, fish culture including coastal aqua-culture, assessment of marine fisheries resources, fishing crafts and gear, fisheries economics

and statistics, fish processing, refrigeration and diversification of products will be provided. It is also proposed to set up extension training centres to provide training both in extension subjects as well as in extension techniques. Further more, it is proposed to build up the organisation of Field Extension Units in various States. The activity of these Units will be chiefly concerned with fish culture and fish handling and processing.

Fifth Plan Outlays

1.265. An outlay of Rs. 160.51 crores is tentatively proposed for the development of Fisheries in the Fifth Plan as against an anticipated expenditure of Rs. 57.00 crores in the Fourth Plan. The sector-wise break-up is expected to be as under:

Table 8 : Fifth Plan Outlays for Fisheries

		(Rs. crores)
sector		
(0)		(1)
1. states		80.98
2. union territories		9.93
3. central sector		47.10
4. centrally sponsored schemes		22.50
5. total		160.51*

*Exclusive of outlays on fisheries research.

1.266. In addition, the following schemes, though an integral part of Fisheries programmes, have been provided for under the I.C.A.R. Plan:—

- (i) Central Inland Fisheries Research Institute;
- (ii) Central Marine Fisheries Research Institute;
- (iii) Central Institute of Fisheries Technology; and
- (iv) All-India Coordinated Research Projects.

IX

FORESTRY

Review of Progress in Fourth Plan

1.267. The physical targets of some important forestry schemes and the achievements for the Fourth Five Year Plan are indicated below :

Table 9: Fourth Plan physical Targets and Achievements

scheme	unit	base level 1968-69	fourth plan 1969-74		anti- cipated base level 1973-74
			target	achieve- ment	
(1)	(2)	(3)	(4)	(5)	(6)
1. plantations of quick growing species	000 ha.	259	287	251	510
2. economic and commercial plantations	..	561	339	289	850
3. farm forestry	..	140	75	80	220
4. communications	000 kms.	37	11	8	45

The State-wise break-up of these targets and achievements is given in Annexure XXVI.

1.268. It would be seen that, under the programme of the plantations of quick growing species, against the Fourth Plan target of 2.87 lakh hectares, the anticipated achievement is 2.51 lakh hectares. However, it needs to be pointed out that the success of plantations of quick growing species has been rather limited. In a number of States, the programme has either not been successful or has tended to be converted into a programme of plantations of economic and commercial uses. Under the programme of economic plantations for industrial and commercial uses, the Fourth Plan target is 3.39 lakh hectares. Against this, the anticipated achievement is 2.89 lakh hectares. The programme has been generally successful. Under the programme of farm forestry-cum-fuelwood plantation, the Fourth Plan target of 75,000 hectares is expected to be exceeded by 5,000 hectares. However, there is a sizeable shortfall in the programme of communications.

1.269. In the Fourth Plan, the Central programme of pre-investment survey of Forest Resources had a target covering 75,000 sq. kilometres of forest area. This is likely to be achieved. However, proper priorities do not appear to have been observed in the selection of areas for such surveys. Again, while results of such surveys in the Central and partly Southern regions are being utilised, effective use of the results of such surveys in other regions has not been made. A centrally sponsored scheme of forest resources survey has also been in operation.

1.270. Under the Central programmes of forest research, the Fourth Plan outlay was Rs. 1.75 crores. The actual expenditure during the Fourth Five Year Plan is anticipated to be 0.90 crores. It is obvious that there have been serious shortfalls under the programmes of forest research. The Fourth Plan specifically aimed at establishing the regional centres in forest research at Gauhati and Jubbalpore. In this respect, very little progress has been made.

1.271. During the period of the Fourth Plan, an Expert Committee on Wild Life (1971) was appointed by the Indian Board of Wild Life. As a follow up of the recommendations of this Committee, Parliament enacted a special legislation, the Indian Wild Life Act 1972 which has now been extended to most of the States. Two new schemes, namely the Tiger Project and development of selected sanctuaries and parks, have been initiated recently.

Objectives of Forestry Development in Fifth Plan

1.272. The primary objective of the Fifth Plan is to initiate measures for increasing production of industrial wood and other forest products by a change-over from conservation oriented forestry to a dynamic programme of production forestry, aiming at clear felling and creating large scale man-made forests with the help of institutional financing. The produce from clear felled areas is also to be utilised in wood based industries by locating additional units wherever required. The second important objective is to develop farm forestry and improvement of degraded forests to increase the fuel and timber supply in the rural areas.

A system of meaningful forest surveys to assess the present growing stocks, increments and potential increments by forest divisions, natural regions and states, alongwith a proper information system will also be built up based partly on the forest working plans and working schemes and partly on the data available from the results of the pre-investment survey of Forest Resources in various regions.

Target of Fifth Plan

1.273. The Fourth Five Year Plan had estimated the consumption of industrial wood in 1968-69 to be 11 million m³. This was based on the then estimated production of 8.0 million m³ from Government forests for 1968-69 (i.e. recorded production) with 40 per cent of this quantity coming from outside the Government forests. The demand by 1973-74 at that time was projected to be 16 to 17 million m³, and it was anticipated that the total supply available by 1973-74 may be about 13.5 million m³. It is now estimated that there was a total consumption of 16 million m³ in 1970 in terms of round wood. The projected requirement by 1980 and 1990 are estimated as 25.5 and 40.1 million m³ respectively. The recorded production of industrial wood in 1973-74 is likely to be 9.4 million m³. The Fifth Plan target for recorded production of industrial wood is placed at 12.3 million m³.

1.274. Important physical programme targets in the forestry sector envisaged for the Fifth Plan are as follows:

Table 10 : Fifth Plan Targets of Important physical programmes

item	unit	base level 1973-74	Fifth plan target
(1)	(2)	(3)	(4)
(1) recorded production of industrial wood	million m ³	9.4	12.3
(2) plantations of quick growing species	000 hec.	510	860
(3) economic plantations of industrial & commercial uses	"	850	1610
(4) farm forestry	"	80	160
(5) mixed plantations including fuelwood	"	140	240
(6) plantation on lands along roads, canal banks, railway lines & flood embankments	000 kms	not known	32
(7) communications	"	45	60

State-wise targets are given at Annexures XXVII and XXVIII

Strategy in the Fifth Plan

1.275. So far, only a limited beginning has been made in project planning for forestry. Three major forestry projects have been under formulation in the States of Uttar Pradesh, Maharashtra and Madhya Pradesh. Special efforts are proposed to be made in the Fifth Plan to prepare a shelf of projects in various

States, indicating the immediate and long-term benefits in terms of increased raw materials for industries and additional revenues at different levels of investments.

1.276. A small beginning towards creating an institutional framework for commercial forestry has already been made during the Fourth Plan period with the formation of the Mysore Forest Corporation. In Maharashtra, a Forest Development Board has been created. The underlying concept of the Board is that at least a part of the surplus revenue accruing as a result of the projects' activities may be ploughed back as investment. In the Fifth Plan, in accordance with the recommendations of the National Commission on Agriculture, a network of State Forest Corporations is proposed to be created for the establishment and management of man-made forests and forest based industries. Efforts will also be made to attract a growing volume of institutional finance.

1.277. The National Forest Policy, adopted in 1952 laid down that India as a whole, should aim at maintaining one-third of its total land area under forests, distributed more or less evenly in such a way that about 60 per cent of the area in the hills and 20 per cent in the plains is kept under forests. However, contrary to the requirements of the National Policy it is estimated that 1.7 million hectares area has been disforested during the period 1951 to 1969. In the Fifth Plan, while laying special emphasis on intensive forest development, it will be necessary to ensure that forest areas are not disforested for extension of crop areas and, to compensate for the forest area already lost, efforts are made to afforest equivalent areas out of the wastelands.

1.278. There has been a continued inadequacy under programme of forest research during the last 10 years. This lacuna needs to be quickly removed. Without effective programmes of forest research, a real break through in the forestry sector does not appear to be feasible.

1.279. One of the critical problems has continued to be that of inadequate growth of farm forestry and extension forestry. Fuelwood requirements in the next 10 to 20 years are anticipated to increase markedly. A substantial step up in fuelwood production will have to be one of the specific objectives of forest management. Large scale fuelwood plantations will have to be raised. Improvement of communications which may contribute to the increased availability of fuelwood will also be given attention in the Fifth Plan.

1.280. The continued existence and conservation of forests often depends on the extent to which forests can be made useful to the neighbouring communities. It will be necessary to make efforts and see that in particular the tribals living in forest areas receive special consideration in forestry programmes. Further steps towards the organisation of forest labour cooperatives will have to be taken.

Programmes in Fifth Plan

Commercial Plantations

1.281. Commercial man-made forests will be a major activity in the Forestry Sector in the Fifth Plan. Setting up of State Forest Corporations and transfer of forest areas considered fit for commercial production to such Corporations will be undertaken. The value of land and the standing timber on such areas will form the major source of equity capital against which the Corporations can borrow from financial institutions. Special attention will be given to the careful selection of species to be raised, the study of mixtures to be followed, intensive programmes of forest research, a critical consideration of rotations on the basis of economic criteria, a rational pricing policy for the supply of forest raw materials to industries and the creation of large scale employment by the envisaged programmes etc.

1.282. Plantations over 11.1 lakh hectares are proposed to be raised during the period of the Fifth Plan. These include plantations of quick growing species, and other species of commercial and industrial importance. The annual target of such plantations is proposed to be raised from the 1973-74 anticipated level of 1.2 lakh hectares to 3.4 lakh hectares in 1978-79.

1.283. Commercial plantations envisaged in the Fifth Five Year Plan would be (a) economic plantations for industrial and commercial uses, and (b) plantations of quick growing species. The economic plantations would consist of important species like *teak*, *sal*, *chil*, *deodar*, *fir*, *spruce*, *semal* and other match wood, plywood species, *khair*, *sisso*, *bamboo* etc. These would be raised in the comparatively most productive and accessible areas, generally on the lines envisaged in the Report of the National Commission on Agriculture on Man-made Forests. There will be a target of 7.6 lakh hectares of such plantations to be raised during the period of the Fifth Plan partly from Plan funds and partly institutional financing. This would bring the base level of 1973-74 of 8.5 lakh hectares for such plantations to a level of 16.1 lakh hectares at the end of the Fifth Plan.

1.284. Plantations of quick growing species mainly *eucalyptus* hybrid will be raised over an area of 3.50 lakh hectares during the Fifth Plan period, partly from institutional financing and partly from Plan funds. These would raise the base level of 1973-74 of 5.1 lakh hectares of such plantations to the level of 8.6 lakh hectares at the end of the Fifth Five Year Plan. Intensive experimental plantations of poplars in the Northern Zone and of tropical pines in suitable areas will be continued. Large scale import of seeds of tropical pines will be necessary for this purpose.

Social Forestry

1.285. Severe shortage of fuelwood is developing rapidly in certain parts of the country and scarcity pockets are expected to widen and multiply in the next few years. Action is necessary to try

and tackle the fuelwood problem. In general, however, firewood is more profitably raised along with some timber etc., on account of the comparatively lower prices of the firewood, though in limited areas even raising of fuelwood plantations can be a profitable venture. Mixed plantations including fuelwood plantations will be raised on waste lands, community lands and sometimes in Government forests also. The physical target for such plantations will be 1.0 lakh hectares for the Fifth Plan. Action is contemplated to select suitable areas of sufficient productivity with special reference to their location, and the demand of timber and fuelwood. Even 2—4 or 10 hectares plantations with adequate fencing and protection including raising of such trees as *neam*, *Mahua*, *Kanji*, the seeds of which are useful, can be profitable.

1.286. In areas deficient in forests like the North Indian plains in particular and generally in most other intensively cultivated places, plantations in the lands along with the roads, canal sides, railway tracks and flood embankments etc. have been successfully raised and can make an appreciable contribution towards supplying the needs of timber and fuelwood, besides the much needed shade on the road sides. It is proposed that such work should be undertaken along a total length of 32,000 kms. during the Fifth Plan. The average cost of such plantations is estimated at Rs. 2500 per kilometre length

1.287. A new approach to farm and extension forestry has been adopted in Punjab and Haryana by encouraging farmers to raise large number of plants supplied to them on the edges of fields and other places. This pattern is proposed to be adopted especially in the Gangetic Valley and Coastal plains where the need for raising trees is most acute. There will be a physical target of 80,000 hectares for this programme to be taken in the State Plan Sector on private lands.

Forest Consolidation, Surveys and Statistics

1.288. The process of consolidation including giving proper legal status to all the forest areas where this has not already been completed is of great urgency. This work would seem to be particularly necessary in the States of Madhya Pradesh, Orissa, Maharashtra, Himachal Pradesh and in the Union Territory of Arunachal Pradesh. Special action is also necessary to try and define the position of forests under the District Councils in the various States of North Eastern Region. Considerable forest areas do not have detailed forest maps. By the end of the Fifth Five Year Plan period all the reserved forests and at least 50 per cent of the protected forests are proposed to be covered by forest surveys and maps.

1.289. In the Fifth Plan, the present Pre-Investment Survey is proposed to be converted into a national forest survey for carrying out regular, periodical and comprehensive forest resources surveys. The programme will include computation of forest growing stocks, increments and potential increments in different forest tracts, divisions, natural regions and states including evaluation, co-ordination and monitoring of forest development programmes.

Communications and Logging

1.290. An important part of the strategy for the Fifth Five Year Plan is the identification of forest areas with adequate forest growth where improvement of communications can play a substantial role in increasing production. A considerable step-up in the construction of new and improvement of existing roads in carefully selected areas is proposed. Improved logging is another important scheme. Wastage in conversion is at present heavy amounting to as much as 70 per cent in some of the forests. Some of the improved logging schemes will be taken up under institutional financing. All such schemes of improved logging will have to be designed to yield a net profit.

Wild Life Conservation

1.291. The Wild Life administration will be sought to be strengthened. Greater emphasis will be placed on carrying out regular surveys and the enumeration of various wild life species. Special effort will be made to protect the tiger population in 9 selected areas, where no commercial forestry operations will be carried out. Some of the selected parks and sanctuaries may be taken under Central Control. The number of protection squads will be increased and protection work intensified. Effort will be made to improve the zoological gardens and enrich them to impart nature education to the masses and serve as centres for the breeding of endangered animals in captivity.

Forest Research & Training

1.292. As indicated earlier, efforts in the direction of forest research have consistently continued to be inadequate. Special efforts will have to be made to develop capability in forest research in the State as well as the Central Sector.

1.293. In the Central Sector, besides the Gauhati and Jubbulpore Centres, additional research centres suitably located will be set up. Programmes of forest research will be sought to be linked to the Agricultural Universities wherever possible. Research will be specially concentrated on the selection of the most suitable and quick growing species in different climatic zones, on advances in forest genetics, and the better utilisation of various forest products. Special attention is proposed to be given to surveys of forest pests and diseases and methods of controlling them, and plant soil relationships etc.

Forestry Administration & Planning

1.294. Considerable emphasis is proposed to be laid in the Fifth Plan on the organisational and training aspects. In order that the envisaged programmes can be put through successfully, it will be necessary to work out the additional requirements of staff and a phased programme for their training. As indicated earlier, special efforts will have to be made to undertake project formulation in the forestry sector. These will include projects for creating large scale plantations, the construction of roads, logging projects and forest-cum-forest industrial projects etc. The State Forest Departments will be suitably strengthened for this purpose.

Financial Outlays for the Fifth Plan

1.295. An outlay of Rs. 220.50 crores is tentatively envisaged for forestry development in the Fifth Plan as against an anticipated expenditure of Rs. 93 crores in the Fourth Plan. The following is the break-up:

Table 11 : Outlays for Forestry Programmes

	(Rs. crores)
1. states	163.00
2. union territories	10.00
3. central sector	28.50
4. centrally sponsored	19.00
<i>total</i>	220.50

In addition, a growing volume of funds is expected to be utilized in forestry sector from institutional sources.

X

LAND REFORM

Introduction

1.296. Considerable emphasis has been laid on land reform since the First Five-Year Plan. The objectives of the land policy have been to remove such motivational and other impediments to the increase in agricultural production as arise from the agrarian structure inherited from the past, and also to eliminate all elements of exploitation and social injustice within the agrarian system so as to ensure equality of tenurial status and opportunity to all sections of the rural population. These objectives were sought to be achieved by abolishing all intermediary interests between the State and the tiller of the soil, regulating rent, conferring on tenants security of tenure and, eventually ownership rights, imposing ceiling on agricultural holdings, distributing surplus land among the landless agricultural labourers and the small holders, and bringing about the consolidation of holdings.

1.297. The new strategy in agriculture, based on high-yielding varieties of seed grown with large application of fertiliser and proper control of pests and diseases and sound agronomic practices, has pushed up the return from agriculture, manifold and thereby increased substantially the net yields from agricultural land. This has further tempted the non-cultivating owners of land to try and evict the tenants from their land in order to directly profit by cultivating their own land under the new strategy. At the same time, the new strategy requires heavy investment in land shaping and infra-structure and inputs, which investment a tenant is normally not willing to make without a clear indication of his right to the usufruct from his toils. This situation brings into sharp focus the need to renew the emphasis we have been laying on land reforms right from the First Five Year Plan and also emphasises the urgency of finding a quick remedy to the situation.

A critical assessment of the past experience in land reform is a necessary prelude to the formulation of an appropriate strategy for the Fifth Five-Year Plan.

Abolition of Intermediary Tenure

1.298. Soon after Independence high priority was given to the abolition of intermediary tenures. Accordingly every State enacted its own legislation for the abolition of intermediary tenures on payment of compensation, and by 1954, necessary legislation was adopted in almost all the States. The implementation of the enacted laws has since been practically completed. Only a few minor intermediary tenures still remain to be abolished and efforts to end them are being made. As a result of the abolition of intermediary tenures about 20 million tenants are estimated to have come into direct contact with the State. Large areas of privately-owned forest land, grazing land and culturable waste land have been vested in the State. Implementation of these reforms imposed a heavy administrative and financial burden on some of the State Governments. The compensation payable to the ex-intermediaries has been computed to be 670 crores out of which about Rs. 275 crores has been paid.

Reform of Tenancy

1.299. There had been leasing of land on a large scale even in areas where intermediary tenures did not obtain and subleasing where such tenures existed. The prevailing rates of rent were high and the tenants enjoyed little security of tenure. Three important guidelines were laid down in the Five Year Plans for the reform of tenancy: First, rent should not exceed 1/5 to 1/4 of the gross produce; second, all tenancies should be declared non-resumable and permanent except in certain specified circumstances; and third, in respect of non-resumable land, the landlord-tenant relationship should be ended by conferring ownership rights on tenants. All States have enacted legislation for regulating the rent payable by cultivating tenants. Maximum rates of rent have been fixed at levels not exceeding those given above in all the States except Punjab, Haryana, Jammu and Kashmir, Tamil Nadu and the Andhra area of Andhra Pradesh. In Punjab and Haryana fair rent is 33 1/3 per cent of the gross produce; in Tamil Nadu 33 1/3 per cent to 40 per cent of the gross produce. The Andhra Pradesh State Assembly passed a Bill fixing fair rent at the level of 30 per cent of the produce for irrigated land and 25 per cent for dry land. In Jammu and Kashmir, for tenants of landowners holding above 12 1/2 acres of land fair rent is 25 per cent of gross produce for wet land, and 33 1/3 per cent for dry land; however, for tenants of landowners who own less than 12 1/2 acres of land fair rent is 50 per cent of the gross produce. Several States have enacted legislation for conferring security of tenure on tenants. Under the existing law the position of tenants, and particularly of share-croppers, continues to be insecure in Bihar, Tamil Nadu, the Andhra area of Andhra Pradesh, the Saurashtra area of Gujarat, Punjab and Haryana. Provisions have been made in several States for enabling tenants to acquire ownership rights. Necessary legislation for this purpose is still to be enacted in Andhra Pradesh, Bihar, Haryana, Jammu and Kashmir, Punjab and Tamil Nadu. Thus in several States in the matter of tenancy reform existing

legislation falls far short of the accepted Policy. On the other hand, there were largescale ojectments through the device of "voluntary surrenders", many the other hand, there were largescale ejectments tenancies have been converted into "Nawkarnamal" and crop-sharing arrangements remain largely oral and informal. Thus the objectives of tenancy reform still remain to be attained.

Ceiling on Agricultural Holdings

1.300. Laws imposing ceiling on agricultural holdings were enacted in all the States except the former Punjab areas of Haryana and Punjab, where the State Government had powers to settle tenants on lands held by owners in excess of the permissible limit. However, the results achieved have been meagre due to the high ceiling level, large number of exemptions from the law, malafide transfers and partitions, and poor implementation. So far only about one million hectares of land has been declared surplus and about 0.53 million hectares of land has been distributed to landless agricultural workers and small-holders. There are wide variations between different States with regard to the level of ceiling, unit of application, exemptions etc. In August, 1971, the Central Land Reforms Committee made certain recommendations with a view to bring about a measure of uniformity in the ceiling laws of the different States. In the Chief Ministers' Conference on ceiling on agricultural holdings held on 23rd July, 1972, various aspects of the ceiling laws were discussed and certain conclusions were reached with regard to the level of ceiling, unit of application, exemptions, compensation, distribution of surplus land etc., and subsequently national guidelines were issued on the basis of those conclusions. The ceiling laws as enforced before the issue of the national guidelines in the States of Assam, Kerala, Tamil Nadu and West Bengal have broadly been in conformity with these guidelines. Some further improvements have been made in the laws of Kerala and Tamil Nadu subsequently. The ceiling laws of Andhra Pradesh, Bihar, Haryana, Himachal Pradesh, Jammu & Kashmir Madhya Pradesh, Orissa, Punjab, Rajasthan and Uttar Pradesh have been revised according to the national guidelines. In the remaining States steps are being taken to expedite the amendment.

Consolidation of Holdings

1.301. In India most agricultural holdings are not only small but also widely scattered. Hence emphasis was laid on the consolidation of holdings in the Five Year Plans. No law for effecting consolidation of holdings has yet been passed in the Andhra area of Andhra Pradesh, Kerala and Tamil Nadu. The laws of Gujarat, Madhya Pradesh and West Bengal provide for consolidation on a voluntary basis. The other States have passed the necessary legislation for compulsory consolidation. By 1972, about 32.6 million hectares of land had been consolidated. The progress has been uneven in the different States. The work has been completed in Punjab and Haryana. Uttar Pradesh has made good progress and some headway has been made in Maharashtra and Himachal Pradesh. Not much has been done in the remaining States.

A major weakness of the programme was that consolidation was done without taking effective steps to ensure security of tenure to tenants, particularly share-croppers. As a result consolidation of holdings, has often led to the large-scale ejection of insecure tenants.

An Overall Assessment the Implementation of Land Reform

1.302. A broad assessment of the programme of land reform adopted since Independence is that the laws for the abolition of intermediary tenures have been implemented fairly efficiently whilst in the fields of tenancy reform and ceiling on holding, legislation has fallen short of the desired objectives, and implementation of the enacted laws has been inadequate. With the abolition of intermediary interests the ownership of land became more broad-based and the erstwhile superior tenants acquired a higher social status.

Strategy for the Fifth Five Year Plan

1.303. The strategy for the Fifth Five-Year Plan will include a programme for institutional changes, concrete operational programmes, implementation machinery, people's involvement and the allocation of adequate funds for financing land reform. It is also necessary to launch a mass campaign to educate both the officials and the beneficiaries about the provisions of the various land reform laws in the States. The training of field officers will also receive adequate attention.

Programme for Institutional Changes

1.304. Priority is to be accorded to the removal of gaps between policy, legislation and implementation. It is imperative that immediate legislative measures are undertaken for plugging the loopholes in the existing tenancy laws to ensure complete security of tenure, conferment of ownership rights on cultivating tenants and share-croppers according to a time-bound programme.

Some policy-issues are involved in framing suitable legislation on tenancy reform. One is the question of the definition of the term "personal cultivation" now differently defined in the State laws. In the prevailing rural situation supervision either by the landowner himself or a member of his family should be insisted upon, the term family being defined as in the ceiling law. Such supervision would be possible only if the landowner or a member of his family resides in the same village or in an adjacent village. It will also be necessary to restrict the future transfer of agricultural land to persons who reside in the same village or in an adjacent village. Such a provision, if strictly enforced, will reduce the incidence of absentee ownership of land.

Another question is whether or not tenancy should be permitted to be created in the future. Past experience shows how difficult it is to regulate tenancies. The logic of development in the field of land reform lies in the right of ownership being conferred on all tenants. Leasing out should be permitted only in such

rare cases like specified disability or service in the defence forces. Even in such cases all contracts of tenancy should be in writing and should be for a fixed period.

Adequate steps are yet to be taken in some States to provide security of tenure and right of purchase in respect of homestead lands on which tenants and agricultural workers, mostly members of weaker sections like Scheduled Castes and Scheduled Tribes and other backward classes have constructed their dwelling houses. These States should enact the necessary legislation and implement it expeditiously.

The States which have not yet amended the ceiling laws in accordance with the national guidelines are to enact the necessary amendments without further delay.

Legislative measures are also to be directed to plug loopholes in the laws of land alienation and debt-redemption to safeguard the interests of the tribal population in backward areas.

Operational Programmes

1.305. Among the operational programmes high priority will be given to a comprehensive programme of preparation and maintenance of record of tenancy. Where there is no statute for the preparation of such records the necessary law should be enacted. It is necessary to design and execute a quick programme for updating records of rights particularly the recording of the rights of share-croppers. It is also necessary to accord high priority to the cadastral survey of the tribal areas.

The other important programme is the distribution of surplus land which should be accompanied by the timely supply of inputs in adequate quantities and investment support. Without such assistance the new assignees will not be able to bring the land under cultivation.

The other important operational programme is the consolidation of agricultural holdings. Before land consolidation operations are begun all tenants including share-croppers should be identified, their rights should be recorded and permanent and heritable rights should be conferred on them. Where land consolidation is undertaken the land of small holders, the surplus land and the Government waste land available for distribution to new assignees should be consolidated in compact blocks. Such a scheme will facilitate the adoption of a policy of directing the flow of future public investments in irrigation and land development exclusively for the benefit of the underprivileged.

IMPLEMENTATION MACHINERY

Administrative Set-up

1.306. The administrative organisation has proved to be an inadequate instrument for the speedy and efficient implementation of land reform. Therefore, an efficient administrative machinery operating at the village, tehsil, district and State levels would be

needed to attend to the task of implementation. At the State level there should be Land Reforms Commissioner with the rank of the First Member of the Board of Revenue functioning directly under the Minister of Land Reform. At the district level there should be a District Land Reforms Officer with sufficient status. The State Governments in the light of local conditions, may decide on the Collector's role in land reforms. There should also be officers of the appropriate seniority at the lower levels. The village level functionaries like Patwaris, Karnams, Karmcharis, etc., have been a serious impediment in the implementation of land reform. Therefore, no staff below the rank of a Revenue Inspector or Circle Inspector should be entrusted with the work of land reform at the lowest level. All the staff needed for the administration of land reforms may be drawn from the general pool of officers of the General Revenue Administration. The creation of a separate organisation charged with the exclusive responsibility for implementing land reform measures with direct accountability to its own hierarchy right upto the Cabinet Minister, is likely to give it the desired momentum and required orientation. Only well-paid staff who can reasonably be expected to be above temptations should be entrusted with land reform work.

Land Reform Tribunals

1.307. Legal hurdles have come in a big way in the implementation of land reforms in many States. It is, therefore, imperative that the Civil Courts should not be involved in the implementation of land reforms. In revenue matters, there is a precedent for the acts of Revenue authorities being placed outside the jurisdiction of Civil Courts. If the laws constituting the Revenue Tribunals provide for sufficient scope for review and revision, it can be reasonably expected that the bar to the jurisdiction of Civil Courts in the reforms procedure would not prejudice fairness and justice. It is, therefore, suggested that suitable Land Reform Tribunals should be constituted in the nature of special itinerant courts which will bring justice to the door of the poor people. Such courts are likely to take decisions based on an understanding of local conditions, rights and customs. The itinerant courts should be purely administrative tribunals and procedures should be simplified. The law may provide for suitable appeals from the decisions of the Lower Court to a higher one which again may preferably hear the appeals in Camp Courts. The Land Reforms Commissioner will have the power of revising any order either on the motion of the affected parties or on his own motion.

1.308. Even after these steps are taken, the litigiousminded can still seek the intervention of Civil Courts by various subterfuges mainly to the detriment of the poorer classes of the rural population. The beneficiaries of land reforms who are the poorer classes would, therefore, require free legal assistance, particularly the share-croppers, where their rights are endangered by litigation started by landowners.

1.309. All personnel selected for implementing the land reforms and all persons placed in-charge of the

various Tribunals should be given the necessary training for implementing the laws efficiently. If the administration shows the same vigour, alertness and efficiency in the implementation of land reform laws as it usually evinces in the maintenance of law and order, a great deal can be achieved. This is possible if there is dynamic, firm and unambiguous political direction and the work is entrusted to hand-picked officers.

People's Involvement

1.310. The existence of organisations of tenants and landless labourers would have facilitated better implementation of land reforms. Such organisation cannot, however, be built up simply by issuing executive instructions. In the absence of a strong peasants organisations the next best arrangement is to associate committees of beneficiaries with the implementation of land reforms. It is recommended that committees of beneficiaries be established at the village and block levels to advise on the implementation of all measures of land reforms and provision of supporting facilities to beneficiaries of land reform. All land-less labourers, share-croppers and small-holders of the village owning less than 2 acres of land may elect 5 to 7 members from among themselves to constitute the village committees. Members of each village committee may elect one of their members themselves to the block committees.

Financing of Land Reform

1.311. In the past, lack of financial support had hampered the progress of land reform. The financial

outlay for the Fifth Five Year Plan has been considerably stepped up from that in the Fourth Five Year Plan for streamlining the tenurial status, strengthening the implementation machinery for investment support to assignees of new land and for an integrated programme of consolidation. As far as preparation of record of rights is concerned, the action should shift from the time-consuming survey and settlement operations to a simple programme for the preparation of records of tenancies to be completed within a short period. Unless upto-date records are prepared it will not be possible to ensure the effective implementation of any measure of land reform or to consolidate agricultural holdings.

Mass Campaign of Land Reform

1.312. It is necessary to launch a mass campaign particularly at the village level to educate the beneficiaries about the various provisions of the land reform laws. In order to achieve this objective it is necessary to translate the laws into regional languages of the States and to publicise them through the various communication media.

Training of Field Officers

1.313. Adequate attention needs to be given to the in-service training of field officers and supervisory officers in regional centres through intensive field experience and inter-State visits.

ANNEXURE I

Fourth Plan—Targets of Production of Foodgrains and Achievements

(million tonnes)

crop	assumed base level (1968-69)	targeted level (1973-74)	production during						annual compound growth rate (%)		
			1968-69	1969-70	1970-71	1971-72	1972-73	1973-74 (likely)	targeted	likely achievement against	assumed 1968-69 base level (actual)
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. rice	39.00	52.00	39.76	40.43	42.22	43.07	38.63	44.0	5.9	2.4	2.1
2. wheat	18.00	24.00	18.65	20.09	23.83	26.41	24.92	30.0	5.9	10.8	10.0
3. maize	6.20	8.00	5.70	5.67	7.48	5.10	6.21	6.5	5.2	0.9	2.7
4. jowar	10.00	15.00	9.89	9.72	8.10	7.72	6.44	9.5	8.5	(-)-1.0	(-)-0.6
5. bajra	5.10	7.00	3.80	5.33	8.03	5.32	3.80	6.5	6.5	5.0	11.3
6. other cereals	7.20	8.00	5.88	6.57	6.94	6.46	5.71	6.0	2.1	(-)-3.6	0.4
7. pulses	12.50	15.00	10.42	11.69	11.82	11.09	9.49	11.5	3.7	(-)-1.6	2.0
9. total	98.00	129.00	94.10	99.50	108.42	105.17	95.20	114.0	5.6	3.1	3.9

Fourth Plan—Targets of Production of Commercial Crops and Achievements

crop	unit	assumed base level (1968-69)	targeted level (1973-74)	production during						annual compound growth rate (%)		
				1968-69	1969-70	1970-71	1971-72	1972-73 anticipated	1973-74 likely achievement	targeted	likely achievement against assumed 1968-69 level	(actual)
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. sugarcane (cane)	million tonnes	120.00	150.00	124.68	135.02	126.37	115.38	126.00	134.00	4.6	2.2	1.0
2. oilseeds	lakh tonnes	85.00	105.00	68.44	77.34	92.58	82.76	70.0	94.00	4.3	2.1	6.6
3. cotton	lakh bales (180 kg. each)	60.00	80.00	51.44	52.55	44.99	65.64	54.89	65.00	5.9	1.6	4.8
4. jute	-do-	62.00	74.00	29.31	56.53	49.38	56.84	48.69	56.00	3.6	(-)-2.0	11.8

ANNEXURE III

All-India Compound Rates of Growth of Area Production and Yield of Foodgrain Crops

(Per cent)				
crop	period	production	area	yield
(0)	(1)	(2)	(3)	(4)
1. rice	1949-50 to 1959-60	3.30	1.00	2.20
	1960-61 to 1971-72	1.88	0.77	1.10
	combined (1949-50 to 1971-72)	2.88	1.15	1.71
2. wheat	1949-50 to 1959-60	4.50	3.50	0.70
	1960-61 to 1971-72	8.76	3.41	5.17
	combined (1949-50 to 1971-72)	5.40	2.65	2.72
3. maize	1949-50 to 1959-60	4.30	3.00	1.30
	1960-61 to 1971-72	3.52	2.99	0.53
	combined (1949-50 to 1971-72)	3.74	2.81	0.91
4. jowar	1949-50 to 1959-60	2.80	1.10	1.60
	1960-61 to 1971-72	(-)-0.73	(-)-0.43	(-)-0.30
	combined (1949-50 to 1971-72)	1.48	0.54	0.93
5. bajra	1949-50 to 1959-60	3.20	1.00	2.20
	1960-61 to 1971-72	5.39	1.10	4.56
	combined to (1949-50 to 1971-72)	3.14	1.04	2.03
6. cereals	1949-50 to 1959-60	3.30	1.60	1.70
	1960-61 to 1971-72	3.00	0.99	2.01
	combined (1949-50 to 1971-72)	3.08	1.15	1.81
7. pulses	1949-50 to 1959-60	3.10	3.00	0.10
	1960-61 to 1971-72	0.48	0.94	0.55
	combined (1949-50 to 1971-72)	0.72	0.79	0.11
8. foodgrains	1949-50 to 1959-60	3.30	1.90	1.30
	1960-61 to 1971-72	2.64	0.61	1.87
	combined (1949-50 to 1971-72)	2.81	1.08	1.61

All-India Compound Rates of Growth of Area, Production and Yield of Commercial Crops

(per cent)				
crop	period	production	area	yield
(0)	(1)	(2)	(3)	(4)
1. oilseeds	1949-50 to 1959-60	3.40	2.70	0.70
	1960-61 to 1971-72	1.80	0.40	0.80
	combined (1949-50 to 1971-72)	2.76	1.92	0.52
2. sugarcane	1949-50 to 1959-60	4.00	2.70	1.00
	1960-61 to 1971-72	1.67	0.64	1.04
	combined (1949-50 to 1971-72)	3.71	2.50	1.19
3. cotton	1949-50 to 1959-60	4.90	4.10	(—)0.23
	1960-61 to 1971-72	0.75	(—)0.24	0.90
	combined (1949-50 to 1971-72)	3.19	1.33	1.81
4. jute	1949-50 to 1959-60	2.70	2.70	negligible
	1960-61 to 1971-72	0.60	(—)0.70	0.10
	combined (1949-50 to 1971-72)	1.95	1.61	0.37

Fifth Plan Growth Rates in Area and Productivity of Crops

crop	annual compound growth rates envisaged for the fifth five year plan		
	production	area	productivity
(0)	(1)	(2)	(3)
1. rice	4.2	0.8	3.4
2. wheat	4.8	2.0	2.8
3. maize	4.2	1.6	2.6
4. jowar	3.0	0.6	2.4
5. bajra	4.2	0.8	3.4
6. pulses	4.0	1.3	2.7
7. foodgrains (total)	4.2	1.0	3.2
8. sugarcane	4.9	2.8	2.1
9. cotton	4.3	2.0	2.3
10. oilseeds (five major oilseeds plus soyabean & sunflower)	5.8	2.4	3.4
11. jute & mesta	2.9	1.8	1.1
12. selected commercial crops	5.2	2.3	2.9
13. all selected crops	4.4	1.2	3.2

ANNEXURE VI

State-wise Foodgrains Production Targets

(lakh tonnes)

state	anticipated production for 5 years of IV plan	target for 5 years of V plan	assumed base level 1973-74	peak targetted production 1978-79	annual compound growth rate per cent (col.4 over col.3)
(0)	(1)	(2)	(3)	(4)	(5)
1. Andhra Pradesh	344.54	415.00	75.00	93.00	4.0
2. Assam	106.30	135.00	24.00	32.00	6.0
3. Bihar	424.31	525.00	90.00	120.00	6.4
4. Gujarat	184.00	245.00	44.00	60.00	6.4
5. Haryana	229.00	280.00	46.00	61.00	5.8
6. Himachal Pradesh	49.27	62.50	11.00	14.00	5.0
7. Jammu and Kashmir	48.57	62.00	11.00	14.00	5.0
8. Karnataka	287.48	349.00	61.00	75.00	4.2
9. Kerala	66.97	86.00	14.17	22.00	9.2
10. Madhya Pradesh	540.05	660.00	118.00	150.00	5.0
11. Maharashtra	271.00	370.00	66.00	85.00	5.2
12. Manipur	10.53	16.00	2.83	3.75	5.8
13. Meghalaya	6.05	8.00	1.45	11.70	3.3
14. Nagaland	3.75	4.70	0.80	1.10	6.6
15. Orissa	251.85	320.90	55.00	70.00	5.0
16. Punjab	380.00	475.00	82.00	103.00	4.7
17. Rajasthan	322.15	390.00	71.00	88.00	4.4
18. Tamil Nadu	346.46	418.00	74.00	91.00	4.2
19. Uttar Pradesh	924.90	1150.00	200.00	250.00	4.6
20. Tripura	12.82	17.00	3.01	3.64	3.9
21. West Bengal	381.11	460.00	80.00	105.00	5.6
22. union territories	22.33	29.30	5.37	6.44	3.7
23. All India	5200.00	6450.00 ¹	1140.00	1400.00 ¹	4.2

¹ The aggregate of State's and Union Territories is somewhat high than the all-India figures.

ANNEXURE VII

State-wise Oilseeds Production Target

state	(lakh tonnes)				
	anticipated production for five years of IV plan	targets for five years of V Plan	assumed base level 1973-74	peak targetted production 1978-79	annual compound rate (per cent col. 4 over col. 3)
(0)	(1)	(2)	(3)	(4)	(5)
1. Andhra Pradesh	61.93	77.00	13.00	18.00	6.7
2. Assam	3.68	7.50	1.00	2.20	17.1
3. Bihar	5.02	8.00	1.00	2.00	12.7
4. Gujarat	68.75	90.00	17.00	21.00	4.3
5. Haryana	5.19	6.00	1.05	1.30	4.4
6. Jammu & Kashmir	—	—	0.06	0.16	21.7
7. Karnataka	33.59	45.00	8.50	11.00	5.3
8. Kerala	1.07	1.60	0.22	0.42	13.8
9. Madhya Pradesh	30.74	43.00	6.50	9.00	6.7
10. Maharashtra	27.80	40.00	6.50	9.00	6.7
11. Manipur	—	0.30	0.02	0.10	38.0
12. Meghalaya	0.11	0.18	0.03	0.10	27.2
13. Orissa	9.54	13.50	2.00	3.50	11.9
14. Punjab	13.68	23.00	3.50	5.50	9.5
15. Rajasthan	19.19	23.50	4.00	4.90	4.2
16. Tamil Nadu	51.61	65.00	11.50	15.00	5.5
17. Tripura	0.16	0.16	0.03	0.04	5.9
18. Uttar Pradesh	82.49	113.00	18.00	24.00	5.9
19. West Bengal	3.14	4.25	0.65	1.00	9.0
20. union territories	0.36	0.65	0.12	0.16	5.9
21. all-India	415.00	550.00	94.00	125.00	5.9

N.B. : The aggregate of State's figures are somewhat higher than the all-India figures.

ANNEXURE VIII

State-wise Sugarcane Production Targets

(lakh tonnes)

state	anticipated production for five years of IV plan	targets for five years of V plan	assumed base level 1973-74	peak targetted production 1978-79	annual compound growth rate per cent (col. 4 over col. 3)
(0)	(1)	(2)	(3)	(4)	(5)
1. Andhra Pradesh	521.08	630.00	116.00	140.00	3.8
2. Assam	79.10	80.00	12.20	18.00	8.1
3. Bihar	292.10	385.00	65.00	80.00	4.3
4. Gujarat	98.00	200.00	22.00	50.00	17.9
5. Haryana	341.30	428.00	68.00	80.00	3.3
6. Karnataka	432.00	500.00	88.00	112.00	4.9
7. Kerala	21.60	37.50	5.00	11.30	7.7
8. Madhya Pradesh	78.70	95.00	15.00	22.00	8.0
9. Maharashtra	668.00	800.00	130.00	180.00	6.7
10. Meghalaya	—	0.50	0.07	0.30	33.8
11. Orissa	95.90	110.00	20.00	24.00	3.7
12. Punjab	274.80	330.00	60.00	70.00	3.1
13. Rajasthan	54.30	65.00	10.50	14.50	6.7
14. Tamil Nadu	507.56	600.00	105.00	140.00	5.9
15. Tripura	4.94	6.50	1.20	1.50	4.6
16. Uttar Pradesh	2834.00	3450.00	600.00	780.00	5.4
17. West Bengal	91.00	91.00	18.00	20.00	2.1
18. union territories	8.35	15.00	2.00	4.00	14.0
19. all-India	6350.00	7750.00	1340.00	1700.00	4.9

N.B. : The aggregate of State's figures are higher than the all India figures.

ANNEXURE IX

State-wise Cotton Production Targets

(lakh bales—180 kgs. each)

state	anticipated production for five years of IV plan	targetted for five years of V plan	assumed base level 1973-74	peak targetted production 1978-79	annual compound rate growth rate (per cent col. 4 over col. 3)
(0)	(1)	(2)	(3)	(4)	(5)
1. Andhra Pradesh	7.24	15.00	2.70	4.00	8.2
2. Gujarat	91.03	110.00	21.00	25.00	3.6
3. Haryana	20.14	26.00	4.40	5.70	5.3
4. Karnataka	25.50	45.00	7.00	12.00	11.4
5. Kerala	0.36	0.50	0.08	0.11	6.6
6. Madhya Pradesh	15.75	20.00	3.50	4.50	5.2
7. Maharashtra	51.00	68.00	12.00	15.00	4.6
8. Meghalaya	0.21	0.40	0.04	0.15	30.3
9. Punjab	46.44	62.00	10.00	13.50	5.2
10. Rajasthan	13.28	20.00	3.00	4.50	8.5
11. Tamil Nadu	18.81	24.00	4.00	5.00	4.6
12. Tripura	0.11	0.14	0.02	0.03	8.5
13. Uttar Pradesh	2.10	2.92	0.50	0.63	4.8
14. <i>all-India</i>	285.00	360.00	65.00	80.00	4.3

N.B. : The aggregate of State's figures are somewhat higher than the all-India figures.

ANNEXURE X

State-wise Jute and Mesta Production Targets

(lakh bales—180 kg. each)

state	anticipated production for five years of IV plan	targets for five years of V plan	assumed base level 1973-74	peak tar- getted pro- duction 1978-79	annual compound growth rate (per cent col. 4 over col. 3)
(0)	(1)	(2)	(3)	(4)	(5)
1. Andhra Pradesh	14.43	16.00	2.80	3.50	4.6
2. Assam	52.86	64.00	11.00	15.00	6.4
3. Bihar	39.09	45.00	8.25	10.00	4.0
4. Meghalaya	3.00	3.00	0.54	0.65	3.8
5. Orissa	23.67	28.00	5.50	7.00	5.0
6. Tripura	5.99	7.50	1.30	1.60	4.3
7. Uttar Pradesh	7.00	7.00	1.30	1.50	2.9
8. West Bengal	173.72	190.00	38.00	43.00	2.5
9. <i>all-India</i>	320.00	360.00	67.00 ¹	77.00 ¹	2.9

¹The aggregate of State's figures are somewhat higher than the all-India figures.

ANNEXURE

Fifth Plan State-wise Targets of High

state	paddy		wheat	
	likely achieve- ment 1973-74	fifth plan target	likely achieve- ment 1973-74	fifth plan target
(0)	(1)	(2)	(3)	(4)
1. Andhra Pradesh	1 200.00	2000.00	70.00	40.00
2. Assam	320.00	870.00	75.00	175.00
3. Bihar	600.00	1200.00	1600.00	2000.00
4. Gujarat	100.00	350.00	275.00	375.00
5. Haryana	200.00	400.00	1200.00	1400.00
6. Maharashtra	325.00	700.00	325.00	600.00
7. Manipur	12.00	30.00	6.00	15.00
8. Meghalaya	3.50	10.00	1.50	0.85
9. Karnataka	280.00	500.00	60.00	80.00
10. Kerala	220.00	800.00	..	..
11. Himachal Pradesh	55.00	80.00	200.00	300.00
12. Jammu & Kashmir	162.00	200.00	121.00	180.00
13. Madhya Pradesh	645.00	1200.00	650.00	1000.00
14. Nagaland	0.60	4.25	..	..
15. Orissa	650.00	1600.00	80.00	200.00
16. Punjab	450.00	700.00	1920.00	2450.00
17. Rajasthan	34.00	60.00	800.00	1150.00
18. Tamil Nadu	2,200.00	2200.00	..	..
19. Tripura	50.00	85.00	2.00	2.70
20. Uttar Pradesh	1,150.00	1700.00	3400.00	5000.00
21. West Bengal	900.00	2250.00	400.00	900.00
22. union territories	63.84	97.92	48.23	53.23
23. all-India	9500.00	16500.00	10800.00	15000.00

N.B.—The aggregate of States and Union Territories is somewhat higher than the All India figure adopted.

Yielding Varieties Programme

(area in '000 hectares)

maize		jowar		bajra		total	
likely achievement 1973-74	likely achievement- fifth plan target	likely achievement 1973-74	likely achievement- fifth plan target	likely achievement 1973-74	likely achievement- fifth plan target	likely achievement 1973-74	likely achievement- fifth plan target
(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
50.00	60.00	130.00	250.00	130.00	200.00	1580.00	2550.00
5.00	24.00	..	..	..	..	400.00	1059.00
250.00	430.00	..	..	..	..	2450.00	3650.00
8.00	30.00	5.00	30.00	1170.00	1400.00	1562.00	2185.00
10.00	10.00	..	..	240.00	400.00	1650.00	2210.00
13.00	20.00	525.00	1500.00	600.00	120.00	1788.00	4020.00
1.00	7.00	..	..	..	..	19.00	52.00
4.00	6.00	..	..	..	..	9.00	18.00
200.00	215.00	261.00	395.00	96.00	110.00	897.00	1300.00
..	..	..	..	..	..	220.00	800.00
60.00	85.00	..	..	..	..	315.00	465.00
20.00	60.00	..	..	6.00	10.00	309.00	450.00
35.00	50.00	156.00	300.00	28.00	40.00	1514.00	2590.00
0.18	0.85	..	..	..	..	0.70	1.60
8.05	40.00	4.10	20.00	..	..	742.60	1860.00
10.00	20.00	..	..	20.00	20.00	2400.00	3190.00
33.00	40.00	10.00	20.00	352.00	1000.00	1229.00	2270.00
30.00	100.00	25.00	80.00	365.00	480.00	2620.00	2860.00
..	..	..	..	..	..	52.00	87.70
20.00	80.00	3.00	15.00	40.00	80.00	4478.00	6875.00
..	..	..	..	..	..	1300.00	1350.00
3.44	4.06	0.43	0.35	16.39	17.62	134.33	173.27
600.00	1000.00	1100.00	2500.00	3000.00	5000.00	25000.00	40000.00

Statewise Targets—Conservation on Agricultural Lands

(area : '000 hectares)

states	fifth plan assumed base level 1973-74	targetted level at the end of 1978-79
(0)	(1)	(2)
1. Andhra Pradesh	470	770
2. Assam	43	80
3. Bihar	331	443
4. Gujarat	1211	1605
5. Himachal Pradesh	8	31
6. Haryana	119	229
7. Jammu & Kashmir	30	42
8. Karnataka	1600	2300
9. Kerala	73	174
10. Madhya Pradesh	2230	4960
11. Maharashtra	6545	7894
12. Manipur	8	18
13. Meghalaya	7	19
14. Nagaland	26	41
15. Orissa	133	168
16. Punjab	125	262
17. Rajasthan	700	1900
18. Tamil Nadu	460	660
19. Tripura	2	12
20. Uttar Pradesh	1863	2423
21. West Bengal	66	116
22. union territories	44	96
23. all India	15000 ¹	25,000 ¹

¹The aggregate of States and Union Territories is somewhat higher than the All India figures.

ANNEXURE XIII

Fifth Plan---Agricultural Credit Statewise Targets of Investment Credit

(Rs. crores)

state	long-term loaning by land deve- lopment banks (or- dinary as well as special)	medium- term ad- vances by coopera- tives	term len- ding by co- mmercial banks	total
(0)	(1)	(2)	(3)	(4)
1. Andhra Pradesh	130.00	18.00	50.00	198.00
2. Assam	14.00	2.00	10.00	26.00
3. Bihar	100.00	10.00	30.00	140.00
4. Gujarat	120.00	46.00	40.00	206.00
5. Haryana	35.00	4.00	13.00	52.00
6. Himachal Pradesh	5.00	13.00	7.00	25.00
7. Jammu & Kashmir	4.00	3.50	5.00	12.50
8. Karnataka	140.00	15.00	42.00	197.00
9. Kerala	30.00	32.50	21.00	83.50
10. Madhya Pradesh	140.00	35.00	52.00	227.00
11. Maharashtra	140.00	35.00	65.00	240.00
12. Manipur	0.50	0.05	1.00	1.55
13. Meghalaya	0.50	0.50	0.25	1.25
14. Nagaland	1.00	0.20	0.25	1.45
15. Orissa	81.00	25.00	15.00	121.00
16. Punjab	110.00	25.00	25.00	160.00
17. Rajasthan	60.00	10.00	55.00	125.00
18. Tamil Nadu	150.00	23.00	50.00	223.00
19. Tripura	2.00	0.30	0.25	2.55
20. Uttar Pradesh	190.00	25.00	60.00	275.00
21. West Bengal	40.00	5.00	30.00	75.00
22. total states	1493.00	328.05	571.75	2392.80
23. total—union territories	3.37	1.53	4.00	8.90
24. total—all India	1496.37	329.58	575.75	2401.70

ANNEXURE XIV

Public Sector Programmewise Break up of Fifth Five Year Plan—Financial Outlays on Agricultural and Allied Sectors

(Rs. crores)

head of development	states & union territories	centrally sponsored sector	central sector	total
(0)	(1)	(2)	(3)	(4)
1. agricultural research & education	93.02	..	150.00	243.02
2. crop husbandry	344.61	150.00	105.75	609.36
3. minor irrigation	772.55	10.00	18.00	800.55
4. soil conservation	220.68	40.00	29.00	298.68
5. command area development	96.63	..	120.00	216.63
6. animal husbandry & dairying	262.68	66.50	210.15	539.33
7. fisheries	89.74	22.50	47.10	159.34
8. forestry	175.02	19.00	28.50	222.52
9. agricultural credit	146.80	..	280.00	426.00
10. agricultural marketing	16.38	..	18.00	34.38
11. storage & warehousing	9.00	..	95.00	104.00
12. food processing . . . . .	..	..	35.00	35.00
13. buffer stocking of agricultural commodities . . . . .	..	..	100.00	100.00
14. cooperation	281.35	44.00	93.00	418.35
15. community development	92.78	..	9.50	128.71
16. panchayats	26.43			
17. special programmes of rural development and employment	47.34		406.00	458.24
18. land reforms	126.85		35.00	151.85
19. total	2801.76	370.00	1770.00	4941.76

Progress of Intensive Cattle Development Project—Selected Items

state	no. of I.C.D. projects			breedable population (lakhs)	animals breed (lakhs)			no. of inoculations performed		
	1968-69 actual	1969-70 actual	1973-74 Target		1969-70 actual	1970-71 actual	1973-74 target	actual		
	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	1969-70	1970-71
1. Andhra Pradesh	2	2	4	4.50	0.65	0.67	2.25	15.82	13.27	25.50
2. Assam	1	2	2	1.20	0.13	0.17	0.60	1.10	0.42	7.0
3. Bihar	2	2	3	2.85	0.83	0.70	1.40	1.72	1.96	17.00
4. Gujarat	3	4	6	4.80	2.03	1.40	2.40	3.66	4.29	28.00
5. Haryana	—	2	5	2.20	0.01	0.04	1.10	0.08	1.07	13.00
6. Jammu & Kashmir	1	2	3	1.60	0.12	0.17	0.75	2.82	1.19	9.00
7. Karnataka	1	2	3	2.50	0.41	0.52	1.20	0.23	3.69	15.0
8. Kerala	1	1	2	1.90	0.85	0.79	1.00	0.06	0.06	11.00
9. Madhya Pradesh	2	3	5	3.90	0.26	0.28	1.90	5.71	7.78	23.0
10. Maharashtra	4	4	6	5.90	0.51	0.41	2.90	6.09	8.57	35.0
11. Meghalaya	—	—	1	—	—	—	—	—	0.02	—
12. Orissa	1	1	3	2.20	0.29	1.14	1.10	3.54	3.37	13.0
13. Punjab	1	2	5	4.80	0.70	0.26	2.40	2.20	2.51	28.0
14. Rajasthan	—	—	1	—	—	—	—	—	—	—
15. Tamil Nadu	3	3	5	6.10	1.51	1	3.00	3.93	1	36.0
16. Uttar Pradesh	2	4	5	5.90	1.15	1.03	2.90	8.81	10.93	35.0
17. West Bengal	2	2	4	3.10	0.62	0.56	1.50	—	—	18.0
central sector										
(a) Haryana	2	2	2	2.40	0.21	0.21	1.15	1.79	3.42	14.0
(b) Rajasthan	1	1	1	1.12	0.04	0.02	0.55	0.23	0.45	6.0
(c) Uttar Pradesh	1	1	1	3.51	0.75	0.74	1.75	5.29	7.32	21.0
total	30	40	67	60.48	11.12	9.11	29.85	67.08	70.32	355.50

† Merged with State Animal Husbandry Department

**Installed capacity and percentage average daily throughput of Milk in Dairy Plants in January, 1969
and January, 1973**

Name of dairy plant	installed capacity (in litres)	% average throughput January '69	% average through- put January '73
(0)	(1)	(2)	(3)
(1) Andhra Pradesh			
1. Hyderabad	80,000	92.0	95.5
2. Kurnool	2,000	65.5	44.2
3. Nellore	5,000	7.6	74.0
4. Visakhapatnam	10,000	—	84.7
5. Chittoor	10,000	6.4	48.4
6. Rajahmundry	10,000	—	97.0
7. Warrangal	6,000	—	63.1
8. Vijayawada	125,000	—	88.6
(2) Assam			
9. Gauhati	10,000	10.2	66.5
(3) Bihar			
10. Bhagalpur	1,000	85.2	36.9
11. Gaya	10,000	21.1	17.4
12. Patna	10,000	27.7	94.9
13. Ranchi	6,000	6.6	60.3
14. Barauni (Creamery) (in terms of milk)	10,000	28.0	54.4
15. Barauni (milk powder factory)	100,000	—	6.0
16. Darbhanga	6,000	—	27.9
(4) 17. Chandigarh	20,000	74.2	139.9
(5) Delhi			
18. Delhi Milk Scheme	255,000	90.7	113.7
(6) Gujarat			
19. Rajkot	45,000	19.7	37.8
20. Mehsana	350,000	70.5	68.8
21. Anand	500,000	24.0	113.7
22. Ahmedabad	100,000	70.5	142.3
23. Jamnagar	6,000	11.3	28.0
24. Bhavnagar	4,000	26.1	44.5
25. Surat	50,000	103.4	117.7
26. Baroda	50,000	37.5	70.0
27. Junagarh	10,000	12.5	2.4
(7) Goa			
28. Ponda	10,000	—	53.5
(8) Haryana			
29. Jind	50,000	—	87.6
30. Bhiwani	15,000	—	56.7
31. Ambala	20,000	—	N.A.
(9) Himachal Pradesh			
32. Mandi	10,000	—	48.4
(10) Jammu & Kashmir			
33. Srinagar	10,000	14.2	15.3
34. Jammu	10,000	—	43.4
(11) Kerala			
35. Calicut	6,000	95.1	91.8
36. Trivandrum	6,000	150.4	159.7
37. Ernakulam	10,000	42.8	53.5
38. Palghat	6,000	96.7	76.2
39. Kottayam	6,000	—	63.5
(12) Tamil Nadu			
40. Coimbatore	16,000	80.7	119.4
41. Kodaikanal	1,000	79.5	125.0
42. Madurai	50,000	23.6	46.1
43. Madras	75,000	60.9	117.7
44. Kanyakumari	3,000	136.5	179.6
45. Tiruchirapalli	16,000	40.5	43.1
46. Tanjavoor	16,000	41.0	26.5
47. Chidambaram	5,000	—	9.4
(13) Maharashtra			
48. Dhulia	80,000	—	134.9
49. Bombay	600,000	69.9	90.4
50. Kolhapur	20,000	223.0	203.4
51. Nasik	12,000	66.5	80.4
52. Nagpur	20,000	60.6	161.1
53. Poona	100,000	105.7	64.9
54. Sholapur	10,000	133.8	133.0
55. Miraj	40,000	95.8	106.3
56. Aurangabad	5,000	30.3	116.9
(14) Manipur			
57. Imphal	4,000	—	30.0
(15) Karnataka			
58. Bhadravati	10,000	—	29.4
59. Bangalore	50,000	61.5	160.1
60. Kudigee	4,500	51.7	55.8
61. Hubli Dharwar	10,000	65.2	145.3

(0)	(1)	(2)	(3)	(0)	(1)	(2)	(3)
62. Gulbarga . . .	10,000	—	53.6	(21) Tripura			
63. Belgaum . . .	10,000	—	42.2	76. Agartala . . .	5,000	73.9	25.3
64. Mangalore . . .	10,000	—	54.7	(22) Uttar Pradesh			
65. Devangere . . .	6,000	—	25.0	77. Agra . . .	6,000	73.9	24.3
66. Mysore . . .	10,000	—	21.9	78. Allahabad . . .	5,400	26.1	23.5
(16) Madhya Pradesh				79. Almora . . .	3,000	13.7	6.15
67. Indore . . .	20,000	1.1	57.6	80. Haldwani . . .	3,000	—	71.6
68. Jabalpur . . .	10,000	—	26.7	81. Mathura . . .	10,000	—	10.5
69. Bhopal . . .	10,000	82.1	80.4	82. Lucknow . . .	40,000	35.8	48.6
70. Gwalior . . .	10,000	—	28.8	83. Dehradun . . .	20,000	—	9.0
(17) Orissa				84. Varanasi . . .	18,000	—	54.8
71. Cuttack . . .	6,000	18.8	5.8	85. Gorakhpur . . .	10,000	—	4.5
(18) Punjab				86. Kanpur . . .	50,000	—	33.8
72. Amritsar . . .	65,000	50.2	105.5	87. Aligarh(in terms of milk)10,000		—	158.8
73. Ludhiana . . .	100,000	—	N.A.	88. Moradabad . . .	55,000	—	59.2
(19) Pondicherry				(23) West Bengal			
74. Pondicherry . . .	10,000	—	112.1	89. Calcutta . . .	200,000	73.5	86.8
(20) Rajasthan				90. Durgapur . . .	55,000	—	14.0
75. Jaipur . . .	20,000	17.7	69.6				

Fifth Five Year Plan—Targets of Livestock Products

states/union territories	milk (000 tonnes)		eggs (million)		wool (lakh kgs)	
	base level	target	base level	target	base level	target
	1973-74	1978-79	1973-74	1978-79	1973-74	1978-79
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Andhra Pradesh	1830.00	2400.00	825.00	1445.00	24.00	26.20
2. Assam	300.00	435.00	234.00	300.00	—	—
3. Bihar	1650.00	1900.00	477.00	780.00	8.00	8.50
4. Gujrat	2000.00	2400.00	134.00	215.00	20.75	24.00
5. Haryana	1330.00	1700.00	140.00	245.00	6.60	7.60
6. Himachal Pradesh	64.00	80.00	13.00	16.00	14.00	17.50
7. Jammu & Kashmir	180.00	225.00	165.00	200.00	14.30	17.50
8. Karnataka	900.00	1125.00	1500.00	3000.00	30.18	33.00
9. Kerala	410.00	550.00	800.00	1200.00	—	—
10. Madhya Pradesh	1662.00	2100.00	250.00	400.00	6.30	7.30
11. Maharashtra	1075.00	1300.00	720.00	900.00	9.11	10.00
12. Manipur	50.50	55.50	15.00	26.00	—	—
13. Meghalaya	42.00	52.00	19.00	28.00	—	—
14. Nagaland	2.00	3.00	9.00	13.00	—	—
15. Orissa	196.00	216.00	292.00	436.00	—	—
16. Punjab	2100.00	3050.00	321.00	495.00	11.80	15.00
17. Rajasthan	2370.00	2800.00	103.00	150.00	108.50	119.00
18. Tamil Nadu	1025.00	1260.00	800.00	1200.00	26.00	30.00
19. Tripura	12.75	17.50	15.70	30.00	—	—
20. Uttar Pradesh	4855.00	5500.00	241.00	410.00	18.50	23.50
21. West Bengal	945.00	1200.00	564.00	833.00	2.00	2.20
22. total states	23000.25	28359.00	7637.70	12322.00	309.04	341.30
<i>union territories</i>						
23. Andaman & Nicobar Islands	1.75	2.00	3.00	6.00	—	—
24. Arunachal Pradesh	20.00	35.00	15.00	30.00	1.00	1.00
25. Chandigarh	15.00	17.50	9.00	14.00	—	—
26. Dadara & Nagar Haveli	0.73	0.80	1.20	2.20	—	—
27. Delhi	135.00	146.00	36.50	60.00	—	—
28. Goa, Daman & Diu	35.00	40.50	9.00	15.00	—	—
29. Lakshadweep	—	—	0.10	0.0	—	—
30. Pondicherry	13.00	15.00	4.10	7.00	—	—
31. Mizoram	0.20	1.00	2.00	10.00	—	—
32. union territories	200.68	221.80	64.90	114.40	1.00	1.00
33. all India	23200.93	28580.80	7702.60	12436.40	301.04	342.30

ANNEXURE XVIII

Target of Selected Physical Programmes Animal Husbandry

states / union territories	I.C.D. projects		key village blocks		(lakhs)		(lakhs)	
	base level 1973-74	target 1978-79	base level 1973-74	target 1978-79	exotic inseminations base level 1973-74	target 1978-79	cross-bred cows base level 1973-74	target 1978-79
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Andhra Pradesh	3	7	41	43	1	1	1	1
2. Assam	2	5	20	32	0.35	1.25	0.50	3.00
3. Bihar	3	8	47	53	0.22	1.00	0.20	0.70
4. Gujarat	7	9	12	12	0.01	0.45	—	0.05
5. Haryana	6	8	13	13	0.20	1.25	0.05	0.45
6. Himachal Pradesh	—	1	7	7	0.25	1.00	0.60	1.10
7. Jammu & Kashmir	3	4	9	13	0.67	3.00	0.40	0.88
8. Karnataka	2	7	37	40	2.50	7.00	3.00	4.40
9. Kerala	2	3	15	15	4.80	12.00	3.50	7.50
10. Madhya Pradesh	5	10	45	65	@	@	@	@
11. Maharashtra	6	10	38	43	0.30	3.00	0.25	2.25
12. Manipur	—	—	2	4	0.01	0.10	—	0.02
13. Meghalaya	1	2	2	3	0.06	0.20	0.10	0.30
14. Nagaland	—	1	1	3	0.03	0.10	—	0.08
15. Orissa	3	4	24	29	0.12	1.00	@	@
16. Punjab	5	7	45	45	0.80	5.00	0.02	0.80
17. Rajasthan	2	6	25	30	0.40	5.00	0.08	2.00
18. Tamil Nadu	3	5	80	94	1.50	5.50	0.40	1.50
19. Tripura	—	1	9	11	—	0.40	—	0.06
20. Uttar Pradesh	6	9	76	76	0.25	5.00	0.03	1.00
21. West Bengal	4	7	62	62	1.00	4.00	0.50	3.00
22. total	63	114	610	693	13.47	56.25	9.63	29.09
<i>union territories</i>								
23. Andaman & Nicobar Islands	—	—	2	2	neg	neg	neg	neg
24. Arunachal Pradesh	—	—	—	1	—	0.10	0.05	0.11
25. Chandigarh	—	—	1	1	0.01	0.015	0.004	0.01
26. Dadara & Nagar Haveli	—	—	—	—	—	—	—	—
27. Delhi	—	—	1	4	0.01	0.20	—	0.05
28. Goa, Daman & Diu	—	—	4	7	0.01	0.05	—	0.01
29. Lakshadweep	—	—	—	—	—	—	—	—
30. Pondicherry	—	—	3	4	0.14	0.25	0.03	0.09
31. Mizoram	—	—	—	1	N.A.	N.A.	N.A.	N.A.
32. union territories	—	—	11	20	0.17	0.615	0.084	0.31
33. all-India	63	114	621	713	13.64	56.865	9.714	29.40

1Would be furnished by the State Government later on.

neg.—negligible

Targets of Selected Physical Programmes

states/union territories	fodder seed production farms		integrated sheep development projects		intensive egg & poultry prodn. centres	
	base level 1973-74	target 1978-79	base level 1973-74	target 1978-79	base level 1973-74	target 1978-79
	(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Andhra Pradesh	—	2	—	—	8	15
2. Assam	2	4	—	—	7	13
3. Bihar	2	4	—	1	5	15
4. Gujarat	4	6	—	2	4	8
5. Haryana	1	1	—	—	—	3
6. Himachal Pradesh	1	3	—	1	—	2
7. Jammu & Kashmir	2	4	—	3	2	5
8. Karnataka	2	4	—	2	3	11
9. Kerala	2	2	—	—	2	2
10. Madhya Pradesh	3	6	—	1	5	8
11. Maharashtra	—	2	—	1	14	14
12. Manipur	1	2	—	—	1	1
13. Meghalaya	1	3	—	—	—	1
14. Nagaland	—	—	—	—	—	1
15. Orissa	1	1	—	—	2	6
16. Punjab	1	3	—	—	3	5
17. Rajasthan	1	2	—	—	9	9
18. Tamil Nadu	3	6	—	—	—	—
19. Tripura	1	3	—	—	1	1
20. Uttar Pradesh	*	*	1	1	8	13
21. West Bengal	8	8	—	—	5	5
22. total—states	36	66	1	14	79	138
<i>union territories</i>						
23. Andaman & Nicobar Islands	—	—	—	—	—	—
24. Arunachal Pradesh	1	—	—	—	—	—
25. Chandigarh	—	—	—	—	—	—
26. Dadara & Nagar Haveli	—	—	—	—	—	—
27. Delhi	—	—	—	—	1	1
28. Goa, Daman & Diu	1	2	—	—	1	2
29. Lakshadweep	—	—	—	—	—	—
30. Pondicherry	—	—	—	—	—	1
31. Mizoram	1	2	—	—	—	—
32. total union territories	2	5	—	—	2	4
33. all India	38	71	1	14	81	142

*Seeds are being produced at the existing 14 Cattle Breeding Farms

ANNEXURE XX

Fifth Five Year Plan—Dairying & Milk Supply Targets of Selected Physical Programmes

states/union Territories	fluid milk plants (nos.)		milk product factories		installed capacity of milk plants (lakh litres)	
	base level 1973-74	target 1978-79	base level 1973-74	target 1978-79	base level 1973-74	target 1978-79
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Andhra Pradesh	8	17	1	3	3.92	12.32
2. Assam	2	4	1	2	0.19	0.59
3. Bihar	5	11	1	3	1.56	5.25
4. Gujarat	6	11	6	6	15.80	24.00
5. Haryana	2	3	2	5	1.05	4.05
6. Himachal Pradesh	1	4	—	—	0.10	0.35
7. Jammu & Kashmir	2	2	—	2*	0.20	0.20
8. Karnataka	9	10	—	1	1.25	5.90
9. Kerala	6	8	—	1	0.51	1.65
10. Madhya Pradesh	4	8	—	1	1.24	2.54
11. Maharashtra	12	17	1	1	13.60	18.00
12. Manipur	1	1	—	—	0.10	0.15
13. Meghalaya	—	1	—	1*	0.06	0.10
14. Nagaland	—	—	—	—	—	—
15. Orissa	1	3	—	—	0.06	0.22
16. Punjab	—	—	6	12	5.00	7.60
17. Rajasthan	3	5	—	6	0.45	6.55
18. Tamil Nadu	11	14	—	1	3.55	8.25
19. Tripura	1	3	—	—	0.10	0.24
20. Uttar Pradesh	9	21	2	7	2.50	6.25
21. West Bengal	3	6	—	2	4.00	9.80
22. <i>total states</i>	86	149	20	54	55.24	114.01
<i>union territories</i>						
23. Andaman & Nicobar Islands	—	—	—	—	—	—
24. Arunachal Pradesh	—	—	—	—	—	—
25. Chandigarh	1	1	—	—	0.20	1.00
26. Dadara & Nagar Haveli	—	—	—	—	—	—
27. Delhi	1	1	—	—	3.55	7.50
28. Goa, Daman & Diu	1	1	—	—	0.10	0.20
29. Lakshadweep	—	—	—	—	—	—
30. Pondicherry	1	1	—	—	0.20	0.30
31. Mizoram	—	1	—	—	—	0.10
32. <i>total</i>	4	5	—	—	4.05	9.10
33. <i>all-India</i>	90	154	20	54	59.29	123.11

*Creameries

**Fifth Five Year Plan—Fisheries
Fish Production**

(000' tonnes)

states	base level 1973-74			fifth plan targets 1978-79		
	inland	marine	total	inland	marine	total
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Andhra Pradesh	87.92	88.71	176.63	119.32	132.19	251.51
2. Assam	32.00	—	32.00	60.00	—	60.00
3. Bihar	68.00	—	68.00	85.00	—	85.00
4. Gujarat	15.00	165.00	180.00	25.00	265.00	290.00
5. Haryana	1.10	—	1.10	2.00	—	2.00
6. Himachal Pradesh	0.80	—	0.80	2.20	—	2.20
7. Jammu & Kashmir	6.50	—	6.50	8.00	—	8.00
8. Karnataka	70.00	120.00	190.00	90.00	150.00	240.00
9. Kerala	20.00	480.0	500.00	25.00	675.00	700.00
10. Madhya Pradesh	9.00	—	9.00	13.00	—	13.00
11. Maharashtra	18.00	264.00	282.00	30.00	288.00	318.00
12. Manipur	1.30	—	1.30	2.00	—	2.00
13. Meghalaya	0.70	—	0.70	1.50	—	1.50
14. Nagaland	0.12	—	0.12	0.20	—	0.20
15. Orissa	23.00	17.00	40.00	28.00	30.00	58.00
16. Punjab	1.90	—	1.90	2.50	—	2.50
17. Rajasthan	8.50	—	8.50	12.50	—	12.50
18. Tamil Nadu	150.00	300.00	450.00	230.00	400.00	630.00
19. Tripura	4.28	—	4.28	6.60	—	6.60
20. Uttar Pradesh	24.00	—	24.00	30.00	—	30.00
21. West Bengal	240.00	10.00	250.00	280.00	20.0	300.00
22 <i>total—states</i>	782.12	144.71	2226.83	1052.82	1960.19	3013.01
<i>union territories</i>						
23. Andaman & Nicobar Islands	—	0.90	0.90	Neg.	6.50	6.50
24. Arunachal Pradesh	0.17	—	0.17	0.30	—	0.30
25. Chandigarh	Neg.	—	Neg.	Neg.	—	Neg.
26. Dadara & Nagar Haveli	Neg.	—	Neg.	Neg.	—	Neg.
27. Delhi	0.22	—	0.22	0.275	—	0.275
28. Goa, Daman & Diu	0.75	22.36	23.11	1.00	30.36	31.36
29. Lakshadweep	—	2.50	2.50	—	5.00	5.00
30. Pondicherry	0.40	15.00	15.40	0.55	23.00	23.55
31. Mizoram	0.340	—	0.340	0.800	—	0.800
32. <i>total—union territories all-India</i>	1.88	40.76	42.64	2.92	64.86	67.78
	784.00	1485.47	2269.47	1055.74	2025.05	3080.79

ANNEXURE XXII

Fifth Five Year Plan—Fisheries
Mechanisation of Boats

(numbers)

states/union territories	base level 1973-74	fifth plan tar- get 1978-79
(0)	(1)	(2)
1. Andhra Pradesh . . .	374	574
2. Assam	2	30
3. Gujarat	2000	3200
4. Kerala	1314	2104
5. Maharashtra	2918	3238
6. Karnataka	1100	1302
7. Orissa	122	300
8. Tamil Nadu	1027*	2382
9. West Bengal	5	105
10. <i>total—states</i>	8862	13235
<i>union territories</i>		
11. Andaman & Nicobar	2	52
12. Goa, Daman & Diu	168	268
13. Lakshadweep	115	175
14. Pondicherry	151	321
15. <i>total—union territories</i>	436	816
16. <i>all-India</i>	9298	14051

*Corrected figure would be furnished by the State Government later on.

**Fifth Five Year Plan—Fisheries
Production of Spawn**

(million)

states/union territories	base level 1973-74	fifth plan tar- get 1978-79			
(0)	(1)	(2)	(0)	(1)	(2)
1. Andhra Pradesh	30.00	75.00	19. Tripura	75.00	150.00
2. Assam	250.00	600.00	20. Uttar Pradesh	200.00	400.00
3. Bihar	200.00	400.00	21. West Bengal	160.00	320.00
4. Gujarat	100.00*	500.00	22. <i>total—states</i>	1887.75	4253.87
5. Haryana	3.50	9.50			
6. Himachal Pradesh	1	1	<i>union territories</i>		
7. Jammu & Kashmir	0.12	0.25	23. Andaman & Nicobar Islands	—	—
8. Karnataka	50.00	300.00	24. Arunachal Pradesh	—	—
9. Kerala	5.00	8.00	25. Chandigarh	—	—
10. Madhya Pradesh	250.00	500.00	26. Dadra & Nagar Haveli	—	—
11. Maharashtra	75.00	150.00	27. Delhi	—	—
12. Manipur	6.00	12.00	28. Goa, Daman & Diu	—	1.00
13. Meghalaya	0.10	4.00	29. Lakshadweep	—	—
14. Nagaland	0.03	0.12	30. Pondicherry	0.10	1.10
15. Orissa	350.00	500.00	31. Mizoram	0.10	1.50
16. Punjab	3.00	15.00	32. <i>total—union territories</i>	0.20	3.60
17. Rajasthan	40.00	120.00	<i>all-India</i>	1887.95	4257.47
18. Tamil Nadu	90.00	190.00			

¹The information will be furnished by the State Government later on.

Fifth Five Year Plan—Fisheries
Production/Procurement of Fry and Fingerlings

(million)

states/union territories	base level 1973-74	fifth plan tar- get 1978-79			
(0)	(1)	(2)	(0)	(1)	(2)
11. Andhra Pradesh . . .	15.00	40.00	18. Tamil Nadu	45.00	90.00
2. Assam	63.00	200.00	19. Tripura	25.00	50.00
3. Bihar	50.00	100.00	20. Uttar Pradesh	25.00	40.00
4. Gujarat	60.00 ¹	225.00	21. West Bengal	35.00	75.00
5. Haryana	0.70	1.90	22. <i>total—states</i>	482.56	1213.40
6. Himachal Pradesh . . .	2.00	10.00	<i>union territories</i>		
7. Jammu & Kashmir . . .	—	—	23. Andaman & Nicobar . . .	—	0.02
8. Karnataka	12.00	80.00	24. Arunachal Pradesh . . .	0.05	0.10
9. Kerala	2.50	4.00	25. Chandigarh	1	1
10. Madhya Pradesh . . .	45.00	100.00	26. Dadra & Nagar Haveli . . .	—	1
11. Maharashtra	55.00	75.00	27. Delhi	0.52	0.75
12. Manipur	1.50	3.00	28. Goa, Daman & Diu	—	0.25
13. Meghalaya	0.04	1.00	29. Lakshadweep	—	—
14. Nagaland	0.20	0.50	30. Pondicherry	0.33	0.50
15. Orissa	35.00	75.00	31. Mizoram	0.02	0.40
16. Punjab	0.62	3.00	32. <i>total—union territories</i>	8.92	2.12
17. Rajasthan	10.00	40.00	<i>all-India</i>	483.48	1215.52

¹Information will be furnished by the State Govt. later on.

Fifth Five Year Plan—Fisheries
Nursery Area

(hectares)

states/union territories	base level 1973-74	fifth Plan tar- get 1978-79			
(0)	(1)	(2)	(0)	(1)	(2)
1. Andhra Pradesh	30.00	40.00	18. Tamil Nadu	1	1
2. Assam	70.00	130.00	19. Tripura	7.00	15.00
3. Bihar	160.00	200.00	20. Uttar Pradesh	250.00	300.00
4. Gujarat	15.00	45.00	21. West Bengal	75.00	150.00
5. Haryana	6.00	25.00	22. <i>total—states</i>	922.00	1784.00
6. Himachal Pradesh	3.00	20.00	<i>union territories</i>		
7. Jammu & Kashmir	1	1	23. Andaman & Nicobar	—	—
8. Karnataka	30.00	55.00	24. Arunachal Pradesh	1	1
9. Kerala	3.50	5.00	25. Chandigarh	—	—
10. Madhya Pradesh	80.00	286.00	26. Dadra & Nagar Haveli	—	—
11. Maharashtra	36.00	70.00	27. Delhi	1	1
12. Manipur	5.00	9.00	28. Goa, Daman & Diu	—	2.0
13. Meghalaya	2.50	10.00	29. Lakshadweep	—	—
14. Nagaland	7.00	25.00	30. Pondicherry	0.94	1.09
15. Orissa	90.00	162.00	31. Mizoram	0.30	1.30
16. Punjab	7.00	37.00	32. <i>total—union territories</i>	1.24	4.39
17. Rajasthan	45.00	200.00	<i>total—all-India</i>	923.24	1788.39

†Figures would be supplied later on by the State Govt.

Fourth Plan—Forestry Physical Targets and Anticipated Achievements (1973-74)

states/union territories	quick growing species (000 hectares)			economic plantations (000 hectares)			farm forestry ¹ (000 hectares)			communications (000 kms.)		
	base level 68-69	tar- get 73-74	anticipated achievement 73-74	base level 68-69	tar- get 73-74	anticipated achievement 73-74	base level 68-69	tar- get 73-74	anticipated achievement 73-74	base level 68-69	tar- get 73-74	anticipated achievement 73-74
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. Andhra Pradesh	13	19	24	30	42	45	6	11	10	1.5	2.1	1.5
2. Assam	6	16	12	neg.	11	10	—	neg.	—	—	0.2	0.2
3. Bihar	11	25	24	29	41	37	1	4	2	5.0	6.0	6.0
4. Gujarat	11	25	24	21	34	35	1	4	1	0.2	0.2	0.2
5. Haryana	4	6	5	7	13	19	neg.	1	4	0.1	0.2	0.2
6. Himachal Pradesh	4	26	21	12	57	31	1	2	1	1.5	2.0	1.8
7. Jammu & Kashmir	1	21	1	5	11	6	—	2	3	0.9	1.1	1.6
8. Karnataka	40	91	73	64	105	95	85	91	106	0.2	0.4	0.3
9. Kerala	18	30	25	47	60	60	2	3	3	2.3	2.5	2.3
10. Madhya Pradesh	26	42	46	29	49	51	1	2	1	9.0	9.0	10.3
11. Maharashtra	26	35	32	44	79	61	neg.	4	3	1.5	2.2	2.2
12. Manipur	—	—	—	1	2	3	neg.	neg.	neg.	0.3	0.8	0.6
13. Meghalaya	—	—	neg.	—	—	1	—	—	neg.	—	—	0.1
14. Nagaland	neg.	1	neg.	1	2	2	neg.	neg.	1	0.3	0.4	0.4
15. Orissa	20	35	34	34	49	48	neg.	4	3	3.1	3.6	4.0
16. Punjab	3	8	7	13	29	30	2	15	16	—	—	—
17. Rajasthan	1	1	1	14	21	18	1	2	1	1.5	1.7	1.7
18. Tamil Nadu	9	9	23	79	95	95	35	57	53	0.2	0.3	0.2
19. Tripura	2	14	16	10	15	14	1	2	2	0.3	0.5	0.8
20. Uttar Pradesh	51	121	120	83	127	128	3	9	9	7.6	12.0	8.7
21. West Bengal	9	14	17	24	26	27	—	1	neg.	0.4	0.4	0.4
22. total—states	255	539	505	547	868	816	139	214	219	35.9	45.6	43.5
<i>union territories</i>												
23. Andaman & Nicobar Islands	—	—	—	6	12	9	—	—	—	—	—	—
24. Arunachal Pradesh	—	—	—	5	15	14	1	3	1	1.0	1.5	1.3
25. Chandigarh	—	—	—	neg.	neg.	neg.	neg.	neg.	neg.	—	—	—
26. Dadar & Nagar Haveli	—	—	—	—	neg.	neg.	neg.	—	—	—	neg.	neg.
27. Delhi	—	—	—	—	—	—	neg.	neg.	neg.	—	—	—
28. Goa, Daman & Diu	4	7	5	3	9	10	—	neg.	neg.	0.1	0.2	0.2
29. Mizoram	—	—	neg.	—	—	1	—	—	—	—	—	—
30. total—union territories	4	7	5	14	36	34	1	3	1	1.1	1.7	1.5
31. all-India	259	546	510	561	904	850	140	217	220	37.0	47.3	45.0

L.M.A. Islands and Pondicherry—Nil.

neg—negligible

¹including fuelwood plantations.

Fifth Plan—Forestry—Base-level 1973-74 and Physical Targets 1978-79

states/union territories	quick growing species (^{'000} hectares)		economic plan- tations (^{'000} hectares)		farm forestry† (^{'000} hectares)		communications (^{'000} kms)	
	base level 73-74	target 78-79 ¹	base level 73-74	target 78-79 ¹	base level 73-74	target 78-79	base level 73-74	target 78-79
	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Andhra Pradesh	24	41	45	66	10	11	1.5	2.0
2. Assam	12	29	10	56	—	—	0.2	0.5
3. Bihar	24	37	37	52	2	5	6.0	6.0
4. Gujarat	24	37	35	64	1	3	0.2	1.1
5. Harayana	5	6	19	34	4	8	0.2	0.3
6. Himachal Pradesh	21	43	31	62	1	3	1.8	2.1
7. Jammu & Kashmir	1	1	6	21	3	15	1.6	2.8
8. Karnataka	73	117	95	146	106	145	0.3	0.4
9. Kerala	25	50	60	72	3	5	2.3	2.6
10. Madhya Pradesh	46	76	51	182	1	6	10.3	13.8
11. Maharashtra	32	38	61	133	3	13	2.2	2.4
12. Manipur	—	—	3	7	neg.	neg.	0.6	0.7
13. Meghalaya	neg.	neg.	1	11	neg.	neg.	0.1	0.2
14. Nagaland	neg.	3	2	14	1	6	0.4	0.5
15. Orissa	34	62	48	118	3	15	4.0	5.8
16. Punjab	7	7	30	48	16	31	—	—
17. Rajasthan	1	1	18	18	1	1	1.7	2.0
18. Tamil Nadu	23	41	95	115	53	112	0.2	0.3
19. Tripura	16	20	14	23	2	2	0.8	1.0
20. Uttar Pradesh	120	222	128	270	9	14	8.7	12.2
21. West Bengal	17	23	27	43	neg.	2	0.4	1.0
22. total—states	505	854	816	1545	219	397	43.5	57.7
<i>union territories</i>								
23. Andaman & Nicobar Islands	—	1	9	14	—	—	—	—
24. Arunachal Pradesh	—	—	14	33	1	1	1.3	2.1
25. Chandigarh	—	—	neg.	neg.	neg.	neg.	—	—
26. Dadra & Nagar Haveli	—	—	neg.	1	—	neg.	neg.	neg.
27. Goa, Daman & Diu	5	5	10	14	neg.	1	0.2	0.2
28. Mizoram	neg.	neg.	1	3	—	1	—	neg.
29. total—union territories	5	6	34	65	1	3	1.5	2.3
30. all-India	510	860	850	1610	220	400	45.0	60.0

Delhi, L.M. A. Islands & Pondicherry—Nil.

¹Inclusive of institutional financing.

†Includes fuelwood plantations.

neg.—negligible.

ANNEXURE XXVIII

Fifth Plan—Forestry—Recorded Production of Industrial Wood and Fuel Wood

(lakh m³)

states/union territories	industrial wood production			fuel wood production		
	1969-70 actual	1973-74 estimated	1978-79 target	1969-70 actual	1973-74 estimated	1978-79 target
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1.. Andhra Pradesh	1.99 ¹	2.50	3.00	7.51 ¹	5.00	6.00
2.. Assam	4.12	4.15	5.00	4.43 ¹	4.43 [‡]	4.43 [‡]
3.. Bihar	3.80	4.50	6.00	2.80	3.50	5.50
4.. Gujarat	1.65 ¹	2.00	2.10	2.70 ¹	2.70	3.00
5.. Harayana	0.23	0.25	0.35	0.23	0.25	0.30
6.. Himachal Pradesh	6.81	6.00	6.00	1.33 ¹	1.33 [‡]	1.33 [‡]
7. Jammu & Kashmir	3.80	4.00	6.00	0.50	0.50 [‡]	0.50 [‡]
8 Karnataka	5.60	6.00	9.00	10.00	12.00	12.50
9. Kerala	5.44 ¹	9.00	10.00	4.40 ¹	6.00	7.00
10. Madhya Pradesh	27.00	27.00	37.00	24.00	25.00	35.00
11.. Maharashtra	4.00	4.50	9.00	14.00	20.00	30.00
12.. Manipur	0.09 ¹	0.09 ¹	0.09 [‡]	0.29 ¹	0.29 [‡]	0.29 [‡]
13.. Meghalaya	2	N.A.	N.A.	2	N.A.	N.A.
14.. Nagaland	0.17 ¹	0.17 [‡]	0.17 [‡]	0.06 ¹	0.06 [‡]	0.06 [‡]
15.. Orissa	5.00	5.00	7.00	6.70	6.70	8.00
16.. Punjab	0.39 ¹	0.40	0.40 [‡]	0.31 ¹	0.31 [‡]	0.32 [‡]
17.. Rajasthan	0.21 ¹	0.21 [‡]	0.21 [‡]	0.89 ¹	0.89 [‡]	0.89 [‡]
18.. Tamil Nadu	2.38	2.60	4.00	3.30	4.00	5.50
19.. Tripura	0.37 ¹	0.37 [‡]	0.38 [‡]	1.38 ¹	1.38 [‡]	1.38 [‡]
20.. Uttar pradesh	8.70	9.50	10.50	22.50	22.50	24.00
21.. West Bengal	2.30	3.00	4.00	6.80	7.00	8.00
22.. total—states	84.05	91.24	120.20	114.13	123.84	154.00
<i>union territories</i>						
23.. Andaman & Nicobar Islands	0.85 ¹	0.85 [‡]	0.85 [‡]	0.21 ¹	0.22 [‡]	0.22 ¹
24.. Arunchal Pradesh	1.00	1.75	2.00	0.22	0.25	0.30
25.. Dadara & Nagar Haveli	0.01 ¹	0.01 [‡]	0.01 [‡]	0.13 ¹	0.13 [‡]	0.13 [‡]
26.. Goa, Daman & Diu	0.09 ¹	0.10 [‡]	0.10 [‡]	0.60 [‡]	0.60 [‡]	0.60 [‡]
27.. Mizoram	2	N.A.	N.A.	2	N.A.	N.A.
28.. total—union territories	1.95	2.71	2.96	1.16	1.20	1.25
29.. all-India	86.00	93.95	123.16	115.29	125.04	155.25

Note : ¹Figures taken from 'Forest Statistics—Bulletin No. 13, Central Forestry Commission.[‡]tentative estimates.²included in Assam.

N. A. information not yet available.

Chandigarh, Delhi, Lakshadwip and Pondicherry—nil.

Chapter 2

Co-operation and Community Development

I

COOPERATION

Review of Progress in Fourth Plan

AT Annexure I is a statement indicating the assumed base level and the targets of the Fourth Plan in respect of important programmes in the co-operative sector. This annexure also indicates the likely achievements against the targets. It will be observed that the Fourth Plan performance presents a mixed picture. In respect of one item, namely, co-operative marketing of agricultural produce, the Fourth Plan target is likely to be exceeded. In respect of certain other items such as cooperative credit and cooperative storage, the targets are likely to be accomplished substantially. With regard to the remaining items, there will be shortfalls against the Plan targets. The relevant factors pertaining to each sector of cooperative development are briefly analysed below.

2.2. In the sphere of cooperative short and medium term credit, the target for the country as a whole is likely to be achieved. In regard to individual States, however, the progress continues to be strikingly uneven. An Annexure II is a statement showing the State-wise position. It will be observed that four States, namely, Gujarat, Maharashtra, Punjab and Tamil Nadu accounted for over 61 per cent of the total volume of cooperative short and medium term credit. It will also be seen that, during the period of the Fourth Plan, the share of cooperatively under-developed States, such as Assam, Orissa, Rajasthan and West Bengal, in the total volume of cooperative credit has further deteriorated.

2.3. The principal bottleneck has been the continued existence of a high level of overdues. The overdues, as a percentage of outstandings at primary societies' level, which stood at 39 on the eve of the Fourth Plan, are estimated to have increased to 41 as on 30th June, 1972. At the central cooperative banks level, the overdues increased in the same period from 27 per cent to 36 per cent. An even more disturbing picture is revealed if these figures are dis-aggregated. At Annexure III is a statement showing the State-wise distribution of the number of central cooperative banks according to the percentage of overdues during recent years. It will be seen that, in a number of States, there has been a particularly disquieting deterioration in the overdues position of a large number of central cooperative banks.

2.4. A scheme was introduced in 1969-70 by the Reserve Bank of India for financing of primary agricultural credit societies by commercial banks. The scheme was meant for areas where the central cooperative banks were financially weak. Under the scheme, 20 commercial banks financed 1596 societies in 52 districts of six States, viz., Andhra Pradesh, Haryana, Madhya Pradesh, Karnataka, Orissa and Uttar Pradesh and disbursed Rs. 10.17 crores upto March 1973. Of all the States, relatively satisfactory results have been achieved in Haryana and Karnataka. Elsewhere, this attempt at collaboration between cooperative credit societies and commercial banks is still to stabilise.

2.5. During the Fourth Plan period, the problems of cooperative short-term credit have been under frequent review. At the instance of the Planning Commission, an Expert Group was constituted in 1972 to examine the credit situation on a district-by-district basis in the States of Eastern India, Rajasthan and Eastern U. P. and make recommendations for reorganisation/rehabilitation of the credit structure in individual States. So far, the Group has completed study of 13 districts of Orissa, two districts each of Assam, Bihar and Eastern U. P. and three districts each of Meghalaya and Jammu & Kashmir States. The Group has suggested various measures for streamlining the institutional credit arrangements depending upon the conditions prevailing in each State. A similar study has also been undertaken in respect of West Bengal by an Expert Group constituted by the Governor, Reserve Bank of India. Another Expert Group, constituted by the Government of India, has brought out reports on the cooperative credit structure in areas where tribal development projects have been started.

2.6. In respect of cooperative long-term credit, there is likely to be a marginal shortfall in the achievement of the Fourth Plan target. One of the factors influencing this short-fall has been the level of overdues. The following table represents the overdues position at the level of central land development banks and primary land development banks :

Table 1 : Overdues in Land Development Banks

	overdues as percentage of demand	
	central land development banks' level	primary land development banks' level
(0)	(1)	(2)
1968-69	10.80	21.23
1969-70	13.00	23.00
1970-71	22.69	31.68
1971-72	17.00	25.00

At Annexure IV is a statement showing the State-wise position. It will be observed that, while in some States such as Haryana and Punjab, the overdues are almost negligible, the level of overdues in certain other States is over 60 per cent. In quite a number of States, there has been steady deterioration in this matter. The State-wise figures of loans advanced by land development banks are given at Annexure V.

2.7. Cooperative marketing did not make significant progress in the initial years of the Fourth Plan. However, in the latter half of the Plan, the pace of cooperative marketing of agricultural produce has increased considerably. According to provisional data, the value of agricultural produce marketed by cooperatives in June, 1972 reached Rs. 844 crores. This included foodgrains worth Rs. 247 crores and other crops Rs. 167 crores. It is estimated that, by the end of the Fourth Plan, the target of handling Rs. 900 crores worth of agricultural produce is likely to be exceeded. This is due to several new factors. From 1972-73, a new scheme for strengthening of marketing cooperatives in the high-yielding varieties areas had been undertaken. Recent years have also witnessed a larger participation by cooperatives in the procurement operations of the Food Corporation of India/State Governments. Marketing societies have been increasingly involved in the procurement operations of the Cotton Corporation and the Jute Corporation.

2.8. Though the overall record of performance of the marketing cooperatives is impressive, the inter-State disparities continue to persist. An analysis of the performance of marketing cooperatives during 1971-72 reveals that four States accounted for 77 per cent of the total marketing of agricultural produce in the country whereas eight other States accounted for only 2 per cent of such total operation during the same year. Besides, there is also considerable unevenness in the performance amongst the individual marketing cooperatives. About one-third of the marketing cooperatives do not undertake any marketing of agricultural produce and another 42 per cent handle agricultural produce of the value of less than Rs. 5 lakhs each. Only 875 societies undertook marketing of agricultural produce above Rs. 5 lakhs each during 1971-72.

2.9. At Annexure VI is a statement indicating the State-wise progress in marketing of agricultural produce by cooperatives. It is observed that Punjab has recorded a phenomenal progress. The value of agricultural produce marketed by cooperatives in Punjab rose from Rs. 76 crores to Rs. 240 crores. Considerable progress has also been recorded in Gujarat, Haryana, and Maharashtra. On the other hand, in some States, such as Andhra Pradesh, Tamil Nadu, Uttar Pradesh and West Bengal, the level of cooperative marketing declined during the corresponding period. It is expected that, during 1973-74 in Uttar Pradesh, the level of handling of cooperatives will improve significantly in view of the increased role of the cooperative procurement of wheat.

2.10. While the Fourth Plan target of establishing 30 new cooperative sugar factories is likely to be achieved, there would be substantial shortfall in other

types of cooperative processing units. Various factors have contributed to this shortfall. These include a lack of adequate initial planning as also difficulties experienced in some cases in raising the requisite equity capital from producer members.

2.11. The following table indicates the main targets and achievements of cooperatives in respect of distribution of agricultural inputs in the Fourth Plan:

Table 2 : Main Targets and Achievements of Cooperatives during Fourth Plan

(Rs. crores)				
item	fourth plan target	1968-69 (actual)	1971-72 (actual)	1973-74 (anticipated)
(0)	(1)	(2)	(3)	(4)
1. fertilizers	650.00	200.00	300.00	350.00
2. seeds	—	23.48	45.00	60.00
3. agricultural implements and machinery	—	6.63	12.00	15.00
4. pesticides and insecticides	—	22.13	20.00	25.00

It will be observed that the main shortfall is on the cooperative retailing of chemical fertilizers. It is a reflection of a bigger shortfall in the overall Fourth Plan target of chemical fertilizer consumption in the country. The cooperative share in the fertilizer trade has been more or less steady around 60 per cent.

2.12. The pace of progress of adding storage capacity in the cooperative sector was rather slow in the initial period of Fourth Plan. As a result of the mid-term appraisal, a central sector scheme was introduced in 1971-72. As a result of this scheme, an additional storage capacity of one million tonnes is likely to be financed. Even so, by the end of the Fourth Plan, storage capacity in the cooperative sector would reach a level of 38 lakh tonnes as against a targetted capacity of 44 lakh tonnes.

2.13. In the sector of consumer cooperation, by the commencement of the Fourth Plan period (June 1969), a country-wide infra-structure had been built up, comprising 13,913 primary consumer cooperatives, 387 central/wholesale stores with 2,647 branches and 80 department stores, 14 State federations of consumer cooperative stores and a National Cooperative Consumers' Federation at the apex. As regards sales turn-over, the performance, was rather static in the first half of the Plan. This was mainly due to reduction in sales resulting from relaxation of controls on foodgrains and sugar. There has, however, been a diversification of the range of business and less dependence on controlled commodities; the non-controlled commodities which accounted for 39 per cent of the sales turnover in 1968-69 accounted for more than 50 per cent in 1971-72. The overall sales turnover, has recently started increasing, on account of larger turnover of department stores and other retail units. This trend is likely to be reinforced by the recent decision of the Government to route distribution of

controlled cloth through cooperative channels, and the greater utilisation of cooperatives in the public distribution system for essential commodities. Another significant development in the course of the Fourth Plan has been the establishment of a consultancy and promotional cell within the National Cooperative Consumers Federation for providing expert guidance to consumer cooperatives.

2.14. A new central sector scheme for the accelerated development of consumer cooperatives with a growth and employment potential was introduced from 1971-72. The basic objective of the scheme was to generate additional employment opportunities for the educated unemployed through the expansion and development of selected consumer cooperatives having growth potential. Under the scheme, assistance was proposed to be provided for development of about 40 existing wholesale central consumer cooperative stores including department stores, identified as growth centres and for the establishment of about an equal number of new retail outlets during the three years beginning from 1971-72. Under this scheme, assistance was sanctioned in 1971-72 to five States for setting up new department stores/large sized retail outlets. During 1972-73, a further amount has been sanctioned under this scheme for the establishment of 17 department stores, 4 large sized retail outlets and for the expansion of two department stores and one retail outlet. These department stores and other units, which are being set up on the basis of carefully drawn up projects are required to observe approved methods and procedures of management and business operations, and serve as models for other consumer stores

2.15. The cooperative training complex consisting of 63 cooperative training centres, 13 cooperative training colleges and a National Institute of Cooperative Management continued to function during the Fourth Plan period. During this period, an additional cooperative training college and three additional cooperative training centres were established. As far as member education programme is concerned, there has been a setback. The number of peripatetic parties operating under the programme has decreased during the past three years due to the discontinuation of the programme in a number of States such as Andhra Pradesh, Jammu & Kashmir, Rajasthan and Tamil Nadu. Qualitatively also the content of the programme has been far from satisfactory. By and large, it has failed to make a significant impact on the working of the cooperatives.

Approach in the Fifth Plan

2.16. Cooperation represents institutionalisation of the principle and impulse of mutual aid. It has the merit of combining freedom and opportunity for the small man with the benefit of large-scale management and organisation. Cooperation is, therefore, eminently suited to bring about the desired socio-economic changes in the context of the existing conditions in the country. There is no other instrument as potentially powerful and full of social purpose as the cooperative movement. Thus the building up of a strong and viable cooperative sector, with special emphasis on

the needs of the peasants, the workers and the consumers, will be one of the major objectives of national policy in the Fifth Plan.

2.17. In the Fifth Plan, cooperative development will have four specific objectives. The first objective is to strengthen the network, of agricultural cooperatives (credit, supply, marketing and processing) so as to serve as the principal institutional underpinning for a process of sustained agricultural development. The second objective will be to build up a viable consumer cooperative movement to enable it to function as an important element in a consumer oriented distribution system. The third objective is to make efforts towards the correction of regional imbalances in the level of cooperative development particularly in the sphere of agricultural credit. Finally special efforts will be made towards restructuring and reorienting the cooperatives so as to shift the focus of their activities increasingly in favour of small and marginal farmers and other under-privileged section of the people.

Strategy and Targets of Cooperative Development

2.18. In the strategy of cooperative development in the Fifth Plan, structural reformation will receive special attention. The cooperative movement has shown particular weakness in those areas where there is greatest need to provide credit to the farmer for his uplift. The small and marginal farmers still continue to be at a great disadvantage in many States in the country inspite of the laws providing for an appeal against the refusal of cooperatives to induct such members. Particularly in the States of Bihar, Orissa, West Bengal, Assam and Rajasthan, cooperative credit is insufficient and does not reach this class. The situation is still worse in areas inhabited by the scheduled tribes in the country. Against this background, it has been decided to try out in certain areas where small and marginal farmers are to benefit and the cooperative system is weak, a new concept of a Farmers Service Society, postulated by the National Commission on Agriculture and developed further by a Study Group. This Society, while keeping the cooperative frame substantially intact, would really act as a guided cooperative with its activities focussed mainly on the economy of the small and marginal farmers and agricultural labourers. It will have professional management generally under the supervision of a commercial bank which will loan the funds required by the Society. It will be necessary to work out this system on an adequate scale and improve it so that the benefits may reach the small and marginal farmers in the various development programmes contemplated in the Fifth Plan. An Expert Group constituted by the Government of India on the cooperative credit structure in the tribal areas have recommended the organisation of large sized credit-cum-marketing societies on the pattern of the Farmers Service Society for these backward areas. As the programmes for scheduled tribes will be substantial in the Fifth Plan, this concept will have to be introduced on a large scale. Arising from the general recommendations of an Expert Group instituted by the Planning Commission, structural reformation is also envisaged on a district by district basis at the level of a large number

of non-viable primary agricultural credit societies and weak district central cooperative banks so that these weaknesses do not inhibit the credit structure reaching the farmer in these areas. Reorganisation of a large number of consumer cooperative stores is also contemplated.

2.19. Besides these structural changes, in the strategy of cooperative development in the Fifth Plan, reliance will be placed chiefly on introducing measures for professionalised management within the cooperatives. Besides changes in bye-laws and procedures, the building up of a cadre of cooperative managers will be given special attention. A growing collaboration is envisaged between public sector commercial banks and primary credit societies. An intimate working relationship is also visualised between public undertakings such as the Food Corporation of India and the Cotton Corporation of India and the Jute Corporation of India and the marketing and processing cooperatives dealing in the relevant commodities. For giving a boost to cooperative development in cooperatively under-developed States, special central sector schemes in the sphere of credit, marketing and processing are proposed to be adopted in the Fifth Plan.

2.20. The following table indicates targets in respect of some important cooperative programmes for the Fifth Plan :

Table 3: Fifth Plan Cooperative Targets

item	(Rs. crores)	
	assumed base level (1973-74)	targetted level 1978-79
(0)	(1)	(2)
1. short-term "advances" by primary agricultural credit societies	700	1300
2. medium-term advances by primary agricultural credit societies during the five years of the plan	200	325
3. long-term advances by the land development banks in five years of the plan	900	1500
4. value of agricultural produce annually marketed by co-operatives	1100	1900
5. number of cooperative processing units installed by the end of the year (nos.)	1500	2150
6. value of chemical fertilizers annually retailed by co-operatives	350	380
7. capacity of cooperative storage at the end of the year	33 lakh tonnes	68 lakh tonnes
8. value of consumer goods annually retailed by urban consumer cooperatives	300	600

Statewise targets are given in Annexures VIII and IX

Co-operative Credit—General Programmes in Fifth Plan

2.21. In the Fifth Plan, cooperatives will continue to be the principal institutional agencies in the field of agricultural credit. Cooperatives will, therefore, be expected to substantially expand their credit operations and, at the same time, provide, in an increasing measure, a variety of ancillary services such as the provision of inputs, farm guidance and assistance in the marketing of crops. Production credit requirements for the country as a whole for the last year of the Fifth Plan have been roughly estimated at Rs. 3,000 crores. Of this, cooperatives will be expected to meet over 40 per cent. As regards medium term and long-term credit target of Rs. 325 crores and Rs. 1,500 crores over the period of 5 years of the Fifth Plan respectively is visualised.

2.22. Serious efforts will be necessary to augment the resources of the cooperative credit institutions if they are to achieve the above targets. These measures will include large deposit mobilisation and the allocation of additional share capital from grower members. Increased Govt. support for strengthening the share capital base of these institutions is also contemplated in the Fifth Plan.

2.23. The most crucial but the weakest link in the cooperative credit structure is represented by the primary agricultural credit society. Particular stress will, therefore, have to be laid on strengthening this link. Whilst the need for reorganisation of societies into viable units has been largely recognised by the States, concrete action to put the policy into practice has been lacking in several States. In the Fifth Plan, concerted efforts will be made to see that as many primary societies as possible have a wholtime Secretary. The total number of primary societies is also proposed to be reduced to 1.15 lakhs as compared with 1.59 lakh societies in existence on 30th June, 1972.

2.24. Overdues constitute the most formidable problem facing the cooperative credit institutions. If institutional credit agencies (whether they are cooperative or commercial banks) are to continue to provide adequate financial support for agricultural development, the creation of a sense of responsibility among the cultivators for the timely repayment of loans is of utmost importance. Extension agencies should, therefore, make repayment of cooperative loans an integral part of the package of practices recommended to the farmers.

2.25. At the institutional level, linking of credit with marketing is a significant way of improving the recovery performance in respect of short term credit. The following arrangements are visualised for effecting better recovery of loans through the sale proceeds of agricultural produce :

- (a) As a measure of positive encouragement for recovery of credit from the sale proceeds of the produce marketed through cooperatives, the central cooperative banks and primary societies need to ensure that first priority in

allocating credit is given to farmers, who have repaid their loans from the sale proceeds.

- (b) Where the procurement/purchase is made through marketing cooperatives, such societies will recover the amount of credit advanced to members by the cooperatives from the purchase price.
- (c) Where the purchases are made directly by the Government Corporations or State Government Departments, these organisations should be required to ensure that an amount of approximately 40 per cent to 50 per cent of the value of produce purchased from a farmer is adjusted against his dues to cooperative societies on account of credit advanced to the farmers. Detailed working arrangements should be introduced to facilitate such recoveries in consultation with the procurement/purchase agency concerned.
- (d) Recovery of cooperative dues should also be made out of the proceeds of sales made in the regulated markets. Suitable provisions should be made in the Agricultural Produce Markets Acts of the various States to this effect.

2.26. Coercive action has to be taken against wilful defaulters and for this, the societies require the active assistance of the State Governments. The State Governments are expected to play a vital role by taking steps such as :

- (i) fixation of time limits for disposal of arbitration cases and execution petitions;
- (ii) debarring defaulters from becoming or continuing as office bearers of cooperative institutions;
- (iii) denying taccavi loans as well as loans from other institutional agencies and other Government support to defaulters; and
- (iv) active propaganda for the timely repayment of loans and emphasising the Government's determination to take coercive measures where necessary.

2.27. There are a large number of district central cooperative banks where a very high level of overdues has already been reached. As a result, a number of these banks have become so weak that they are no longer suitable instruments for channeling the flow of credit. In 1972, a central sector scheme for rehabilitation of selected weak central cooperative banks was initiated. Whilst this scheme would be continued during the Fifth Plan period, this may still leave a number of districts without a viable district cooperative bank. In such cases, either the apex cooperative bank would have to step in and directly finance primary credit societies or the scheme of financing primary credit societies by commercial banks will have to be extended to such districts. The latter scheme is already operating in respect of about 1500

primary societies spread over 52 districts. An aggressive extension of the scheme involving a direct collaboration between the public sector banking institutions and cooperative credit societies is proposed to be taken up to fill in the gaps in the conventional cooperative credit system.

2.28. Earlier, an indication has already been given about the problem of overdues as affecting the flow of cooperative long-term credit in a number of States. If the objective of channeling a larger volume of long-term credit in these areas is to be achieved, concerted measures will be necessary to bring down the level of overdues. In the Fifth Plan, concerned State Governments and the land development banking structure will have to make special efforts to make recoveries and scale down the overdues. It will also be necessary to improve the quality of loan appraisal by the land development banks. For this purpose, the establishment of technical cells in the land development banking system will be given priority in the Fifth Plan.

Cooperative Credit and Small Farmers

2.29. A major objective of credit policies in the Fifth Plan will be to ensure a substantial increase in the flow of institutional credit to small farmers, marginal farmers, tenants and share croppers. A number of measures have already been introduced for disbursing a larger proportion of cooperative credit to these categories of farmers. Normally, for short-term loans a member has to take up shares to the extent of 10 per cent of his borrowings and an additional 5 per cent in each of the subsequent two years raising the total to 20 per cent. In regard to his medium-term loans, however, the linking generally recommended is 10 per cent. For small farmers, marginal farmers and weaker sections relaxations have been allowed by reducing the share capital required to be held by them and by allowing them to pay the reduced amount of share capital in convenient instalments.

2.30. For facilitating the flow of loans to tenants and share croppers, it will be necessary to give effect to the following changes in cooperative credit procedures and policies which have already been approved :

- (a) Where such a member is in a position to indicate formally or informally the survey number of the land proposed to be cultivated and the Managing Committee of the Society is prepared to accept the statement and apply for a loan on his behalf, finance may be provided to him on that basis as per prescribed scale of finance.
- (b) Where, however, the survey number of land cannot be indicated even informally without undue hazard and the Managing Committee is also not in a position to identify, if need be, the piece of land cultivated by the member, one of the three alternatives mentioned below may be adopted by the societies for financing such members :
 - (i) He should be asked to produce solvent surety/sureties of one or two members

who are owners of land or are registered tenants. The guarantees of the fellow-members may be accepted only to the extent to which they themselves are eligible for crop loans from the society.

- (ii) He may be asked to provide collateral tangible security in the form of gold or silver ornaments sufficient to cover the loan, with the prescribed margin.
- (iii) Wherever solvent surities are not forthcoming as guarantors or collateral security as indicated above cannot be provided, it will be difficult to extend full credit facilities to an oral lessee (i.e.) to those whose status as a cultivator is not certified by any fellow member residing in the same village or who does not have tangible security to offer. However, a calculated risk may be taken even in such cases and short-term loans may be advanced to them only in kind (i.e. in the form of fertilisers, improved seeds and other inputs) provided the value of all such inputs supplied does not exceed, say Rs. 500 per individual. As required by the bye-laws of the society, another member will, of course have to stand as surety, for the loan who may or may not be an owner of land or a registered tenant, provided the guarantor is acceptable to the Managing Committee of the Society.

2.31. It has also been decided that concessional finance provided by the Reserve Bank will also be available to non-agriculturists and agricultural labourers who are members of primary credit societies for purchase of milch cattle and poultry farming activities. These loans can be availed of without security of land on a group guarantee basis provided there are adequate arrangements for the sale of milk and poultry and a consequent recovery of loans out of the sale proceeds. Medium-term loans upto Rs. 2,000 for dairy and poultry can also be given by cooperatives without security of land. In order to facilitate the flow of funds in SFDA and MFAL areas, the Reserve Bank has also agreed that the State Governments will be eligible to borrow from the Long-term Operations Fund for investment in the share capital of primary credit societies irrespective of the level of overdues in such societies. Some relaxation in the same direction has also been granted in respect of share capital of central cooperative banks serving SFDA and MFAL Projects.

2.32. The central cooperative banks have been asked to ensure that a minimum of 20 per cent of their borrowing from the apex banks is covered by outstanding loans to societies for small farmers and weaker sections. The policy of reserving a percentage of cooperative credit in favour of small farmers, marginal farmers and other weaker sections should be effectively implemented in all States during the Fifth Plan period and the percentage should go up from year to year. According to the Reserve Bank's statistics for the cooperative years 1969-70 and 1970-71, about 1/3rd of credit advanced by primary credit

societies was for cultivators with land holdings of less than two hectares. It is envisaged that by the end of the Fifth Plan such advances to persons holding less than 2 hectares of land should constitute at least 40 per cent of the total advances made. In other words, by 1978-79 out of the total target of Rs. 1300 crores for short-term advances, Rs. 520 crores should be for cultivators with less than 2 hectares of land. It is also necessary that the small/marginal farmers should have due share in the control and management of the primary societies. Provision may be made by law that at least 50 per cent of the members of the managing committees of societies should be from the category of small farmers, marginal farmers, tenants, agricultural labourers and share croppers.

2.33. In the sphere of long-term credit, the co-operative land development banks have already taken steps to streamline their loaning policies and procedures in order to provide the desired service to the small farmers. The concessions are in respect of the repayment period of loans, down payments, etc. As regards share capital contribution, the small farmers are expected to subscribe at the rate of 2 per cent in the first year and 1 per cent in each of the three subsequent years as against the normal practice of 5 per cent share capital in one lump sum. In the Fifth Five Year Plan, besides the above noted concessions, the following additional concessions/liberalisations in the loaning policies and procedures with a view to ensuring smooth flow of credit to the small and economically weak farmers are envisaged :

- (i) If the resources available are inadequate in any land development bank to meet the requirements of all its members, the banks should ensure that the needs of small cultivators are adequately met on a priority basis. The Cooperative land development banks should adopt a positive policy of canvassing applications from the weaker sections.
- (ii) The loaning policies of cooperative land development banks may be liberalised in respect of the valuation of landed property offered as security ; issue of joint loans for groups of small cultivators and economic viability of the proposed investment rather than the value of the tangible security as the basis for loan.
- (iii) Bigger cultivators, who can repay loans in shorter periods should be encouraged to avail themselves of medium-term credit for investment.

2.34. In order to ensure a smooth flow of funds for loaning in the SFDA areas, the primary cooperative land development banks in such areas are eligible for full financing from the state cooperative land development banks irrespective of the percentage of their overdues. In the weaker States of Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, West Bengal, Madhya Pradesh, Orissa, Rajasthan and Tripura, it will have to be ensured during the Fifth Plan that policies and procedures are so designed as not to inhibit the flow of credit to the smaller farmers.

2.35. In the Fifth Plan, a significant experiment is proposed to be made for organising farmers, service societies in areas covered by the SFDA programmes. Arising out of the recommendations made by the National Commission on Agriculture, these societies are proposed to be set up to provide integrated credit, supplies and services in selected areas. Each society is expected to cater to a minimum population of 10,000 and may cover a community development block in full. While the membership of the society will be open to all cultivators within its jurisdiction, the control over management is required to be vested in the weaker sections who will have 2/3rd of the seats on the board of management reserved for them. Most of the farmers' service societies are proposed to be linked to commercial banks who will supervise the societies and will also meet the salary of the managing directors of the societies. One of the unique features of these societies will be that they will have on their pay roll the requisite technical staff so as to integrate extension know-how with credit, supplies and marketing and processing.

Cooperative Marketing

2.36. The main emphasis in the Fifth Plan in sphere of cooperative agricultural marketing will be on the consolidation and strengthening of existing societies. Additional societies will be organised only in cases where new secondary markets come up. Besides there may be need to set up separate marketing societies for handling certain specialised commodities such as fruit and vegetables, lac, plantation crops, etc. These societies will cover compact areas where production of such specialised crops is concentrated. It is estimated that about 100 new marketing primaries will be organised during the Fifth Plan.

2.37. It is envisaged that, during the last year of the Fifth Plan, cooperatives will handle agricultural produce of the value of Rs. 1900 crores, consisting of foodgrains, worth Rs. 800 crores, sugarcane worth Rs. 600 crores and the balance of other crops. Inter-State trade by cooperatives is envisaged to be of the order of Rs. 80 crores annually by the end of the Fifth Plan. In the field of exports, cooperatives are expected to step up their operations to Rs. 15 crores by 1978-79.

Cooperative Processing

2.38. During the Fifth Five Year Plan, approximately 650 new agricultural processing units in the cooperative sector will be installed. These include 76 sugar factories, 45 cotton ginning and processing units, 2 jute mills, 40 oil mills, 4 solvent extraction plants, 4 vanaspati oil units, 155 rice mills, 35 dal mills and 60 cold storages.

2.39. On the eve of the Fifth Plan, the total licensed capacity of the sugar industry in the cooperative sector is estimated at 28 lakh tonnes. Of this, the capacity that will be actually installed, is 18 lakh tonnes. During the Fifth Plan, it is estimated that cooperative sector will be issued additional licensed capacity of 9.18 lakh tonnes in respect of new sugar factories and 3.40 lakh tonnes for the expansion of old units.

This will raise the total licensed capacity in the cooperative sugar sector to 41 lakh tonnes by the end of the Fifth Plan. Of this, the installed capacity by the end of the Fifth Plan is targetted at 35 lakh tonnes. It is also contemplated that, during the Fifth Plan, one large sized sugar machinery manufacturing unit would be set up in the cooperative sector under the auspices of the National Federation of Co-operative Sugar Factories.

2.40. As regards cooperative spinning mills, on the eve of the Fifth Plan, the total licensed capacity and installed capacity is expected to be 15 lakh spindles respectively. It is contemplated that by the end of the Fifth Plan the licensed capacity of cooperative spinning mills would be raised by 10 lakh spindles while the installed capacity would go up by 9 lakh spindles.

Cooperative Distribution of Agricultural Inputs

2.41. At Annexure VII is a statement indicating the number of cooperative retail depots for the distribution of fertilizers. It will be observed that in recent years there has been a steady decline in the total number of retail points in the cooperative sector for the distribution of fertilisers. The most significant decrease has taken place in the States of Andhra Pradesh, Bihar and Maharashtra. In the Fifth Plan, it will be necessary not only to arrest this trend but to make positive efforts towards converting primary societies into multi-purpose societies. All viable/potentially viable societies which have a full-time Secretary are proposed to be involved in the distribution of agricultural inputs particularly fertilizers. For this purpose, specific financial arrangements will be made. This will include provision of cash credit accommodation by the central cooperative banks to the concerned primary agricultural credit societies. A portion of the share capital contributed to these societies by the State Government will also be utilised for investment in such non-credit business.

2.42. In addition to enlarging the role of cooperatives in fertilizer distribution, the Fifth Plan also visualises that the cooperative sector will go in for a large sized fertilizer factory with production capacity of 900 tonnes of ammonia and 1500 tonnes of urea per day. This will be in addition to a fertilizer factory set up by the Indian Farmers Fertilizer Cooperative Ltd. in Fourth Plan.

Consumer Cooperatives

2.43. As already pointed out, rather inadequate progress has been registered in the Fourth Plan in the sphere of quantitative expansion of consumer trade. When the Fourth Plan started, the turnover of urban consumer cooperatives was around Rs. 240 crores. In the terminal year of the Fourth Plan, this is likely to go up only by about Rs. 60 crores or so. In the Fifth Plan, the increase projected is around Rs. 300 crores. In other words, if the Fifth Plan targets are to be reached, an effort several times that in the Fourth Plan will have to be made.

2.44. As regards the consumer cooperative structure, the stress in the Fifth Plan will be on consolidation and

strengthening of existing institutions rather than on starting new ones. In places where the existing primary stores happen to be weak and incapable of serving as effective retail outlets, the central/wholesale stores are proposed to be encouraged to set up retail outlets or department stores directly/under their own auspices. This trend has already started and is proposed to be strengthened in coming years. In addition, it is proposed to undertake a programme of rehabilitation of about 100 existing wholesale stores and 30 department stores.

2.45. In the Fifth Plan, the main effort will be towards institutionalising the purchasing power of the consumer cooperative movement in its wholesaling structure, namely, the national cooperative consumers federation and the State federations. In the recent past, efforts have already been initiated to strengthen these organisations. Further measures are contemplated so that an effective leadership in wholesaling is provided to the retail consumer cooperatives by these wholesaling organisations. It is also contemplated that, besides the provision of consumer goods to the retail cooperatives, the national and the state federations will increasingly play a part in offering consultancy services to their constituent units and thereby assist in both quantitative and qualitative aspects of their operations. In particular, the opening of new department stores and other relatively large consumer enterprises are proposed to be subjected to a process of a proper project formulation and technical assistance. Financial assistance from the Government is proposed to be increasingly tied up with the observance of appropriate managerial and technical norms.

2.46. In the Fifth Plan, besides the consolidation and strengthening of existing stores, the consumer cooperative movement is also expected to increase the number of its retail outlets. For this purpose, 50 large department stores and 150 small department stores are proposed to be organised. These are intended to be set up in towns and consumer centres not presently covered by consumer cooperatives. In addition to these department stores, about 1300 retail outlets are expected to be set up by central/wholesale stores during the Fifth Plan.

2.47. In the Fifth Plan, consumer cooperatives are proposed to be increasingly involved in the distribution of essential consumer articles. Recently, the distribution of controlled cloth has been entrusted to the National Cooperative Consumers Federation and its constituents and other authorised channels. It is contemplated that similar arrangements will enable consumer cooperatives to play a growing role in the distribution of various other essential articles. Whenever it is found feasible, consumer cooperatives are also expected to take up the manufacture of consumer articles within their fold.

Cooperative Training and Education

2.48. During the Fifth Plan, the cooperative training and education programmes at the National Institute of Cooperative Management, the cooperative training colleges and junior training centres would be intensified and increasingly linked to the growing and diversified needs of the various sectors of the cooperative movement. These institutions will be suitably

strengthened for this purpose. It is proposed to establish two more training colleges to meet the needs of Kerala and the North-Eastern Region.

Cooperative Management

2.49. During the Fifth Plan period, it is envisaged to expand the operations of cooperatives in all sectors substantially. The achievement on this front will be possible only if the cooperatives are suitably and adequately manned by professional managers. Suitable measures will be taken for the establishment of cadres at appropriate levels in the different sectors of the cooperative movement. It will also be desirable that a proper relationship is developed between the non-official elected leaders and the professional management. The statutes and the bye-laws of the cooperative societies need to clearly demarcate the functions and duties between the non-official elected leaders and the chief executives. The cooperative laws are proposed to be amended, wherever necessary, to provide for a suitable legal base for the establishment of management cadres.

2.50. The cooperative credit structure, both short and medium-term as well as long-term, gravely suffers from high overdues. One of the reasons of this problem has been the dominance of beneficiaries, *i.e.* borrowers in the management of the cooperative credit institutions. It is, therefore, envisaged that, during Fifth Plan, steps will be taken to induct persons other than borrowers, *i.e.* professional bankers, representatives of the commercial banks, etc. in the management of the cooperative banking institutions to tone up their working.

2.51. At the end of the Fourth Plan, only about one-third of the primary agricultural credit societies are likely to have paid-Secretaries even though the need for full-time paid Secretaries has been stressed for several years. It is, therefore, intended that out of about 1.15 lakh primary societies which are likely to be retained by the end of the Fifth Plan, at least 80,000 societies should be brought under the cadre scheme by 1978-79. This would be done in phased programme so that about 20% of the total societies likely to be covered by the end of Fifth Plan, are taken up every year. To begin with, it is contemplated that all societies which have reached a loan business of at least Rs. 50,000 should be covered by this scheme. In order to organise secretaries of primary societies into a cadre, the constitution of a cadre authority and a cadre fund in each State is visualised. Primary credit societies would contribute 75% of their income from interest to the cadre fund. Central cooperative banks and state cooperative banks will also contribute a specified percentage of their profit. The deficit in cadre fund, if any, will be made good by an appropriate subsidy by the State Government. Similarly, the formation of cadre of managerial staff, setting up of this technical cells, etc., and creation of a cadre fund and cadre authority at the level of state cooperative banks and also central cooperative land development banks is visualised.

2.52. In the cooperative marketing sector, as against 3335 primary marketing societies at the end of 2.52. In the cooperative marketing sector, as

staff of their own. The remaining obtained their managers on deputation from government departments. The State Marketing Federations were required to create common pools/cadres of managerial personnel for being lent to their affiliated societies for which subsidies were provided by State Governments. Much progress has, however, not been made in this regard. Effective measures are, therefore, required to be taken to implement the scheme effectively in all States and if need be, with legislative support. There is also an urgent need to professionalise the middle and senior level managerial cadres of cooperative marketing and processing societies to improve the working of these institutions.

Reduction of Inter-State imbalance in Cooperative Development

2.53. Even though for the country as a whole, significant progress has been made in certain sectors of the cooperative movement like credit, marketing, processing, supplies, considerable inter-State disparities exist. Special policies and procedures will, therefore, be designed in Fifth Plan to reduce such disparities. Some of these are outlined below.

2.54. On the basis of per hectare short-term advances by primary credit societies, the States can be divided into three broad groups:—

Group (A) : consisting of States where the per hectare advance is Rs. 45 or more. The States in this group are: Punjab, Kerala, Gujarat, Tamil Nadu and Maharashtra. The highest in this group is Punjab where the amount advanced works out to Rs. 96 per hectare of gross cropped area.

Group (B) : consisting of States where the per hectare short-term advances are between Rs. 20 and Rs. 45. States falling in this group are: Andhra Pradesh, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, and Uttar Pradesh.

Group (C) : consisting of States where the per hectare short-term advances are less than Rs. 20. The States falling in this group are: Assam, Bihar, Meghalaya, Orissa, Rajasthan, West Bengal, Manipur, Tripura and Nagaland. In Assam, the figure is as low as Rs. 6 per hectare.

2.55. In order to reduce regional disparities, the following rates of increase in short-term production credit is envisaged in the Fifth Plan.

- (a) In the advanced States in Group 'A' an increase of about 10% per annum is considered appropriate. Short-term loans advanced in these States would thus increase from an estimated Rs. 396 crores in 1973-74 to Rs. 644 crores in 1978-79.
- (b) For the States in Group 'B', about 15% annual rate of growth is considered necessary. Short-term loans advanced in these States would then increase from an estimated Rs. 224.5 crores in 1973-74 to Rs. 456 crores in 1978-79.

- (c) For the States in Group 'C', it is considered necessary to provide for a growth rate of about 20% per annum. Short-term loans advanced in these States would then increase from an estimated Rs. 80 crores in 1973-74 to Rs. 215 crores in 1978-79.

2.56. Necessary programmes, changes in policies and procedures and allocation of funds will be devised for achieving the growth rates as indicated above, particularly in Group 'C' States. Efforts will also be essential particularly in weaker States to augment the resources of the cooperative credit institutions to enable them to achieve these targets. These measures will include deposit mobilisation and the collection of additional share capital from grower members. Increased Government support for strengthening the share capital base of these institutions will also be necessary. A central sector scheme for providing assistance to cooperative credit institutions in the cooperatively underdeveloped States will be introduced during the Fifth Plan period.

2.57. The problems of inter-State imbalances has also to be tackled in the field of long-term credit. On the basis of long-term loans outstanding with reference to the net sown area the average investment of long-term credit comes to Rs. 46 per hectare. The position in various States, however, differs materially. The States may be divided into the following groups:

Group 'A' : States where the outstandings are more than Rs. 60 per hectare. These include Tamil Nadu, Punjab, Gujarat, Andhra Pradesh, Maharashtra and Haryana. Tamil Nadu figure is Rs. 124 per hectare.

Group 'B' : States where the average outstanding are between Rs. 30 and Rs. 60 per hectare. These include Uttar Pradesh, Karnataka, and Kerala.

Group 'C' : States where the outstanding per hectare are less than Rs. 30. The rest of the states fall in this category. The lowest is Assam with outstandings of Rs. 2 per hectare.

2.58. With a view to ensure the reduction of disparities the State Cooperative and Development Banks in Group 'C' States should, in the Fifth Plan, have a growth rate of more than double over their performance during the Fourth Plan period. The rate of growth in the case of the cooperative land development banks in Group 'A' and 'B' may be 25% and 50 per cent respectively. In order to ensure a growth rate of more than 100% in Group 'C' States, the following administrative and financial arrangements are visualised :

- (1) A constant watch over the progress achieved by the cooperative land development banks in Group 'C' States will be kept by a cell in Union Department of Cooperation. A Committee consisting of representatives of the Government of India, RBI and the concerned States may be constituted to make a periodical review of the progress and problems in this regard.

- (2) The target for the floatation of rural debentures for the cooperative land development banks in Group 'C' should be lower.
- (3) The reduction in the ordinary debenture programme of the Cooperative land development banks in Group 'C' States on account of overdues or the failure to float rural debentures should be less severe.
- (4) Suitable relaxations may be allowed in the condition regarding matching contribution by the State Governments in respect of the ordinary debenture support to be provided for the State Cooperative Land Development Banks in Group 'C'.
- (5) Assistance from the Reserve Bank of India for share capital contribution to the institutions in those areas should also be on a more liberal pattern.

2.59. Inter-State disparities are also prominent in the field of cooperative marketing. On the basis of data available for the marketing of agricultural produce by cooperatives during 1971-72, four States namely, Gujarat, Maharashtra, Punjab and Uttar Pradesh accounted for 77% of the total marketing done by cooperatives in the country whereas five States of Assam, Bihar, Orissa, Rajasthan and West Bengal accounted for less than 5% of the total marketing done by cooperatives in the country. Special attention would have, therefore, to be given to removing inter-State imbalances to accelerate the development of cooperative marketing activities in weaker areas. A new central sector scheme for the development of the programmes of cooperative marketing, processing, supplies and storage in weaker areas is envisaged during the Fifth Plan period. This scheme will be operated by the National Cooperative Development Corporation.

Fifth Plan Outlays

2.60. It is visualised that the total public sector outlay for programmes of cooperative development during the Fifth Plan will be Rs. 423 crores as against an estimated expenditure of Rs. 258 crores in Fourth Plan. The following is the break-down of Fifth Plan outlay :

	(Rs. crores)
state and union territories	286
centrally sponsored sector	44
central sector	93
<i>total</i>	423

The above outlay is exclusive of the provision required for State & Central Government support to the debentures of cooperative land development banks for which an outlay of Rs. 227 crores is separately envisaged. The above outlay also does not include the requirement of funds for a large sized cooperative fertilizer plant envisaged in the Fifth Plan. The requirements of the latter are taken care of in the Industrial Sector of the Plan.

II

COMMUNITY DEVELOPMENT AND PANCHAYATS

Review of Progress in Fourth Plan

2.61. The basic objective of the community development programme, launched in 1952, was to secure the fullest development of the material and human resources on an area basis and thereby raise the rural community to higher levels of living with the active participation and on the initiative of the people themselves. This basic objective has not undergone any significant change though, in the process of working, there have been some variations in the emphasis in the programme aspect of community development. The Community Development blocks have two active stages of operation, Stage-I of five years followed by Stage-II of another five years. At the end of ten years, the block enters post-Stage II. At the beginning of the Fourth Plan, there were 5,265½ Community Development blocks in the whole country. Following re-organisation in many States, the number has come down to 5,103 (as in March 1973). Out of 5265 C. D. Blocks at the beginning of the Fourth Plan, 672 were in Stage-I, 2,274 blocks in Stage-II and 2,319 in Post-Stage-II. Out of 5,103 C.D. Blocks as on 31-3-1973, 199 were in Stage-I, 1,417 in Stage-II and 2,354 in Post-Stage-II. The Statewise position regarding number of C.D. blocks as at the beginning of Fourth Plan and as on 31-3-1973 may be seen at Annexure IX. It may be seen that the number of C.D. blocks has been significantly reduced in Andhra Pradesh and Karnataka.

Pilot Research Project in Growth Centres

2.62. A pilot research project in growth centres was implemented as a centrally sponsored scheme during Fourth Plan period. The scheme envisaged the setting up of a total of 20 research and investigation cells to evolve techniques and the methodology for the development of emerging and potential growth centres by providing social and economic overheads in delineated areas in terms of a carefully prepared inventory of local needs. All the 20 areas identified have been approved and one research and investigation cell at each of these approved areas has been established. Reports have also been completed for all the 20 projects. It is envisaged that based on the findings of these surveys and reports it would be possible to lay down some guidelines for selecting potential centres for growth without lengthy and elaborate investigations so that they can be followed by planning the infrastructure facilities in different areas. It may, however, be observed that the progress on the scheme has been rather tardy. The objective that on the basis of these studies, the locational decisions for rural infrastructure would be rationalised, has yet to be realised.

Panchayati Raj

2.63. Panchayati Raj now extends to all the States excepting Meghalaya and Nagaland. In Jammu & Kashmir, Kerala, Manipur and Tripura, only gram panchayats are functioning. In Bihar, panchayat samitis have been established in seven districts and all the three-tiers in five districts. In the

remaining districts, high tiers of panchayati raj are expected to be established soon. In Kerala, the District Administration Bill, for setting up of two-tiers of panchayati raj *i.e.* at village and district level has been introduced in the State Legislature. In Jammu and Kashmir, the legislation for setting up of higher-tiers of Panchayati Raj has been introduced. Manipur and Tripura are considering introduction of higher tiers of panchayati raj. In Nagaland, there is no panchayati raj set up but there are traditional area, range and tribal councils. Statutory gram panchayats exist in the Union Territories of Delhi, Goa, Daman and Diu, Dadra and Nagar Haveli, Chandigarh and Andaman and Nicobar Islands. In Arunachal Pradesh (NEFA) three-tier system of panchayati raj has been introduced. In the case of Delhi, establishment of two-tier system is under consideration. In Pondicherry "The Pondicherry Village and Commune Panchayat Bill, 1972," has been passed by the assembly in 1973. In case of Lakshadweep the establishment of panchayati raj system is under consideration.

2.64. The pattern of organisation of Panchayati Raj is not uniform in all the States. While West Bengal has four-tiers, Karnataka and Orissa have two-tiers, Jammu & Kashmir and Kerala one-tier and the rest of the States have three-tier system. In Jammu & Kashmir and Kerala, only gram panchayats are functioning. There are now 2,21,270 village panchayats covering 98 per cent of the rural population, 3,871 panchayat samitis and 2,33 zila parishads in the country. In 1968-69, there were 254-zila parishads in the country but the number has fallen to 233 in 1971-72 as the zila parishads were abolished in Karnataka and Orissa. Similarly, in 1968-69, the number of panchayat samitis was 3,292 as against 3,871 in 1971-72. There has, however, been a little increase in the number of village panchayats. There were 2,14,967 village panchayats in the country in 1968-69 as against 2,21,270 in 1971-72. The comparative figures of these institutions as at the end of 1968-69 and 1971-72 is given in Annexure-X.

2.65. During the Fourth Five Year Plan, some significant development took place with respect to enactment and implementation of Panchayati Raj Acts in different States. For instance, zila parishads were abolished in Orissa, Karnataka and Haryana States. Similarly, the zila parishads in Uttar Pradesh were suspended in the year 1970 for a period of 2 years and their powers, duties and functions were transferred to the District Magistrates. In Assam, a new Act is under implementation. The Government of West Bengal is also contemplating to introduce a new bill. Some State Governments have taken steps to review the panchayati raj system so as to bring about improvements in its working. The Governments of Andhra Pradesh, Rajasthan, Maharashtra, Madhya Pradesh and Gujarat have got the working of panchayati raj examined by high-powered committees and their reports are under consideration of the State Governments.

2.66. The basic concept behind establishing Panchayati Raj was to create rural local self-Government agencies responsible for discharging certain

selected functions pertaining to development. However, from the experience of the functioning of these agencies in various States during the Fourth Plan period, it could be said that by and large *status quo* had been maintained with regard to their functioning. In some of the States, namely, Punjab, Andhra Pradesh, Rajasthan, Karnataka, Orissa, Haryana, the powers concerning control over the junior staff of the panchayat samitis, ceiling on expenditure and execution of minor programmes etc. which were given to panchayati raj bodies have been withdrawn. In several States, it is observed that the elections to these institutions are not being regularly held. For instance, elections of Panchayati Raj institutions in the States of Bihar, Kerala, Haryana, Rajasthan, Uttar Pradesh, West Bengal Himachal Pradesh are overdue.

2.67. The bulk of the budget of Panchayati Raj bodies consists of grants provided by the State Governments for certain specified schemes initiated at the State level. In the States like Tamil Nadu, Andhra Pradesh and Rajasthan, the trend is encouraging as considerable funds are placed at the disposal of the panchayat samitis and the quantum has increased from year to year. States like Gujarat, Orissa and Maharashtra are also routing considerable funds through panchayats samitis but the amount has shown a decrease from year to year during the Fourth Plan period. The position in other States cannot be said to be satisfactory. At present the only exclusive source of revenue to the panchayats is cess or surcharge on the land revenue. In this regard, the States of Tamil Nadu, Madhya Pradesh, Kerala and Haryana account for 89% of the total effort.

Objectives and Strategy for Fifth Plan

2.68. It is recognised that rural development should include agricultural development in its widest sense so as to embrace, besides crop production, all its allied activities. This integrated development should encompass both spatial and functional integration of all relevant programmes bearing on increased agricultural production and reduction of unemployment and under-employment among small farmers and agricultural labour. Minimum needs programme is to be implemented on a massive scale during Fifth Plan. These programmes will cover a large number of developmental activities spread over a wide area. There would still be some developmental needs of a purely local nature particularly in the sphere of social action to be covered. The aim is towards all round development and not confined to increasing production alone. People's participation in these developmental programmes is vital for their success. The Community Development Agency and Panchayati Raj Institutions should have adequate credibility and viability, if they are to play their role effectively as instruments of change and raise among the rural people the desire for a better living. It is in this context that the Community Development and Panchayati Raj institutions would be suitably re-oriented and strengthened to become instruments of social and economic changes.

2.69. Integrated rural development would be possible only through cooperation and participation of

the people. This could be secured by strengthening the panchayati raj institutions at various levels. It would be necessary in this context to review the size, and viability of (i) gram Panchayats; (ii) whether the panchayat samiti or zila parishad could be the best agencies for carrying out these programmes and (iii) what specific programmes the panchayat samiti or zila parishad could and should administer. It would be desirable that the panchayats are entrusted with the implementation of specific programmes. Efforts will have to be made to attract institutional finance for augmenting the resources of panchayati raj bodies. In any scheme of strengthening the panchayats, it is essential to lay down norms and criteria of viable panchayats. Such criteria for viable panchayat in term of area, population, etc. would be considered and laid down.

12.70. As a part of minimum needs programme, it has been recognised that rapid progress will have to be made for integrating family planning with health and nutrition facilities in order to promote the concepts of small families. Local institutions like panchayats would be very essential for the success of this programme. These agencies would therefore, be suitably involved in this plan effort.

Whole Village Development Programme

2.71. Recognising the urgency of increasing the productive capability in the rural areas and promoting the welfare and prosperity of the people through equitable distribution of the benefits of development, the National Commission on Agriculture have recommended adoption of a whole village approach to development for harnessing the growth potential of the villages. The central theme of the whole village approach is to build the programme of development around the community as a whole. It is felt that if the community can be enthused and stirred into common action towards development, the utilisation of the growth potential will be easier and quicker from which the community as a whole will benefit. The programme components of the whole village development approach consist of the following :

- (i) Consolidation of holdings;
- (ii) Overall land development plan for maximising water control and moisture preservation in dry areas;
- (iii) maximising irrigation support subject to per acre maximum limit of investment based on the need to repay investment credit by extra production possible, and
- (iv) cropping programme for the village for the best use of irrigation and for ensuring the best-control of irrigation and drainage.

In order that there is optimum utilisation of land and water, the programme should be taken up for a village or an area comprising a cluster of villages to ensure best watershed management.

2.72. In the interest of social justice, the State is required to provide support in the field of irrigation, provide technical support, develop waste lands, provide house sites for landless and legal frame work for consolidation of holdings and protection of share croppers. The programme also envisages adequate

credit support and financial support to the small farmers for settlement of their debts with the money-lenders. In order to gain sufficient experience in the working of the programme under different conditions and gather more knowledge about the problems of organisation and implementation, and financial implications, it is proposed to take up the programme initially on pilot basis in 38 villages of 4 States of Bihar (23) Orissa (6), Tamil Nadu (4) and Uttar Pradesh (5).

Fifth Plan Outlays

2.73. It is tentatively visualised that the total public sector outlay for the programmes of Community Development and Panchayats during the Fifth Plan will be Rs. 128 crores with the following breakdown :

states and union territories	118.50
central sector	9.50
centrally sponsored	Nil
<i>total</i>	128.00

The above outlays are exclusive of the provisions for the scheme relating to nutrition programme which formed the part of Community Development programmes during the Fourth Plan period but would henceforwards from the part of 'Nutrition' during Fifth Plan period.

III

SPECIAL PROGRAMME OF RURAL DEVELOPMENT

General Approach

2.74. In the Fifth Plan, one of the major objectives is to substantially raise the per capita monthly consumption of the lowest 30 per cent of the rural population. This implies that the income of about 25 million of the poorest rural households must rise. For achieving this objective, while some part, is expected to be played by other sectors such as rural industries, construction and housing, the main effort must necessarily emanate from the agricultural sector.

2.75. The above effort will have a three-fold direction in the Fifth Plan. The first direction will be concerned with reorientation of the general programmes of agricultural development so as to ensure that the mass of small and marginal farmers and agricultural labourers are increasingly able to benefit from these programmes. A large programme of milk production through small and marginal farmers is visualised. The programmes for development of animal husbandry and fisheries will also be oriented towards both increasing overall production, and subserve the objective of uplifting the economy of small and marginal farmers and agricultural labour. A similar slant will have to be given to the other normal programmes of agricultural development such as minor irrigation and soil conservation. The reorientation of structure and policies of co-operative credit institutions in favour of small and marginal farmers will be another major aspect.

2.76. The second direction of effort will be towards building elements of special assistance to small farmers in the area development programmes. The Fifth Plan visualises two such major programmes, namely, development of the command of selected irrigation projects and development of specified drought prone areas. While these programmes are essentially concerned with the integrated agricultural development of the economy of these areas, it is proposed to ensure that the small farmers remain within the main stream of development and in particular are enabled to participate in the benefits.

2.77. The third direction of effort will be towards intensification and enlargement of special programmes specifically designed for the weaker sections and the weaker areas in the agricultural economy. These are dealt with in the subsequent sections of this Chapter.

IV

SMALL FARMERS' DEVELOPMENT AGENCIES

Review of Progress in the Fourth Plan

2.78. One of the objectives of the Fourth Plan was to enable the small and marginal farmers and agricultural labour "to participate in the process of development and share its benefits." In pursuance of this objective, the Plan, inter alia, provided for two sets of projects, namely, projects for small but potentially viable farmers and projects for marginal farmers and agricultural labour. The small farmers were taken to be those who, with the help of irrigation, provision of credit, supplies and marketing and application of modern technology, could be made viable. A limit of one to three hectares of land holding was generally adopted in identifying such farmers. Farmers with land holdings below this limit were categorised as marginal farmers. As regards agricultural labour, this category was defined to cover those rural households who derive more than 50 per cent of their income from agricultural wages.

2.79. The agencies in charge of these projects are corporate bodies registered under the Societies Registration Act. Each agency has a small membership consisting mainly of the representatives of the institutional agencies and concerned district officers with the Collector or the Deputy Commissioner as the Chairman. It has a small administrative and coordinating cell. The agencies are expected to utilise the existing field institutions, i.e., the Government development departments, local organisations, particularly those of panchayati raj and block development, cooperative and other institutions. The agencies are to act as catalysts activating the existing institutions providing support for them and creating new organisations, wherever necessary, to cater to the beneficiary farmers. The agencies can also directly undertake certain activities like setting up of infra-structural facilities. The chief function of the agencies, however, is to identify the participants, study their problems, draw up suitable programmes for them, locate

institutional support, arrange extension services and provide supervision for the adoption and implementation of the programme.

2.80. Although the programme was initiated in 1969, it took the best part of the year to convey the basic concepts to the States and district, authorities and to get the projects prepared. The projects for marginal farmers were prepared still later. The year 1971-72 was thus the first full year of the working for most of the projects though some were in operation earlier. There are, at present, 46 SFDA projects and 41 MFAL projects.

2.81. An outlay of Rs. 115 crores was originally earmarked for SFDA/MFAL programmes for the Fourth Plan. Subsequently, this has been revised to Rs. 103 crores and Rs. 12 crores have been diverted for six special projects taken up in predominantly tribal areas. As most of the projects had an operational period of only three years the expenditure during the plan period is likely to be about Rs. 49 crores.

2.82. At Annexure I is a statement showing the physical progress of programmes recorded in SFDA/MFAL projects for the country as a whole till March 1973. It will be seen that, in the aggregate, the projects have recorded fairly significant progress. At the end of March 1973, the agencies had identified 23.66 lakhs of small farmers and 11.26 lakhs of marginal farmers and agricultural labourers. Of this, 14.95 lakhs representing 43 per cent of the identified participants had been brought within the cooperative fold. As regards physical programmes, one of the important items relates to minor irrigation. The overall achievement in respect of dug wells/pump sets, in relation to the targets envisaged, works out to about 46 per cent under both SFDA and MFAL projects. As regards the distribution of milch cattle, the achievement, has been only about 22 per cent of the target.

2.83. Credit is one of the prerequisites for implementing the various programmes of small and marginal farmers. At the time of formulating the Fourth Plan, it was tentatively estimated that the short-term credit might be of the order of Rs. 25 crores in the first year going up to Rs. 100 crores during the last year of the Fourth Plan and that investment credit (medium and long-term) during the entire period of operation of the projects may be about Rs. 200 crores. This credit was to come partly from cooperatives and partly from commercial banks.

2.84. While the volume of credit flowing to small and marginal farmers has gone up in the project areas, it has been much below the expectations indicated above. The short-term credit provided during the cooperative year 1972-73 till March 1973 to the beneficiaries in SFDA areas was Rs. 17.26 crores. The investment credit (medium and long term) provided by cooperatives to identified participants comes to Rs. 28.62 crores. The term lending by commercial banks to the beneficiaries in the agency areas is estimated at Rs. 2.31 crores.

2.85. On an all-India basis, against the number of identified participants, the SFDA agencies have so far covered about 25 per cent under improved agriculture and about 12 per cent under other programmes. The corresponding figures for the MFAL programmes are 20 per cent and 13 per cent. The performance has been considerably uneven from area to area and between projects in the same State. Generally, the progress of minor irrigation and subsidiary activities has been satisfactory in Mysore, Orissa, U.P., Gujarat, Punjab and Haryana. Progress has been halting in States like Assam, Bihar, J.&K., Rajasthan and West Bengal.

Approach and Programme in the Fifth Plan

2.86. In the course of the working of SFDA/MFL projects, a number of operational deficiencies have been noticed. In several cases, the original project reports were not prepared very carefully and the targets envisaged were found to be unrealistic. Consequently, the original project content had to be substantially revised. Another deficiency is the lack of proper synchronisation of normal State plan activities and the activities of these special projects. Integrated and coordinated planning, which implies dovetailing of the resources under the State Plan and the agencies' funds, is yet to be attempted in most areas. In several cases, the various concerned departments of the State Governments had not adequately accepted their role and commitment in the progress envisaged under these projects. In the Fifth Plan, one of the obvious tasks would be to take steps towards making requisite operational improvements in SFDA/MFAL projects.

2.87. It is proposed to continue and expand the programme limiting each project to one district and expand the coverage so as to establish 160 projects in all. The additional projects will be mainly located in States having concentration of population of small and marginal farmers and agricultural labour. These projects will be composite in character and will serve both the small farmers and marginal farmers. The beneficiaries in these projects will be restricted to farmers with land holdings up to 2 hectares and agricultural labour.

2.88. The emphasis under the combined SFDA/MEAL projects in the Fifth Plan will be on crop husbandry for the small and marginal farmers. Since these projects will be located in the areas which are neither command areas under major irrigation projects nor the drought prone areas, a combination of programmes for irrigated and rain-fed agriculture and dry farming will form the core of the projects. The subsidiary occupations for suitable areas will be supplemental programmes for the small and marginal farmers and agricultural labourers in the project areas. These programmes will be funded separately but coordinated at the project level. A provision of Rs. 200 crores has been made in the Central Plan for the special programmes for small and marginal farmers in 160 projects. This will be supplemented by suitable outlays in the State Plans for extension of infrastructure support which is a crucial gap in the current Plan. Cooperatives and commercial banks

will be set larger tasks and a beginning will be made in selected projects to provide integrated credit services through Farmers' Service Societies referred to in the Chapter on "Cooperation & Community Development".

2.89. In a separate section on Land Reforms, various programmes relating to tenancy legislation, preparation and maintenance of record of rights and consolidation of agricultural holdings have been spelt out. It is contemplated that areas covered by small farmers' development agencies would be treated as priority areas for the implementation of these land reform measures. In particular, preparation of record of tenancies, including share cropping arrangements in these areas, is proposed to be given pointed attention. It is also contemplated that the heads of the land reform organisation at the district level will be included as a member of the managing committees of the small farmer development agencies.

V

TRIBAL DEVELOPMENT AGENCIES

Review of Progress in the Fourth Plan

2.90. A special programme for the development of selected tribal areas was initiated in the latter part of 1971-72. The programme for the tribals, particularly the economic aspects, which constitute the core of the programme has been conceived on the lines of SFDA/MEAL schemes and forms a part of the Central sector programmes. Six projects, approved by the Government of India in the Fourth Plan, are located in Srikakulam (AP). Koraput and Ganjam (Orissa), Dantewade and Konta (MP) and Singhbhum (Bihar) with a total cost of Rs. 9 crores (Rs. 1.5 crores for each project). In addition a sum of Rs. 3 crores has been separately earmarked for providing arterial roads in the project areas (@ Rs. 0.50 crore for each project).

2.91. The programme started in the latter part of the year 1971-72 and it is still in the stage of infancy. The expenditure is likely to be about Rs. 5 crores.

2.92. As it is intended that the benefits of the different economic programmes in the project areas should accrue to the weaker sections and the deserving among the tribals, the Agencies have in general confined identification to tribal participants below 2 hectares of irrigated or 4 hectares of unirrigated holdings. In areas where due to the unsatisfactory state of land records there has been delay and difficulties in identification, efforts are being made to overcome these difficulties in consultation with local chiefs. The development Agencies have since identified 50,058 tribal participants out of which 35,638 have so far participated in the programmes. The progress is, however, uneven as between different projects. It is particularly slow in the two projects of Baster district (MP).

Approach and Programme in the Fifth Plan

2.93. The Tribal Development Agencies have been conceived as an extension of the programme for small/marginal farmers tailored to the special conditions of the tribal areas to obtain some experience for whole. Since the programme is still at an early stage it can hardly provide gainful experience to serve as a guideline for the future. These Projects will have an operational period of full five years and will continue till the end of March 1977. In addition, a few more similar projects are likely to be taken up in the Fifth Plan. The Central sector funds for these projects are proposed to be used for certain basic purposes such as soil conservation and land development, control of shifting cultivation and a subsidy towards the risk fund of cooperative institutions. It is expected that the State Plan funds will be deployed for various complementary activities. The limited programme of special tribal development projects will be part of a general development plan with a substantial provision for improving the economy of the tribals. As mentioned in the Chapter on Development of Backward Classes, it is intended to have a separate sub-plan within the State Plan for areas predominantly inhabited by tribals so that it will be possible to ensure that tribal areas get an adequate share of plan resources.

2.94. In the implementation of these special projects, particular stress will be laid on restructuring the cooperative institutions. It is envisaged that there should be a single institutional point at the village level for the provision of credit, distribution of inputs, marketing of agricultural commodities, marketing of minor forest products and distribution of consumption goods. Apart from production credit, there has to be provision for a reasonable consumption credit which will have to be linked to the sale of minor forest products by tribals. Earmarking of loans in favour of tribals has also to be adopted. Another important aspect will be in relation to debt redemption for this purpose there will be a need to set up debt relief courts for scaling down of tribal debts. Land records have to be up-dated and land allotted to landless tribal families on a long-term basis. It will also be necessary to effectively enforce existing protective laws concerning the tribals as regard debt relief, prevention of alienation of tribal land, restoration of land illegally transferred to non-tribals etc.

VI

DROUGHT PRONE AREA PROGRAMME

Review of Progress in Fourth Plan

2.95. The Fourth Plan stated that :

“Apart from outlays included in the Plan, the Central Government annually provides about Rs. 25 crores from the budget as grants to famine affected areas. Over the Fourth Plan period, namely Rs. 100 crores are likely to be available from this source. The bulk of this Amount can be so deployed in the areas chronically affected by drought as to generate considerable employment in the rural sector largely related to a pre-planned programme of rural works”.

Hence, a rural works programme was initiated in 1970-71 in areas within 54 districts (alongwith some continuous areas of another 18 districts).

2.96. Initially, this programme focussed on execution of rural works and employment generation. Subsequently, it was realised that a mere rural works programme would not help towards the drought-mitigating development of the areas. The programme was sought to be reoriented on the basis of an area development approach and was redesignated as Drought Prone Area Programme at the time of the mid-term appraisal of the Fourth Plan. The classification of the scheme was changed from non-plan to a Central Plan scheme. In January, 1973, it was decided that the funds provided for the programme should not be restricted to financing the four specified activities, namely, minor and medium irrigation, afforestation and soil conservation, roads, and drinking water supply but also be available for cattle development, sheep husbandry, dairying etc. which are highly relevant to the land and water resources situation in most of the drought-prone areas. In pursuance of the above decision, certain funds for production activities such as animal husbandry and milk chilling plants have recently been sanctioned for some of the drought-prone districts. However, by and large, most of the available funds had already been pre-empted by other schemes. Thus the change in the approach has so far been merely conceptual than operational.

2.97. The Drought Prone Area Programme has been in operation for nearly four years. Since its inception, scheme costing nearly Rs. 111 crores have been sanctioned. Minor Irrigation schemes accounting for about 60 per cent, rural communications for about 25 per cent and the balance for other programmes such as soil conservation, afforestation and drinking water supply. As against this, cumulative expenditure has been about Rs. 74 crores till July 1973.

2.98. The broad conclusions emerging from the DEAP programme are summarised below :

- (i) On account of the initial pre-occupation of the programme with rural works, the programme tended to lack an appropriate order of priorities. For instance, in many areas, excessive priority was given to roads even though, at the present stage of development, their contribution to drought mitigation in the concerned areas could not be considered significant. For a number of districts, some sort of master plans were drawn up but these were often found to be a collation of different departmental schemes and programmes. Moreover, there have been frequent revisions in the inventory of the approved schemes.
- (ii) There has been lack of close watch on the physical performance in respect of various programme. The available data on expenditure and physical performance shows that there has been a sizeable deviation from the norms and yardsticks at the time of the formulation of the scheme. On present indi-

cations, a large number of schemes are likely to be left incomplete by the end of the Fourth Plan.

- (iii) It was understood that the central funds provided under the DPAP would be additional to the normal Plan funds flowing in the districts concerned. This has not happened in practice.

Development Strategy in Fifth Plan

2.99. The need for a careful development strategy for drought prone areas in the fifth plan arises from several considerations. Firstly, the drought prone areas represent nearly 19 per cent of the total area of the country and account for nearly 12 per cent of the population. Secondly, the drought prone areas are a major factor contributing to regional imbalances in the country. Their overall productivity has been and continues to be low. Every third year, about three million inhabitants of the arid zone migration with their livestock. Thirdly, these areas remain a continuing source of strain on the financial resources of the nation. At the all India level, during the period 1969-70 to 1971-72, the expenditure on drought relief was nearly Rs. 420 crores. For 1972-73, the expenditure would be in the neighbourhood of Rs. 370 crores.

2.100. The main thrust of effort in the Fifth Plan will be to restore a proper ecological balance in the drought prone areas. Some of the important elements which may constitute the strategy for such ecologically integrated development are listed below:—

- (i) Development and management of irrigation resources;
- (ii) Soil and moisture conservation and afforestation;
- (iii) Re-structuring of cropping pattern and pasture development;
- (iv) Changes in agronomic practices;
- (v) Livestock development;
- (vi) Development of Small-marginal farmers and agricultural labour.

2.101. The above task involves a distinct and deliberate reversal of the trends which have persisted. From the view point of land-use planning, sizeable parts of the area in the drought prone districts, particularly those falling within the arid-and semi-arid zones, are lands which are only fit for conservation purposes. However, in practice, there has been a growing trend towards bringing these areas under crop farming. Crop husbandry has thus been taken to marginal and submarginal lands and the areas which were previously pastures and grazing lands have been brought under the plough. In some of the relevant districts, there has been an increase of about 45 per cent in the cropped area during the last 15 years. This has tended to link the economy of these areas to more and precarious crop farming.

Development and Management of Irrigation Resources

2.102. The Irrigation Commission has computed that, at present, about 13 per cent of the cropped area of the drought-affected region is irrigated. This is likely to rise to about 19 per cent when the schemes under execution are completed. Even so, as much as 81 per cent of the cropped areas will remain without irrigation. In the drought areas of Gujarat, Madhya Pradesh, Maharashtra, and Mysore, the position will remain much worse. Given this, a proper programme for development and management of irrigation resources in the drought prone areas is of obvious significance. It is contemplated that, in the Fifth Plan, apart from improvement in existing irrigation works, various irrigation projects already under construction in the drought prone areas will be completed. In certain districts, where the percentage of area under irrigation continues to be negligible or small, the possibility of providing irrigation through in the Central Plan for the purpose.

2.103. While occasionally a drought-prone area may be found to be blessed with significant unexploited water resources, the typical position is one of extremely limited availability of water resources. In such a situation it will be desirable to have the water resources owned and operated, as far as possible, on a cooperative or a community basis. It will be socially undesirable if a small number of individuals come to own the limited number of tubewells which may be found feasible in terms of identified ground water resources. An appropriate ceiling on "water holding" must be deemed necessary in a proper strategy for development in drought-prone districts. In order to give effect to this approach, it may be essential for these states to acquire the command area of a new tubewell that is proposed to be installed and use the irrigated area either for development of fodder for a cattle colony or to enable the village community to benefit from this limited irrigated acreage. A similar approach is suggested in respect of surface irrigation works in the drought-prone areas.

2.104. Further, the limited water must be put to optimum use. Crops such as sugarcane and paddy must be avoided and fodder crops & pasturage encouraged. For this purpose, it will be necessary to invoke suitable legislative powers. There must also be concerted effort towards avoidance of water losses, through development of underground conveyance system it is economically feasible.

Soil and Moisture Conservation

2.105. The routine soil conservation measures such as contour bunding, furrowing, terracing and levelling have naturally to be part of the programme in the crew local conditions. In dryland farming technology, a new element has recently been sought to be introduced namely water harvesting. Generally, in a water harvesting system, storage structures are found to be fairly costly. Enough field experience, therefore, needs to be gained to see whether the programme can be economically viable before it can be adopted on a large scale.

2.106. In those drought-prone areas where there is a high-degree of wind-erosion, there is a need for adopting a programme of shelter belts to stabilise sand dunes. It has been found that protective strips of certain plants significantly decrease the intensity of wind erosion. It is proposed to take up this programme in a bigger way particularly in the desert areas.

2.107. Finally, it is necessary to stress the role of forests. In several drought areas, there has been indiscriminate felling of trees for fuel and this, in turn, has adversely affected the soil and agro-climatic situation. A programme of afforestation is, therefore, conceived as an important element in the programme.

Restructuring of the Cropping Pattern and Changes in Agronomic Practices.

2.108. To ensure the optimum use of soil moisture, it is necessary to choose crops which have a deep root system and have the capacity for quickly establishing roots in deeper layers of the soil. Non-traditional crops like sunflower and castor which are drought resistant have to be adopted. Besides grasses, these non-conventional crops are promising for stabilising production on dryland. Among conventional crops, there are certain varieties of millets and green gram which give better performance under moisture stress conditions.

2.109. Another aspect which needs attention is a suitable system of inter-cropping. Along with grasses, annual rainy season legumes or perennial legumes can be cultivated. Experiments have also been done with other crops and these need to be taken the farmers' fields. This practice of inter-cropping and mixed cropping is important for stabilising agricultural production.

2.110. Besides the choice of appropriate crops and varieties, other elements in an effective dryland farming technology include judicious fertilizer use for stabilising and enhancing agricultural production, appropriate plant protection & weed control measures and the need for a flexible date for the sowing of the crop.

Livestock Development

2.111. While crop farming on the lines indicated in the preceding paragraphs will be sought to be promoted in drought-prone areas, the strategy of development is structured mainly around animal husbandry. In some of the districts, particularly in Rajasthan, there are cattle of reputed breeds. But grass and fodder resources are dwindling. Almost every alternate year, a number of cattle perish on account of drought. The yield levels are generally very low. Most of the areas are characterised by poor marketing arrangements.

2.112. For development of animal husbandry, pasture lands is a pre-requisite. In some of the concerned districts, even in a normal year, there is a substantial shortage which gets further aggravated in a drought year. There is both need and scope for pur-

suing the objective of pasture development. In a number of districts liable to drought a significant portion of the total area (some time as high as 30 per cent) is owned either by Government or by the village community. In the past, there has been a tendency to allocate such land for crop cultivation. This needs to be discontinued and instead efforts should be made to convert these lands into pasture lands. The available research data about grassland technology and pasture development needs to be fully exploited. A portion of the village common lands should be developed to serve as a base for fodder banks. This programme may be supplemented by development of fodder crops around sources of irrigation.

2.113. With the arrangements for feed and fodder, the strategy of development must aim at a vigorous programme for augmenting the production of milk, through related programmes such as breeding and animal health cover. As traditionally some of these areas have had reputed indigenous breeds, no particular effort to introduce exotic blood has so far been made in most of these areas. Hence it is necessary to take up a strong promotional and extension programme and also build up infrastructure for supplying exotic semen in liquid or frozen form.

2.114. Many of the drought-prone areas also offer considerable scope for the development of sheep husbandry. These areas have a sizeable sheep population but they are often of low genetic potential. Moreover, they suffer from malnutrition on account of the poor quality of available forage and excessive pressure on grazing land. These factors, coupled with the environmental stress, account for low yields of wool and mutton. A vigorous programme of sheep and wool development, both on the production and marketing fronts, is therefore necessary.

Development of Small Farmers

2.115. The number of small farmers and marginal farmers in the drought-prone districts is estimated to be over 5 million and of agricultural labourers about 3.5 million. It is proposed in the Fifth Plan to build into the drought-prone area development programme special provisions for the benefit of the small farmers, marginal farmers and agricultural labour.

Organisational and Financial Arrangements

2.116. The main elements of the strategy of integrated agricultural development in drought prone areas are not the concern of one single existing department of Government but concern at least five main Departments, namely, Agriculture, Irrigation, Animal Husbandry, Forestry and Cooperation. There is a real danger that any integrated plan of development of a drought-prone area may flounder on the rock of departmentalism. To get over these problems it seems necessary to opt for an organisational innovation. This may take the shape of a coordinating corporate body which is charged with the responsibility of designing, coordinating and catalysing a programme of integrated development in each drought-prone dis-

tract. Such a coordinating corporate body should have the requisite financial and operational flexibility. At the same time, it should be able to effectively utilise the facilities and the manpower of various development departments operating in the district. For this purpose, it would be essential that the District Collector and other district officers concerned are involved as ex-officio chairman and members of the management organisation of the coordinating or corporate body. In addition suitable non-officials may be included on the pattern of SFDA. The Coordinating/or corporate body will have to be so patterned that it is also able to directly undertake some activities particularly land development, where necessary.

2.117. It is contemplated that, whilst for various activities, a drought-prone district should continue to receive funds under normal departmental plan schemes, it is necessary that certain nucleus funds are earmarked for each drought-prone district. It is envisaged that the central government will generally provide Rs. 3 crores from the central plan to each drought-prone district when 75 per cent or more of the area is characterised as drought prone, Rs. 2.5 crores to each district where the area ranges between 50 to 75 per cent and Rs. 2 crores to each district where the area is less than 50 per cent. Matching amounts would generally be found by the States concerned from within their State Plan. On the basis of this allocation, it is estimated that a nucleus amount exceeding Rs. 300 crores would be made available. In addition to the above nucleus funds, it is visualised that each corporate body should be able to raise, wherever necessary, institutional finance for direct investment.

2.118. It is necessary that the integrated plan of development of each drought-prone district is very carefully drawn up, after a proper survey and a proper resources inventory of the district. The development plan should embody concrete programmes and projects to be taken up. As far as possible, these should be quantified to facilitate proper evaluation and also to serve as a guideline for the project staff. Concurrently, a bench mark survey of the existing situation in relation to crop production and livestock should be carried out. This bench mark survey would facilitate a periodical evaluation.

VI

PILOT INTENSIVE RURAL EMPLOYMENT PROJECTS

Review of Progress in the Fourth Plan

2.119. During 1971-72 a Crash Scheme for Rural Employment was taken up throughout the country as a non-plan programme with a provision of Rs. 50 crores to provide quick and direct employment to atleast

some specific numbers in each district. The scheme had a two-fold purpose namely (i) generating employment for 1,000 persons on an average per year in every district; and (ii) production of assets of a durable nature in consonance with local development plans. The works undertaken under the scheme were to be such as would be completed within 2 working seasons. The scheme has been included in the Fourth Five Year Plan for the years 1972-73 and 1973-74 with an outlay of Rs. 50 crores for each year.

2.120. During the year 1971-72, expenditure was Rs. 31.25 crores and employment generated was 800 lakhs mandays. During 1972-73 expenditure was Rs. 52 crores and employment generated was 1,300 lakh mandays. Experience of the working of the programme showed that resources were spread thinly over a very large number of very small projects and that the bulk of the expenditure, about 80 per cent, was incurred on Communications.

2.121. As a part of the Crash Scheme for Rural Employment, a pilot intensive rural employment project was taken up during 1972-73 in 15 selected blocks. The object of this project was to collect the necessary data regarding the dimensions of the programme for providing full employment to everyone who was willing to work. This scheme is to be implemented over a 3 year period and will accordingly spill-over to the first year of the Fifth Five Year Plan.

Approach and Strategy in the Fifth Plan

2.122. The Crash Scheme for Rural Employment was conceived at a time when the various special rural development programmes like SFDA, MFAL, DPAP etc. had not spread out fully and a minimum measure of effort was considered necessary to relieve distress caused by unemployment or under-employment. These programmes have now operated for sometime and as indicated earlier, are to be expanded and intensified. Besides, the Plan proposes a minimum needs programme which will include a massive programme of construction of rural roads with an outlay of Rs. 500 crores, a programme of drinking water supply in the rural areas with an equal outlay and a fairly large construction programme, and for education, primary health centres, rural households etc. These outlays are considerably greater than those under the limited and ad-hoc. Crash scheme during the Fourth Plan, which were aimed at providing employment for 1000 persons per district. Further, in view of the integrated approach towards area development of which rural development and employment will form the basic objective, it may no longer be necessary to continue this ad-hoc scheme. The Pilot intensive scheme will, however, continue for the period envisaged viz. till 1974-75. The results of that scheme will provide appropriate guidelines for shaping the programme of integrated development of different areas with a view to provide employment to the maximum number of persons in the area.

ANNEXURE I

**Assumed Base Level and Targetted Level and
Anticipated Achievement in respect of Important
Cooperative Programme for Fourth Plan**

programme	unit	assumed base level	targetted level	anticipated achievement
(0)	(1)	(2)	(3)	(4)
1. loans advanced annually by primary agricultural credit societies :				
(a) short-term		450	675	700
(b) medium-term		40	75	50
total (a and b)		490	750	750
2. ordinary long-term loans advanced by co-op. land development banks during five years.		120	700	700
3. co-operative marketing of agricultural produce	Rs. crores	583	900	1100
4. co-operative processing units (installed)	number	..	1768	1500
5. fertilisers retailed by co-operatives	Rs. crores	200	650	350
6. retail sales of urban consumer co-operatives	Rs. crores	270	400	300
7. co-operative storage capacity (completed)	million tonnes	..	4.00	3.80

ANNEXURE II

Statewise short and Medium term loans Advanced by
Primary Agricultural Credit Societies percentage
share to all India Total

Sttate	(Rs. crores)			
	1968-69		1971-72	
	loans advan- ced	percent- age of all India total	loans advan- ced	percentage of all India total
(0)	(1)	(2)	(3)	(4)
1. Andhra Pradesh	25.89	5.16	28.75	4.78
2. Assam .	2.86	0.57	1.16	0.19
3. Bihar .	12.50	2.49	15.60	2.59
4. Gujarat .	65.26	13.01	85.25	14.17
5. Haryana .	12.18	2.43	19.25	3.20
6. Himachal Pradesh	1		4.72	0.78
7. Jammu & Kashmir	0.69	0.14	3.18	0.53
8. Karnataka .	32.43	6.46	42.6	7.09
9. Kerala .	20.41	4.05	35.0	5.82
10. Madhya Pradesh	40.36	8.67	56.5	9.40
11. Maharashtra	92.57	18.45	110.5	18.37
12. Manipur .	1		0.28	0.05
13. Nagaland .	1		0.18	0.03
14. Orissa .	11.30	2.25	10.70	1.78
15. Punjab .	61.94	12.35	61.39	10.21
16. Rajasthan .	14.55	2.90	9.74	1.62
17. Tamil Nadu .	43.77	8.73	57.78	9.61
18. Tripura .	-		0.77	0.13
19. Uttar Pradesh	54.50	10.86	51.25	8.52
20. West Bengal	5.76	1.15	5.27	0.25
21. <i>total—union territories</i>	4.65	0.93	1.51	0.25
22. <i>total</i> .	501.62	100.00	601.43	100.00

1 Included under Union Territories.

Frequency Distribution of Central Co-operative Banks by Percentage of Overdues

state	upto 5%							5 to 10%							10 to 25%						
	June							June							June						
	65	66	67	68	69	70	71	65	66	67	68	69	70	71	65	66	67	68	69	70	71
	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
1. Andhra Pradesh	4	3	-	3	1	-	-	5	3	1	1	2	1	-	7	11	9	9	7	7	7
2. Assam	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Bihar	2	-	-	-	-	-	-	1	1	1	-	-	-	-	3	5	4	2	-	-	1
4. Gujarat	5	2	2	1	2	3	-	2	5	1	1	2	2	3	12	11	12	12	8	9	10
5. Haryana	-	-	-	-	-	-	-	-	-	2	1	-	-	1	-	-	7	6	7	3	1
6. Himachal Pradesh	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1	2	1
7. Jammu and Kashmir	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	3	1
8. Karnataka	2	1	1	-	1	1	-	3	4	4	2	2	1	2	7	4	3	5	7	5	3
9. Kerala	1	2	1	2	1	1	-	1	1	3	2	2	2	-	3	5	5	3	5	6	8
10. Madhya Pradesh	5	1	2	-	-	1	-	5	2	3	5	2	1	1	28	23	15	15	17	14	9
11. Maharashtra	2	-	-	-	-	-	-	2	4	-	3	4	1	1	17	10	9	5	5	7	6
12. Orissa	3	3	2	2	-	-	-	5	3	-	-	-	-	-	3	5	6	7	7	-	3
13. Punjab	1	4	3	1	1	-	-	7	10	4	3	1	-	-	16	12	11	11	8	3	-
14. Rajasthan	-	1	-	-	-	-	-	1	-	1	1	-	-	-	7	7	3	5	6	5	2
15. Tamil Nadu	5	3	3	4	3	2	2	6	1	3	3	4	3	6	3	5	7	5	6	10	6
16. Uttar Pradesh	5	6	4	9	6	2	-	16	4	3	4	7	5	1	28	22	21	23	11	17	13
17. West Bengal	2	2	-	-	-	-	1	2	3	-	-	1	-	1	13	2	8	5	2	3	-
18. total	40	29	18	22	15	10	3	56	41	26	26	27	16	17	147	123	122	115	97	91	71

ANNEXURE IV

Overdues of Primary Land Development Banks as
Percentage of Demand

state	1968-69	1969-70	1970-71	1971-72
(0)	(1)	(2)	(3)	(4)
1. Andhra Pradesh	4.1	5.3	13	11
2. Assam . . .	40.0	50.0	60	67
3. Gujarat . . .	..	50.0	64	57
4. Haryana . . .	..	..	..	0.4
5. Himachal Pradesh	..	..	..	50
6. Karnataka . . .	42.5	48.1	48	36
7. Kerala . . .	33.7	36.0	37	37
8. Maharashtra	23.6	30.3	53	33
9. Madhya Pradesh	38.2	46.3	38	47
10. Orissa . . .	20.1	16.0	46	61
11. Punjab . . .	..	0.3	4	5
12. Rajasthan . . .	52.1	30.8	36	47
13. Tamil Nadu	11.0	14.0	18	15
14. Uttar Pradesh	..	50.0	100	..
15. West Bengal . . .	69.1	50.0	56	35
16. total—all India	22.9	33.0	32	25

ANNEXURE V

**Statewise Ordinary Long term Loans Advanced
by Land Development Banks percentage share All
India total**

(Rs. crores)

state	1968-69		1971-72	
	loans advan- ced	percent- age of all- India total	loans advan- ced	percent- age of all- India total
(0)	(1)	(2)	(3)	(4)
1. Andhra Pradesh	13.11	11.04	14.05	11.5
2. Assam	0.02	0.02	0.10	0.08
3. Bihar	1.97	1.66	7.45	6.12
4. Gujarat	20.27	17.07	15.06	12.37
5. Haryana	3.51	2.96	4.31	3.54
6. Himachal Pradesh	0.23	0.19	0.38	0.31
7. Jammu and Kashmir	0.22	0.18	0.48	0.40
8. Karnataka	5.05	4.26	7.36	6.05
9. Kerala	1.02	0.86	1.74	1.43
10. Madhya Pradesh	3.32	2.80	5.05	4.15
11. Maharashtra	25.62	21.57	9.88	8.1
12. Manipur . . . . .	..	..	..	..
13. Meghalaya . . . . .	..	..	..	..
14. Nagaland . . . . .	..	..	..	..
15. Orissa	2.03	1.71	3.08	2.53
16. Punjab	6.19	5.21	10.50	8.63
17. Rajasthan	2.43	2.05	2.52	2.07
18. Tamil Nadu	16.24	13.68	19.64	16.13
19. Tripura . . . . .	..	..	neg.	..
20. Uttar Pradesh	16.29	13.72	18.69	15.35
21. West Bengal	1.06	0.89	1.01	0.83
22. Union territories	0.16	0.13	0.43	0.35
23. total	118.75	100.00	121.73	100.00

ANNEXURE VI

**Statewise Value of Agricultural Produce marketed
by the Cooperatives**

(Rs. crores)

State/union territories	1968-69	1971-72
(0)	(1)	(2)
1. Andhra Pradesh	23.49	12.58
2. Assam	9.65	14.17
3. Bihar	7.36	14.34
4. Gujarat	57.20	91.84
5. Haryana	14.41	34.22
6. Himachal Pradesh	1	1.10
7. Jammu and Kashmir	0.65	1.88
8. Karnataka	26.37	42.62
9. a	8.23	14.38
10. Madhya Pradesh	11.72	23.45
11. Maharashtra	168.66	193.64
12. Manipur	1	0.08
13. Nagaland	N.A.	N.A.
14. Orissa	1.62	2.74
15. Punjab	76.12	240.02
16. Rajasthan	3.47	7.85
17. Tamil nadu	25.25	19.84
18. Tripura	1	0.15
19. Uttar Pradesh	145.64	124.79
20. West Bengal	6.91	2.00
21. Union territories	2.51	2.00
22. <i>total</i>	588.46	843.69

¹ Included under Union Territories.

ANNEXURE VII

**Statewise Number of Cooperative Retail Depots for
Distribution of Fertilisers (Position as at the
end of the Cooperative Year)**

(nos.)

state/union territories	1966-67	1967-68	1968-69	1969-70	1970-71
(0)	(1)	(2)	(3)	(4)	(5)
1. Andhra Pradesh	4110	3219	4110	4119	1516
2. Assam	-	-	-	-	-
3. Bihar	4753	4703	4220	4220	1560
4. Gujarat	2150	3393	3304	3304	3083
5. Jammu and Kashmir	761	761	761	761	785
6. Haryana	2000	1497	2000	2090	1850
7. Karnataka	4373	4373	4308	4533	3290
8. Kerala	1202	1363	1363	1363	2149
9. Madhya Pradesh	3864	2343	2350	2350	3500
10. Maharashtra	8000	3318	3318	3318	2417
11. Meghalaya	-	-	-	-	200
12. Tamil Nadu	3573	2970	2977	2977	3132
13. Orissa	3028	2629	2673	2673	3350
14. Rajasthan	2626	2543	1863	1836	2204
15. Punjab	4002	4000	4000	4000	4065
16. Uttar Pradesh	1910	1909	2026	2026	3501
17. West Bengal	1679	1679	1000	1000	1605
18. Himachal Pradesh	-	-	-	-	-
19. Union territories	1139	227	227	227	413
20. total	48170	40927	40473	40707	38620

Fifth Plan—Cooperation—Statewise Physical Targets

(Rs. crores)

states/union territories	short-term advances		medium-term advances		long-term advances		coop. agril. marketing		retail sale of fertilisers		retail sale of urban consumers goods	
	anti-cipated base level	fifth plan target	anti-cipated base level	fifth plan target	anti-cipated base level	fifth plan target	anti-cipated base level	fifth plan base	anti-cipated base level	fifth plan base	anti-cipated base level	fifth plan target
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. Andhra Pradesh	28.00	70.00	8.00	18.00	86.15	130.00	30.00	65.00	35.00	75.00	25.00	50.00
2. Assam	4.00	12.00	0.35	2.00	0.70	14.00	15.00	40.00	0.10	7.50	2.30	15.00
3. Bihar	14.00	40.00	9.00	10.00	42.21	100.00	15.00	40.00	16.00	50.00	15.00	30.00
4. Gujarat	90.00	130.00	38.00	46.00	95.00	120.00	98.00	125.00	34.00	70.00	14.00	20.00
5. Haryana	19.50	45.00	0.50	4.00	50.00	35.00	35.00	60.00	20.00	55.00	5.00	10.00
6. Himachal Pradesh	4.50	9.00	10.78	13.00	2.00	5.00	1.25	5.00	2.00	6.00	0.45	1.50
7. Jammu and Kashmir	5.00	12.00	1.20	3.50	2.44	4.00	3.00	15.00	2.60	10.00	1.00	2.50
8. Karnataka	45.00	75.00	5.00	15.00	70.00	140.00	50.00	100.00	12.00	30.00	35.00	70.00
9. Kerala	40.00	75.00	23.50	32.50	13.50	30.00	18.00	58.00	8.00	28.00	20.00	30.00
10. Maharashtra	130.00	225.00	5.00	35.00	130.00	140.00	350.00	500.00	42.00	70.00	56.00	75.00
11. Madhya Pradesh	62.50	130.00	17.50	35.00	45.00	140.00	35.00	80.00	35.00	90.00	11.00	22.00
12. Manipur	0.40	2.00	0.01	0.05	0.05	0.50	0.50	1.00	0.20	0.40	0.24	1.00
13. Meghalaya	1.00	2.50	..	0.50	..	0.50	1.00	5.00	0.20	1.50	0.35	2.00
14. Nagaland	0.15	0.50	0.12	0.20	0.10	1.00	0.30	1.00	..	..	1.00	2.00
15. Orissa	18.00	40.00	9.14	25.00	20.04	81.00	8.00	20.00	11.00	40.00	5.00	10.00
16. Punjab	65.00	114.00	20.00	25.00	82.00	110.00	225.00	350.00	50.00	100.00	6.00	20.00
17. Rajasthan	30.00	75.00	4.00	10.00	23.00	60.00	20.00	20.00	8.00	30.00	5.00	12.00
18. Tamil Nadu	71.00	100.00	28.00	23.00	112.00	150.00	25.00	50.00	22.00	48.00	55.00	80.00
19. Tripura	1.25	3.00	0.15	0.30	0.05	2.00	1.00	5.00	..	2.50	0.50	2.00
20. Uttar Pradesh	60.00	115.00	22.00	25.00	126.00	190.00	140.00	260.00	45.00	100.00	8.00	35.00
21. West Bengal	10.00	40.00	2.00	5.00	5.34	40.00	18.00	50.00	12.00	46.00	30.00	70.00
22. total—States	699.39	1315.00	204.25	328.05	895.58	1493.00	1089.05	1880.00	355.10	860.50	295.84	560.00
<i>union territories</i>												
23. Andaman and Nicobar	0.05	0.15	0.02	0.05	..	0.05	0.50	1.00	..	..	1.50	3.00
24. Arunachal Pradesh	..	..	..	..	..	..	..	..	..	..	2.00	6.00
25. Chandigarh	0.04	0.05	..	0.05	..	0.02	0.40	0.45	..	0.05	0.50	1.00
26. Dadra and Nagar Haveli	0.05	0.10	..	..	..	..	..	0.10	..	0.04	..	..
27. Delhi	0.35	1.00	0.50	0.60	1.04	1.50	0.20	0.50	0.10	0.20	11.00	25.00
28. Goa	0.25	0.75	0.08	0.20	0.09	1.00	0.17	1.50	0.30	0.50	5.00	8.00
29. Lakshdweep	..	0.12	..	0.13	..	..	0.55	1.00	..	0.04	..	..
30. Mizoram	..	0.50	..	..	..	..	..	0.25	0.02	0.10	0.50	1.50
31. Pondicherry	0.70	10.0	0.20	0.50	0.60	0.80	0.60	1.00	1.00	1.50	1.50	3.00
32. total—union territories	1.44	3.67	0.80	1.53	1.73	3.37	2.42	5.80	1.42	2.43	22.00	47.50
33. total—all India	700.74	1318.67	205.05	329.58	897.31	1496.37	1091.47	1885.80	356.52	863.93	317.84	607.50

ANNEXURE IX

Fifth Plan-Cooperation—Statewise Physical Targets

state/union territories (0)	(thousand tonnes)			
	cooperative pro- cessing units in- stalled		cooperative storage capacity constructed	
	antici- pated base level	fifth plan target	antici- pated base level	fifth plan target
	(1)	(2)	(3)	(4)
1. Andhra Pradesh	202	211	266	346
2. Assam	43	52	43	96
3. Bihar	33	60	137	311
4. Gujarat	150	209	251	376
5. Haryana	15	35	130	220
6. Himachal Pradesh	5	8	42	85
7. Jammu and Kashmir	34	51	62	119
8. Karnataka	127	205	375	500
9. Kerala	54	80	105	170
10. Madhya Pradesh	135	250	275	575
11. Maharashtra	295	349	440	690
12. Manipur . . . . .	..	2	9	18
13. Meghalaya	1	5	28	54
14. Nagaland	1	1	3	10
15. Orissa	110	124	150	200
16. Punjab	45	76	720	1500
17. Rajasthan	18	40	138	340
18. Tamil Nadu	102	132	300	500
19. Tripura . . . . .	..	2	14	17
20. Uttar Pradesh	86	170	252	567
21. West Bengal	51	90	80	120
22. total—states	1507	2152	3820	6814
23. total—union territories	5	15	20	30
24. all—India	1512	2167	3840	6844

ANNEXURE X
**Statewise Position of C. D. Blocks at the Beginning
of Fourth Plan and as on 31st March, 1973**

(nos.)

state/union territories	no. of C.D. Blocks as on 31st March	
	1969	1973
(0)	(1)	(2)
1. Andhra Pradesh	445	324
2. Assam	160	130
3. Bihar	575	587
4. Gujarat	224	218
5. Haryana	82	83
6. Himachal Pradesh	69	69
7. Jammu and Kashmir	70	73
8. Karnataka	268	175
9. Kerala	143	144
10. Madhya Pradesh	416	457
11. Maharashtra	425	425
12. Manipur	14	14
13. Meghalya	—	24
14. Nagaland	21	21
15. Orissa	307	314
16. Punjab	116	116
17. Rajasthan	232	232
18. Tripura	15	17
19. Uttar Pradesh	899	875
20. Tamil Nadu	375	374
21. West Bengal	341	335
<i>union territories</i>		
22. Andman & Nicobar Islands	5	5
23. Arunachal Pradesh	41	43
24. Chandigarh	1/2	1
25. Dadra & Nagar Haveli	2	2
26. Delhi.	5	5
27. Goa, Daman & Diu	11	12
28. Lakshdweep	—	4
29. Mizoram	—	20
30. Pondicherry	—	4
<i>total—all India</i>	5265 1/2	5103

ANNEXURE XI

Coverage of Panchayati Raj Institutions in different States of India

(nos.)

state/union territories	zila parishad as in		panchayat samiti as in		village panchayat as in	
	1968-69	1971-72	1968-69	1971-72	1968-69	1971-72
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Andhra Pradesh	20	21	321	324	15290	15906
2. Assam	16	19	120	121	2570	2602
3. Bihar	3	5	71	209	10844	10844
4. Gujarat	17	17	182	182	11864	13067
5. Haryana	7	7	82	82	4595	4590
6. Himachal Pradesh	8	8	29	29	1695	1695
7. Jammu & Kashmir	—	—	—	—	960	1496
8. Karnataka	19	—	174	175	8385	8307
9. Kerala	—	—	—	—	952	960
10. Madhya Pradesh	—	—	—	390	12809	12815
11. Maharashtra	25	25	295	296	22017	22356
12. Manipur	—	—	—	—	230	224
13. Meghalaya	—	—	—	—	—	—
14. Nagaland	—	—	—	—	—	—
15. Punjab	11	11	116	116	7857	9645
16. Orissa	13	—	314	314	2350	3826
17. Tamil Nadu	23	23	374	384	12386	12651
18. Tripura	—	—	—	—	448	449
19. Rajasthan	26	26	232	232	7374	7361
20. Uttar Pradesh	51	51	657	657	72292	72846
21. West Bengal	15	15	325	325	19662	19662
<i>union territories</i>						
22. Andaman and Nicobar Islands	—	—	—	—	36	39
23. Arunachal Pradesh	—	5	—	44	—	623
24. Chandigarh	—	1	—	1	—	18
25. Dadra and Nagar Haveli	—	—	—	—	—	10
26. Delhi	—	—	—	—	194	195
27. Goa, Daman and Diu	—	—	—	—	157	173
28. total	254	233	292	3871	214967	221720

Chapter 3

Irrigation, Command Area Development And Flood Control

I IRRIGATION

OUR production of both food and fibre has to be raised to meet the needs of an increasing population with rising living standards. There is only a limited scope for bringing additional land under cultivation. The desired increase in production has therefore to come largely from multiple cropping and an increased level of productivity. Fortunately, great advances have taken place in agricultural technology in recent years specially in high yielding varieties of seeds and in the use of fertilisers. However, to be able to derive the optimum benefits from these advances, the availability of an assured water supply is one of the most essential prerequisites. The rainfall in the country is mostly confined to a few monsoon months in the year and there are great variations in its incidence from year to year. Moreover, the rainfall in a large part of the country is low and uncertain in its distribution. Even where the rainfall is high, the available soil moisture in the winter and summer months is not adequate to support multiple cropping. These vagaries of the weather frequently give rise to drought and scarcity. Therefore, there is an increased need for providing assured supplies of water through construction of irrigation structures.

Water Resources

3.2 All fresh water resources are ultimately derived from inland precipitation. The average annual precipitation, excluding evapo-transpiration and soil moisture storage, in the country can be placed at 179 million hectare metres¹, resulting in the surface run-off and the ground water recharge included in the annual hydrological cycle. However, on account of the limitations of topography, physiography, geology, dependability, quality and the present state of technology, only a part of this will be utilisable water. It

has been estimated² that about 67 million hectare-metres of surface water and 26.5 million hectare-metres of ground water can be utilised. The estimate of the utilisable water resources is, however, expected to improve with the advancement of technology.

Irrigation Potential

3.3. Out of the total arable area of 175 million hectares in the country, it is estimated that 142 million hectares would be under cultivation at the end of the Fourth Plan. The gross cropped area would be about 169 million hectares. On present estimates, 107 million hectares of land can be ultimately irrigated both from surface and ground water sources, their contribution being 72 and 35 million hectares respectively.

3.4. Irrigation Projects are classified into three categories viz. minor, medium and major schemes for administrative convenience. Schemes estimated to cost upto Rs. 25 lakhs (Rs. 30 lakhs for hill areas) are classified as minor, those costing above Rs. 25 lakhs and upto Rs. 5 crores as medium and those costing above Rs. 5 crores as major. It has been estimated that the ultimate irrigation potential would be about 50 million hectares from minor and about 57³ million hectares from major and medium irrigation schemes.

Review of Irrigation Development

3.5. By the end of the Fourth Plan, it is anticipated that against the ultimate irrigation potential of 107 million hectares, a potential of 44.9 million hectares and utilisation of 43.1 million hectares would have been achieved. Table I indicates the position regarding creation of potential and its utilisation as obtained at the end of the Fourth Plan (1973-74), the beginning of the Fourth Plan (1968-69) and the beginning of the planned development (1950-51).

Table 1: Development of Irrigation Potential

item	ultimate potential	(million hectares)					
		1950-51		1968-69		1973-74	
		pot.	utl.	pot.	utl.	pot.	utl.
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. surface water	72	16.1	16.1	25.1	24.0	28.9	27.1
(a) major & medium	57	9.7	9.7	18.1	17.0	21.4	19.6
(b) minor	15	6.4	6.4	7.0	7.0	7.5	7.5
2. ground water	35	6.5	6.5	12.0	12.0	16.0	16.0
total	107	22.6	22.6	37.1	36.0	44.9	43.1

Notes : (i) In case of minor irrigation utilisation has been assumed to be the same as potential since the actual utilisation figures are not available.

(ii) Ultimate potential figures are based on the reports of the Task Forces on Surface Water and Ground Water Resources-Planning Commission—April 1972

¹Compiled from the Report of the Irrigation Commission (1972), Vol. III.

²Report of the Irrigation Commission 1972, Vol. I.

³This was estimated to be 45 million hectares at the time of formulation of the Fourth Plan.

3.6. The Fourth Plan had visualised that the level of irrigation potential would be raised from 37.5 million hectares to 45.5 million hectares i.e. a net addition of 8 million hectares during the plan period. Out of this, 4.8 million hectares was to come from major and medium schemes and 3.2 million hectares from minor schemes. However, the base level of 37.5 million hectares anticipated at the time of formulation of the Fourth Plan actually turned out to be lower by 0.4 million hectares. The net addition to the irrigation potential during the Fourth Plan is expected to be 7.8 million hectares, bringing the level of achievement by the end of 1973-74 to 44.9 million hectares.

3.7. Against the targetted addition of 4.8 million hectares from the major and medium schemes, the actual achievement is likely to be only 3.3 million hectares. However, against the proposed outlay of Rs. 951 crores for this category of schemes, the actual expenditure during the Fourth Plan is likely to be about Rs. 1170 crores. This disparity of reduced physical achievement against enhanced financial expenditure is principally a reflection of the steep rise in the cost of several projects. Apart from the increase in the cost of materials and labour, other important contributory factors in a number of cases have been a lack of adequate investigations and proper project formulation; changes in the scope of projects during the course of their execution and higher costs of land compensation and rehabilitation. The effect of increase in the cost of projects has been to slow down their physical progress and some projects which were earlier expected to be substantially completed in the Fourth Plan will now yield their benefits only during the Fifth Plan.

3.8. In the case of minor irrigation schemes, at the time of the formulation of the plan, a target of 3.2 million hectares was sought to be achieved during the Fourth Plan period at an estimated total investment of about Rs. 1911 crores. Of this Rs. 516 crores was provided in the Public Sector, Rs. 650 crores was to come from institutional sources, Rs. 445 crores was to be invested on Rural Electrification mostly on energisation of pumpsets and Rs. 300 crores as private investment by cultivators from their own resources. This target of 3.2 million hectares is likely to be fully achieved at an estimated total investment of Rs. 2193 crores (Rs. 525 crores in the public sector, Rs. 650 crores from institutional sources, Rs. 450 crores by the cultivators from their own resources and Rs. 568 crores on the Rural Electrification. In addition, a potential of 1.3 million hectares is expected to be contributed by minor irrigation schemes taken up under other Central Plan programmes of SFDA, MFAL, Drought Prone Areas and Emergency Agricultural Production undertaken during the course of the Plan period. Thus the total contribution from minor irrigation schemes during the Fourth Plan is expected to be 4.5 million hectares.

3.9. The Second Irrigation Commission was set up by the Government of India with its main term of reference being to review and draw up a broad outline for irrigation development in the country. The

Commission submitted its report in the year 1972 and its various recommendations are being examined. The principal recommendations relate to the creation of a high-level "National Water Resources Council" to deal with policies and priorities, the setting up of River Basin Commissions for the preparation of river basin plans, formulation of project-wise ayacut development plans along-with irrigation plans for major and medium projects, accordance of high priority to irrigation works in the drought-prone area, conjunctive use of surface water and ground water in canal commands, remodelling of existing irrigation works to improve their performance and improvements of drainage in irrigation commands. The Commission has also indicated guidelines for fixing water rates. The National Commission on Agriculture in its interim report on Irrigation Systems and Commanded Areas, has also emphasised the need for modernisation of the irrigation systems, exploitation of ground water in command areas, adequate provision of drainage and integrated development of command areas of major and medium irrigation projects.

MAJOR AND MEDIUM IRRIGATION

Objectives and Strategy in the Fifth Plan

3.10. It is considered that the Fifth Plan will have two main objectives, namely, (i) a substantial increase in the creation of irrigation potential consistent with the relevant organisational and financial capabilities, and having regard to the needs of the drought prone areas, and (ii) improvement in the utilisation of the created potential and efficient management of water and land for achieving maximum productivity. At the same time it will be sought to reduce, to the extent possible, the inter-State imbalances in the development of irrigation potential from major and medium schemes. It is also important that the irrigation projects should continue to subserve the larger plan objectives of generating employment during the construction stage as well as the overall development of the agricultural economy resulting in benefits accruing to the community as a whole.

3.11. During the Fourth Plan, it is anticipated that Rs. 1170 crores would have been spent in the major and medium irrigation sector and the additional potential to be created is expected to be 3.3 million hectares. As compared to this, a substantially higher outlay of Rs. 2401 crores and a target of 6.2 million hectares are being aimed at during the Fifth Five Year Plan.

3.12. Irrigation is a State subject and the provision for all major and medium irrigation projects figures in the State Plan Sector. However, in making provisions for the Fifth Plan, the following general principles have been kept in mind:

- (i) All medium schemes which will continue into the Fifth Plan period will be fully provided for so that these get completed.

- (ii) As regards the major irrigation projects continuing in the Fifth Plan period, effort will be to complete all projects which are in an advanced stage of construction;
- (iii) Emphasis will be given to the modernisation of the older irrigation projects for better control in distribution of water and augmentation of supplies. Some irrigation structures though still in service may need replacement because they are no longer reliable and safe;
- (iv) In adopting new schemes, priority will be given to those which benefit chronically drought-affected, tribal and backward areas. As major irrigation schemes take considerable time to be completed, an adequate number of new schemes will be taken up to maintain continuity in the development of irrigation and to ensure that in the Sixth Plan too requisite additional irrigation potential becomes available.

It is considered that the requirements of drought-prone areas should be the first charge on the available supplies, taking into account the existing commitments, and that projects should be taken up in these areas by making judicious use of the available waters of the States. At the same time, it is important that the position regarding surpluses and shortages in various basins should be studied in depth and priorities determined for investigation of some links for inter-regional, inter-basin and sub-basin transfers of water with a view to ensuring immunisation of some of the critically drought-affected areas in the country during the Fifth and Sixth Plan periods.

3.13. Regarding the second objective *viz.* improving utilisation of the created potential and efficient management of water and land for maximum productivity, it is relevant to note that, at present more than 90 per cent of the consumptive use of fresh water is for irrigation. With further development and economic progress, the requirements of water for other purposes are also bound to grow. It has also been estimated that it will not be possible to irrigate more than 61 per cent of the arable areas in the country from all the available surface and ground water sources. With growing needs of the increasing population and with the limited availability of water resources, the need for efficient use of water for agriculture becomes all the greater. To this end, two broad sets of measures are visualised. The first concerns the measures to be adopted for improving the efficiency of the irrigation systems and other relates to on-farm measures to derive optimum agricultural production.

3.14. One of the principal measures to be adopted to minimise the loss of water and thereby augment the ultimate potential for irrigation is the lining of water channels especially where the water is scarce. Since the main canals and the main branches would be running more or less continuously it will be difficult to line them after the system starts

functioning. It is, therefore, essential that the lining of the main canals and branches is carefully considered at the time of the construction. Based on comparative economy, selective lining may be resorted to in the first instance on the basis of the following criteria :

- (i) Where water channels pass through highly permeable soil causing much loss of water and/or waterlogging;
- (ii) Where the percolated water cannot be retrieved by means of tubewells more economically as compared to the investment on lining;
- (iii) Where even if the water is retrieved, it may be unfit for use due to salinity or other causes; and
- (iv) Where the channels are designed for continuous running, keeping in view the criteria (i), (ii) and (iii) above.

3.15. The irrigation system should ensure timely supplies of the required quantities of water. A major constraint in some of the existing canal system particularly in some of the States in northern India is that the distributary channels are able to run in the rotation of 1:3 or 1:4 only during periods of keen irrigation demands. This restricts the raising of high-yielding varieties of crops, vegetables etc. Priority is indicated for augmentation of supplies in such areas by providing back-up surface storages and pumping ground water. It is, however, desirable that new irrigation projects should be designed at least for alternate running and with adequate water allowance so that the system is able to meet irrigation requirements fully, depending upon the crop patterns. Greater attention also needs to be given to provide better and more adequate controls and communication systems so that the sophisticated regulation of supplies is possible to meet the demand for crops in different areas during crucial periods.

3.16. Due to the inadequate attention being paid to drainage, some of the areas commanded by the Chambal, Gandak and Kosi Projects and a number of irrigation projects located in Maharashtra are affected by waterlogging. The condition of land has deteriorated in some cases through the appearance of salts. It is recognised that proper attention has to be paid to the drainage of an area to which irrigation is introduced so as to maintain the hydrological balance. In its absence, the productivity and full utilisation of the potential as envisaged will not materialise. It is, therefore, essential that the main drainage system should form an integral part of all irrigation schemes and adequate provisions ought to be made for their completion along with the main projects. Suitable measures should also be taken in this respect in the case of on-going projects.

3.17. In recent years, the science and technology of Agriculture have made revolutionary progress and have also given rise to new patterns of demand for inputs amongst which irrigation is very important.

These demands have to be met satisfactorily for optimum production. Many of the older irrigation systems in the country and even some of the more recent ones do not meet the requirements of modern agriculture adequately and call for modernisation. Recently, both the Irrigation Commission and the National Commission on Agriculture have focussed attention on the need for improvements to the existing irrigation systems in order to increase their efficiency and usefulness. In the past, some of the old structures such as Krishna Anicut, Sone Weir etc. have been remodelled or replaced from the consideration of engineering safety and to safeguard existing irrigation supplies. Proposals are also afoot for remodelling the Godavari Weir and Tajewala and Okhla headworks. None of the systems has, however, been reviewed comprehensively for improvement in all the aspects covering engineering safety, better regulation, augmentation of supplies, making up deficiencies, efficiency in conveyance of water, scientific application of water to crops and maximising benefits by changing cropping patterns. Some of the structures in the old projects which have outlived their life will also need to be replaced. It is contemplated that a comprehensive review of the pre-Plan and earlier Plan projects will be organised at the State level by suitable Review Cells comprising teams of specialists in irrigation engineering, agronomy, soils and agricultural economics. Such a review would reveal several steps that can be taken, mostly in the field of agronomy, water management and operation which would enhance the utility of these projects with a modest expenditure.

3.18. During the Fourth Plan period, emphasis was laid on the need for comprehensive river basin planning for integrated development of water and land resources. The progress in this respect has, however, been slow. Greater efforts are thus indicated during the Fifth Plan. Necessary provision has been made in the Central Sector. Preparation of integrated basin plans calls for reliable long term data. Steps will, therefore, be taken for the collection and compilation of requisite data according to the desired standards and on a continuing basis. Many States have created facilities for river gauging in regard to projects under consideration and also to enable preparation of Master Plans for each river basin or sub-basin. While some basins have adequate densities of hydrometric installations, following the norms recommended by the World Meteorological Organisations regarding area-wise minimum density for hydrological measurements, the arrangements in many basins are still far below the prescribed standard. The Irrigation Commission and the Water Resources Panel (set up by the Planning Commission) have also recommended the adoption of these standards and has emphasised the necessity of setting up an adequate number of stream gauging stations in all basins. The States' efforts to set up an adequate number of river gauging stations would be supplemented by a Centrally Sponsored Scheme providing additional assistance to the States for the purpose.

3.19. It is well recognised that without an integrated and coordinated approach to the irrigated agriculture best results towards optimum production

cannot be obtained. There is the problem of insufficient utilisation which manifests itself in the form of time lag between the creation of potential and its utilisation and non-attainment of optimum production due to poor management and inefficient use of land and water. It is also necessary that the benefits from irrigation projects should flow within the scheduled time frame for which purpose structural changes may have to be introduced in the organisational set up. The introduction of irrigation in an area should act as a catalyst for the agricultural and economic development of the area resulting in a major change in the cropping patterns, land development, availability of marketing facilities, mechanisation of certain farm operations, if necessary, etc. The Command Area Development Programme, dealt later in the Chapter, has been oriented to achieve this objective.

3.20. As regards the reduction in the imbalances between different States in the irrigation potential created from major and medium schemes, it may be stated that for the country as a whole, by the end of the Fourth Plan, a potential of 21.4 million hectares is likely to have been created which is about 38 per cent of the ultimate irrigation potential of 57 million hectares from major and medium irrigation schemes. The position however, is markedly uneven between different States in the country. The percentage of ultimate potential created varies from the lowest figure of 4 per cent for Assam to an achievement as high as 70 per cent for Tamil Nadu, and 72 per cent for Haryana and Punjab together. In the Fifth Plan, most of the additional potential will be created as a result of the completion of continuing projects. Nevertheless, their contribution to the reduction of the imbalances between the States would be significant. A statement showing development of irrigation potential during various periods is given at Annexure I. It will be seen that, for the country as a whole, there would be an increase of 29 per cent in respect of irrigation potential created during the Fifth Plan over that created upto the end of the Fourth Plan. However, the states of Assam, Bihar, Gujarat, Madhya Pradesh, Rajasthan and Uttar Pradesh which, at the end of the Fourth Plan, had achieved less than the national average their irrigation potential will be having a faster rate of growth than the national average of 29 per cent. Further, it is expected that, as a result of new projects being taken up in the Fifth Plan period, it may be possible to achieve progressively further reduction in the imbalance in the subsequent plans.

Inter-State Water Disputes

3.21. The major rivers in India are all inter-State in character. Development of water resources is, however, being planned by individual States taking into account their own needs and requirements for various uses of water. As a result, inter-State differences with regard to storage, priorities and use of water have arisen and stood in the way of expeditious development of the water resources of some of the rivers. Some of the water disputes have been settled in recent years with the agreement of the

States involved. Differences regarding the use of Sone waters, Betwa waters and the Tajewala and Okhla barrages on the Yamuna have been discussed and settled by the States. The State Governments are also making fresh attempts to resolve the differences on the use of Cauvery waters. Negotiations are in progress on the issues relating to some other rivers. Narmada, Krishna and Godavari disputes have been referred to Tribunals for adjudication under Inter-State Water Disputes Act. The adjudication proceedings are in an advanced stage, and the award of the Tribunal on the Krishna waters dispute is expected in the near future, whereafter the Tribunal would start hearings on the Godavari. The possibilities of settling the Godavari dispute by negotiations are also being explored. Major issues relating to Narmada dispute are being resolved, by the Chief Ministers concerned by negotiations with the assistance of the Prime Minister. Where inter-State River Basin disputes exist, it is not possible to issue approvals for projects meant to utilise disputed waters. This inhibits the smooth and orderly development of irrigation in the concerned States. It is, therefore, necessary that a speedy solution to the problem of inter-State River Water dispute is evolved.

Research

3.22. Applied Research in Irrigation, Hydraulics, Soil Mechanics and Construction materials is being conducted in the Central Water and Power Research Station at Poona, Central Soils and Materials Research Station at Delhi and other research stations set up for the purpose in the States. The research programmes are coordinated by the Central Board of Irrigation and Power. With the larger programmes of development now being undertaken, the activities of these Organisations will be increasing.

3.23. Due attention to R&D programme in the field of water resources will be given in the Fifth Plan for which adequate provision has been made under the Central Sector. The R&D activities concern hydrological observations, assessment of water resources, basic and applied research connected with hydraulic structures, hydro-mechanical equipment, soils, materials, behaviour, etc.

Investigations

3.24. A large shelf of properly investigated projects will obviously be required for being taken up during the Fifth Plan as well as the subsequent Plans. Timely action is necessary as surveys, investigations and the preparation of projects are time consuming processes. The programme of investigation of irrigation projects included in the State Plans is proposed to be substantially increased during the Fifth Plan.

Proposals for Major and Medium Schemes

3.25. About 230 ongoing projects, including 75 major projects will spillover into the Fifth Plan Period.

The spillover of continuing schemes and outlays proposed for the Fifth Plan is shown in Table 2 :

Table 2 : Spillover and Outlays for Schemes Continuing into the Fifth plan

(Rs. crores)				
scheme	esti- mated cost	expdtr. to end of 1973-74	spill- over in-to fifth plan	allo- cations for fifth plan
(0)	(1)	(2)	(3)	(4)
1. major schemes	3295	1991	1304	1078
2. medium schemes	298	166	132	132
3. total	3593	2157	1436	1210

With the proposed outlay, all the continuing medium projects and 64 major projects are expected to be completed during the Fifth Plan period. Some of the continuing major projects which will spillover into the Sixth Plan are Kallada in Kerala, Warna and Krishna in Maharashtra, Upper Krishna in Karnataka, Rajasthan Canal (Stage-II) in Rajasthan and Sarda Sahayak Project in Uttar Pradesh.

3.26. The break down of total outlays for major and medium irrigation projects including investigations and research in the States, the research and design schemes in the Central Sector and the Centrally Sponsored Programmes, is indicated in Table 3 :

Table 3 : Abstract of Outlays—Major & Medium Irrigation

(Rs. crores)	
item (0)	outlay (1)
1. continuing schemes	1210
2. new schemes	1064
3. investigations and research in the states and union territories	74
4. research and design in the central sector	42
5. centrally sponsored programme	11
total	2401

In addition, some medium irrigation schemes might be financed out of the outlay under the DPA Programme.

Benefits

3.27. Of the irrigation potential of 6.2 million hectares to be created during the Fifth Plan, the continuing schemes will account for 5.5 million hectares and 0.7 million hectares will become available from new schemes. Utilisation is expected to be about 5.2 million hectares. Statewise details are given in Annexure I. The creation of full potential has been assumed while working out the benefits from all continuing medium projects which are likely to get completed during the first three or four years of the plan period. However, in the case of the new medium projects to be taken up during the Fifth

Plan and continuing major projects likely to completed towards the end of the Fifth Plan, a lower level of potential has been assumed.

MINOR IRRIGATION

3.28. Whereas the outlays for major and medium irrigation programme are met exclusively from the public sector, the investment on minor irrigation schemes is derived largely from private and institutional resources.

3.29. On the eve of the Fifth Plan, the total cropped area which benefits from minor irrigation is likely to be 23.5 million hectares. In the Fifth Plan, an increase of 6 million hectares is envisaged as against a likely achievement of 4.5 million hectares in the Fourth Plan. The source-wise details of the target of 6 million hectares of the Fifth Plan are given in Table 4:

Table 4: Source-wise Details of Target—Minor Irrigation

(million hectares)	
source	target
(0)	(1)
1. groundwater	4.5
2. surface irrigation from storage and diversion schemes	1.0
3. lift irrigation from streams or rivers	0.5
<i>total</i>	6.0

State-wise details are given in Annexure II.

There is loss of irrigation potential due to tubewells—which have limited life-going out of commission. It is estimated that during the Fifth Plan such area going out of commission would be 3 million hectares. Therefore, to achieve an irrigation target of 4.5 million hectares from ground water resources, it will be necessary to aim at an additional gross area of 7.5 million hectares.

3.30. In recent years, the scale of ground water development in the country has not been matched by any thing like the technical, administrative and legislative arrangements necessary to assure its growth along healthy lines. Since 1966-67, there has been a programme of building up State Ground Water Organisations but the results are, by and large, inadequate. The present structure in the States consists of about 143 divisions. These ground water organisations are concerned with a number of important functions such as the preparation of an inventory of existing wells/tubewells; collection, synthesis and interpretation of hydro-geological data; survey and investigation including limited test-drilling; and study of hydro-geological parameters. In the Fifth Plan, it is proposed to strengthen the State ground water organisations.

3.31. In some States, such as Gujarat, Haryana, Punjab, Rajasthan and Tamil Nadu, the development of ground water will be reaching its limit during the

Fifth Plan period. Regulation, control and management of ground water will, therefore, have to be given special attention in these States from the very beginning of the Fifth Plan. Suitable ground water legislation will be necessary for proper regulation. In addition, in the planning for ground water, emphasis will be on increased utilisation by manipulation of aquifers through induced recharge.

3.32. Under the ground water development programme, nearly 20,000 large-capacity State tubewells involving an investment of about Rs. 200 crores have so far been set up. The management of the State tubewells has continued to present problems. Often, the command area of State tubewells is larger than can be properly served by the amount of available water. Hence, it is necessary that the command areas need to be made more compact. There is also the need to avoid losses of both water and revenue by adopting better delivery system and stricter supervision.

3.33. Surface minor irrigation works have not as yet received adequate technical support in the matter of design, construction and maintenance. A serious effort will have to be made to correct these defects during the Fifth Plan to make good this deficiency. Minor storage and diversion schemes are particularly susceptible to loss of potential by siltation, and hence it will be necessary to establish suitable linkage between the State Soil Conservation Organisations and the authorities responsible for the construction and operation of minor irrigation schemes.

Proposals for Minor Schemes

3.34. Investment for minor irrigation schemes is derived from the public sector, the financing institutions and private resources. The public sector programmes are for State surface water schemes including river pumping projects, State tubewells, loans and subsidies to small farmers and for purchase of equipment. The outlays on minor irrigation schemes in the Agriculture Sector are given in table 5:

Table 5: Outlays on Minor Irrigation

(Rs. crores)	
item	outlay
(0)	(1)
1. states	763.90
2. union territories	8.65
3. centre	38.00
<i>total</i>	810.55

3.35. In addition to the public sector outlay of Rs. 810.55 crores, an investment of Rs. 1,462 crores from institutional resources, Rs. 500 crores by the cultivators from their own resources and Rs. 1098 crores on Rural Electrification Corporation is envisaged for the minor irrigation works in the Fifth Plan.

Irrigation Statistics

3.36. While assessing the benefits from minor irrigation schemes, due allowance must be made for the irrigated areas going out of use due to siltation in the case of tanks, clogging up of filters and the pumps and motors becoming unserviceable in the case of tubewells, etc. Since the statistics are not always based on actual assessment of the area irrigated, an element of unreliability creeps in. At present, irrigation statistics are drawn from two sources; the land utilization statistics, compiled annually by the State Land Records and Revenue Authorities and the periodical progress reports furnished by the State Governments. It is noticed that discrepancies often exist between the two sets of figures. It is, therefore, desirable that greater attention is paid to the collection of irrigation statistics after proper observation and verification at site.

II

COMMAND AREA DEVELOPMENT

3.37. Irrigation potential created with the completion of major and medium irrigation schemes is expected to rise to 21.4 million hectares by the end of the Fourth Plan period. An additional potential of about 6.2 million hectares is likely to be created during the Fifth Plan period. The level of actual utilisation of the irrigation potential till the end of the Fourth Plan period is expected to be 19.6 million hectares. The large public sector investment of about Rs. 3,000 crores in major and medium irrigation projects by the end of the Fourth Plan highlights the need for the optimum utilisation of the irrigation potential. It has not so far been possible for farmers to maximise advantage from such facilities because of the non-availability of assured and regular supplies in certain irrigation systems. The non-construction of water-courses and field channels, the need for land levelling, land shaping and other on-farm works, the non-existence of proper drainage systems leading to the problems of water-logging, salinity and alkalinity, the practice of doing field to field irrigation, the non-adoption of rostering system of irrigation as well as irrigation during the night and the inadequacy of infrastructure and inputs are further aspects which have led to the under-utilisation of the irrigation potential in case of a large number of projects. These need urgent attention.

3.38. It is now fully accepted that an integrated area development approach should be adopted in dealing with all these points in order to ensure optimum production. This matter came up for consideration before the Irrigation Commission and was also dealt with by the National Commission on Agriculture which came to the conclusion that more coordinated work is required to be done by the Departments of Irrigation, Soils and Agriculture to make the best use of the irrigation system with its modernisation and the adjustment of cropping patterns to the soil and agro-climatic conditions of the command areas.

3.39. Integrated area development requires detailed action in several disciplines like irrigation, soil conservation, agricultural extension and co-operation along with due support from credit and services organisations. Whereas in small irrigation projects covering a few hundred acres or a thousand acres, it may be possible for a coordinating machinery and certain well laid principles to generally tackle these problems, in major irrigation commands covering districts and even divisions in the country, the operations become huge, unwieldy and as complicated as operations in a large modern industry. In such a situation, a mere coordinating agency may not be able to bring in the cohesion at the various levels of operation in the various disciplines to enable a package of action at the field level. The organisation we shall have to develop for tackling this problem will have to be a unified agency with a centre of direction and radiating organisations in the various disciplines upto field level, with inter-locking coordinating functions at various levels of operation. The various levels at which coordination is expected must also be given sufficient decentralised powers so as to act quickly without serious loss of time and opportunity. The need for quick decision making and quick operation also necessitates sufficient decentralisation of Government's authority both administrative and financial in the various disciplines to the Central direction organisation. Such organisation must also be in a position to actively support and develop the ancillary requirements of agricultural development in the nature of markets and communications and processing industries.

3.40. For improving utilisation of the irrigation potential, a number of policies and measures, both in the realm of irrigation engineering and agricultural development are proposed. The main drainage and water courses up to 1 cusec/40 hectare blocks form an integral part of the irrigation projects and provision for these is made in the Major and Medium Irrigation Sector as part of the outlays for the projects. The engineering measures are primarily concerned with the provision of field channels and field drainage within the 40 hectare blocks and land levelling and land shaping operations.

3.41. Furthermore, there are other programmes which are essential for facilitating the effective and efficient exploitation of the irrigation potential created in the command areas. Such programmes include the fixing and enforcing of suitable cropping patterns; the strengthening of extension training and demonstration; planning and ensuring the supply of inputs such as credit, seeds, fertilisers, pesticides etc; marketing and processing facilities and necessary communications etc.

3.42. The need for an inter-disciplinary authority with a direct line of command and concerning the Departments of Irrigation, Agriculture, Soil Conservation and Co-operation has been accepted by all the States. It is felt that such an authority should have as its head a whole-time administrator who should be vested with the powers of the Head of the above Departments. Each of these Departments should have an officer of the rank of a Joint Head of Department for the Command Area. There should

be a separate allocation of funds for all the relevant schemes which are to be executed in the command areas. The administrator should have full and effective powers as regards the staff and the budgetary provisions relating to the command areas. A Board should also be set up for each command area with non-official representatives in order to supervise the preparation of various programmes and to ensure their implementation by removing bottlenecks and through periodic reviews of their progress.

3.43. The success of the area development programme would largely depend upon the ability of the existing institutions to provide institutional finance to the farmers. Where the Land Development Banks or the Land Development Corporations are not able to do so, the Board set up in each command area may be structured as a Company under the Company Law for the limited purpose of ensuring flow of institutional credit to farmers. However, the existing organisations/agencies will be used for the execution of the works in the field, the advancement of loans to the beneficiaries and the recovery of loans etc.

3.44. The command area development programmes will vary in scope and extent from project to project and State to State depending upon the developments that have already taken place and various other relevant factors. Detailed surveys and studies will be carried out in the selected commands and comprehensive integrated schemes drawn up. Broadly speaking, expenditure will have to be incurred in respect of on-farm development works consisting of field channels, field drains, land levelling and land shaping operations; surveys, designs and preparation of plans for these works and the supervision of execution thereof; strengthening of existing extension, training and demonstration organisations. As the cost of field channels, field drains, land levelling and land shaping have to be borne by the beneficiaries, institutional funds will have to be arranged by the Land Development Banks, Land Improvement Corporations, Farmers' Service Societies or the Area Development Corporation. Necessary equity capital and debenture support will be provided to these organisations by the State and the Centre on a matching basis. Similarly, funds on a matching basis will be provided for surveys, designs and preparation of plans for on-farm works, supervision of execution of such works and consultancy services to the farmers. However, the cost of strengthening the existing extension, training and demonstration organisations will be fully borne by the States.

3.45. It is proposed that, for the time being, Development Authorities for integrated development shall be set up in areas covering the commands of about 50 major projects with a total culturable commanded area of about 15 million hectares. It is estimated that about 5 million small and marginal farmers will benefit. The execution of works relating to the construction of field channels and field drains coupled with land levelling and shaping operations will assure irrigation to this category of farmers. It would also be possible for them to derive additional benefit by making use of other inputs such

as fertilisers. The increase in the overall level of agricultural production will also benefit the agricultural labourers.

3.46. Arrangements will need to be made at both the Centre and States for periodical review of the implementation of these programmes and dealing with any problems that may arise. At the Central level, an inter-departmental committee has already been set up. At the State level, there will have to be a high level inter-departmental committee headed by the Chief Minister more or less on the lines of the Central Committee, to ensure that all bottlenecks in the way of proper formulation and implementation of the various programmes are quickly resolved.

Pilot Projects for Integrated and Intensive Agricultural Development

3.47. On the basis of the recommendations made by the Task Force on Integrated Rural Development, pilot projects are proposed to be taken up in certain areas where canal irrigation has been recently introduced. These projects envisage integrated land and water development in conjunction with other complementary programmes including consolidation of holdings. The command area of an individual distributory is proposed to be simultaneously brought within the purview of the following measures for optimum utilisation of the land and water resources:

- (a) Consolidation of holdings.
- (b) Land levelling and land shaping.
- (c) Realignment and lining of water courses.
- (d) Training and cleaning of nallahs.
- (e) Provision of drainage of ditches.
- (f) Provision of supplementary irrigation facilities from ground water resources wherever necessary.

The objective will be to set up a growing cluster of such commands of distributories for an intensive and integrated treatment of land and water resources in the selected districts. In the first year of the programme, it is proposed to initially take up about 4,000 hectares in each of the selected districts. As the effect of the demonstration spreads, more areas may be brought within the purview of the scheme. A provision of Rs. 5 crores has been made for this programme in the Central Sector.

Irrigation Laws

3.48. Some of the Irrigation Laws and Acts prevalent in various States are antiquated and not conducive to efficient functioning of the irrigation systems and need to be examined fairly soon in order to make suitable provisions for the following:

- (i) Beyond the outlets, the distribution of water should not be left completely to the initiative of farmers. The Government should be in a position to enforce an appropriate rostering system of irrigation supplies which would include irrigation during the night.

- (ii) Abolition of *satta* system wherever it is applicable.
- (iii) The State should have the power (a) to require the beneficiaries to construct and maintain field channels and field drains, (b) to carry out land levelling and land shaping operations and (c) to undertake such works if the beneficiaries fail to do so with the costs being recovered as arrears of land revenue.
- (iv) The Canal Officers should have the power to deal effectively with cases of wastage, unauthorised use and obstruction to the flow of water.

3.49. The investments on command area development programmes are derived from the public sector (both States and Centre), the financing institutions and private resources. The outlays for such programmes in the Agriculture Sector are shown in

Table 6 : Outlays for Command Area Development

(Rs. crores)	
Item	outlay
0	1
1. states	96.63
2. union territories	—
3. centre	—
<i>total</i>	216.63

In addition, an investment of Rs. 210 crores is envisaged from institutional resources for the command area development works in the Fifth Plan.

III FLOOD CONTROL

3.50. With our extensive river systems, floods occur every year in some part or the other of the country. However, in the Ganga and Brahmaputra Basin States of Uttar Pradesh, Bihar, West Bengal and Assam and in the State of Orissa, floods are almost an annual feature and pose a serious problem due to inundation and river erosion. Drainage congestion is a problem in several parts of the country specially in the Deltaic regions of the Peninsula and irrigated Indo-Gangetic Planes of the Northern India. India has also got a long sea coast which is subject to coastal erosion at different places. However, the problem is acute in the State of Kerala where almost 320 kilometres of the coastline are constantly under attack to varying degrees.

3.51. The total area that can reasonably be protected has been assessed to be about 16 million hectares out of a total area of about 20 million hectares liable to floods. Data on flood damages available since the year 1953 shows that, on an average, floods affect an area of 6.7 million hectares annually including 2.6 million hectares under crops. The annual average damage, which is mostly to crops, houses and public utilities, has been estimated to be about Rs. 126 crores over the 1953—72 period. Almost 70 per cent of the damage relates to crops.

Besides, there are indirect losses resulting from the break-down of communications and essential services and the expenditure on relief operations.

3.52. The progressive increase in the damage due to floods in monetary terms can be attributed to several reasons including the rise in prices particularly of crops; the mounting pressure on land from the ever increasing population which induce people to occupy, build and cultivate on traditional ponds, depressions and khadir lands; the role played by development works such as roads, railways, canals etc., firstly by exposing more public property to damage and secondly by accentuating damaging capability of waters by transforming sheet flows into concentrated flows through culverts, siphons, bridges, aqueducts, etc. The flood control measures have, therefore, to keep pace with the general tempo of economic and other developmental activities.

3.53. Against an outlay of Rs. 133 crores, the expenditure during the Fourth Plan period, is anticipated to be about Rs. 175 crores providing reasonable protection to an area of 1.2 million hectares. It is estimated that as a result of the construction of new embankments, the raising and strengthening of existing embankments, town protection works, drainage channels, and multi-purpose reservoirs, nearly 7.1 million hectares of land usually subject to flood damage will have been provided reasonable protection at the beginning of the Fifth Plan. The flood control measures undertaken so far have been helpful and will be continued. However, there is need to supplement these engineering works with measures for the positive control of the events which cause an increase of damage potential and actual loss. Such measures would include proper land use planning and regulation. There is also the need for long range planning and preparation of master plans to indicate the sequencing and priorities of the various measures that may be taken from time to time to fit into the overall plans. To meet the challenge posed by the difficult and complex problems of flood control in the Ganga and Brahmaputra Basins, Boards and Commissions have been set up. The preparation of comprehensive master plans for these basins will be one of their primary responsibilities.

3.54. An outlay of about Rs. 301 crores is envisaged during the Fifth Plan period which will provide reasonable protection to about 1.8 million hectares. All the continuing schemes of the Fourth Plan including the priority flood control works identified following the 1971 floods will be completed as far as is practicable. First priority will be given to the raising and strengthening of existing embankments and other connected flood protection works. Special attention will also be given to the flood control programmes on inter-State rivers where the various works in different States will need to be properly dovetailed and co-ordinated to get the optimum benefits and, at the same time, ensure that the works taken up in one State not aggravate the conditions of other States. Provision is also made for undertaking surveys, investigations and studies for the preparation of both the comprehensive outline plans for flood control in the different basins and the detailed indivi-

dual schemes for inclusion in the plans. The survey programme to precisely demarcate the areas prone to flooding, drainage congestion and waterlogging begun in the Fourth Plan will be accelerated.

3.55. The programme will also include measures for drainage and anti-waterlogging, mainly in the States of Punjab and Haryana and to some extent in Uttar Pradesh and the Deltaic tracts of Andhra Pradesh and Tamil Nadu where old irrigation schemes have been in operation for a very long time. It is envisaged that the drainage problem in the command areas of the continuing and new irrigation projects will be provided for in the Irrigation Sector of the Fifth Plan. Adequate provisions have been made for the anti-sea-croson programme in Kerala and other affected States.

3.56. The increased emphasis given in the Fourth Plan for setting up scientific flood forecasting and warning systems in the various important river basins will be continued in the Fifth Plan.

3.57. Adequate attention will also need to be given to the proper upkeep and maintenance of

existing and future flood control works. Each State should fix the standard of annual maintenance expenditure required for various flood control works and ensure that the necessary funds are actually made available.

3.58. The break-up of the total outlays for the flood control programme are given in Table 7:

Table 7: Abstract of outlay—Flood Control Programme

(Rs. crores)	
item	outlay
(0)	(1)
1. states	192.61
2. union territories	14.92
3. central sector	93.50
<i>total</i>	301.03

ANNEXURE I

Benefits from Major and Medium Irrigation Schemes

('000 hectares gross)

state	esti- mated irriga- tion poten- tial	irrgn. from pre-plan schemes	benefits to end of '68-69 from plan schemes		benefits to end of fourth Plan from plan schemes		pot. to end of Fourth Plan includ- ing pre- plan schemes	%age of pot. to end of fourth plan of ulti- mate poten- tial	estimates of benefits during Vth plan		pot. to end of Vth plan includ- ing pre- plan schemes	%age of pot. to end of Vth plan of ulti- mate pot.	% age of in- crease in pot. during Vth plan over IVth plan
			pot.	utl.	pot.	utl.			Pot.	Utl.			
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. Andhra Pradesh ¹	6480 ¹	1676	727	685	949	850	2625	40.5	570	525	3195	49.3	21.7
2. Assam . . .	970 ²	..	22	16	38	38	38	3.9	70	40	108	11.1	184.2
3. Bihar . . .	9229 ¹	404	890	675	1601	1052	2005	21.7	880	960	2885	31.2	43.8
4. Gujarat . . .	2150 ³	33	440	312	690	474	723	33.6	370	260	1093	50.8	51.4
5. Haryana . . .	5	436	920	896	1094	1060	1530	5	250	195	1780	5	16.3
6. Himachal Pradesh	n.a.	..	..	..	..	..	..	..	..	..	..	..	..
7. Jammu and Kashmir	150 ⁴	43	36	33	46	40	89	59.3	30	23	119	79.3	33.7
8. Karnataka . . .	2000 ⁴	308	483	401	618	533	926	46.3	340	290	1266	63.0	36.7
9. Kerala . . .	1000 ¹	158	179	179	242	242	400	40.0	160	130	560	56.0	40.0
10. Madhya Pradesh	5630 ³	513	429	172	481	380	994	17.7	630	400	1624	29.0	63.4
11. Maharashtra	2350 ³	255	316	155	667	312	922	39.2	515	405	1437	61.1	55.8
12. Manipur . . .	n.a.	..	..	..	..	..	..	..	25	15	25	..	..
13. Meghalaya . . .	n.a.	..	..	..	..	..	..	..	..	..	..	..	..
14. Nagaland . . .	n.a.	..	..	..	..	..	..	..	..	..	..	..	..
15. Orissa . . .	3600 ¹	455	625	560	871	844	1326	36.8	240	180	1566	43.5	18.1
16. Punjab . . .	4920 ^{1&6}	1220	740	724	803	784	2023	72.26	200	150	2223	81.46	9.9
17. Rajasthan . . .	3150 ²	320	696	614	840	748	1160	36.8	410	275	1570	49.8	35.3
18. Tamil Nadu . . .	1610 ¹	891	207	186	237	235	1128	70.0	55	40	1183	73.4	4.9
19. Tripura . . .	n.a.	..	..	..	..	..	..	..	..	..	..	..	..
20. Uttar Pradesh	11200 ¹	2553	1054	968	1950	1311	4103	36.6	1375	1190	5478	49.0	33.5
21. West Bengal . . .	2310 ²	440	675	671	950	940	1390	60.2	125	130	1515	65.5	9.0
22. Pondicherry . . .	n.a.	..	10	10	15	15	15	..	2	2	17	..	13.3
<i>total</i>	56750	9705	8449	7257	11692	9848	21397	37.7	6247	5180	27644	48.7	29.2

¹State Governments²Central Water and Power Commission.³Relevant Report on Techno-Economic Survey; National Council of Applied Economic Research.⁴On the basis of figures furnished by the CW&PC with marginal adjustments in the Planning Commission.⁵Included in Punjab.⁶Includes for Haryana also.

ANNEXURE II

Benefits from Minor Irrigation Schemes

('000 hectares gross)

state/union territory	benefits to the end of fourth plan including pre-plan schemes	estimate of benefits during the fifth plan
(0)	(1)	(2)
1. Andhra Pradesh	1700	220
2. Assam	450	250
3. Bihar	1700	400
4. Gujarat	1175	375
5. Haryana	900	250
6. Himachal Pradesh	80	20
7. Jammu and Kashmir	300	50
8. Karnataka	850	300
9. Kerala	275	75
10. Madhya Pradesh	1100	600
11. Maharashtra	1300	350
12. Manipur	24	10
13. Meghalaya	10	5
14. Nagaland	9	5
15. Orissa	400	350
16. Punjab	2400	300
17. Rajasthan	1775	125
18. Tamil Nadu	1930	170
19. Tripura	10	10
20. Uttar Pradesh	6500	2500
21. West Bengal	1100	600
22. total—states	23988	6965
23. union territories	46	97
24. total—all-India	24034 ¹	7062 ²

¹The figure actually assumed for anticipated level of benefits from minor irrigation schemes to end of Fourth Plan is 23.5 million hectares.

²All-India target of benefits from minor irrigation schemes in the Fifth Plan is assumed to be 6 million hectares.

Chapter 4 Power

Introduction

ELECTRICITY is the most versatile form of energy and provides an important infrastructure for economic development. It is a vital input for Industry and Agriculture, and is of particular importance to a developing rural sector which needs more and more power for its agricultural operations, for its small scale and agro industries. All sectors of the economy need electricity for their common needs of water supply, transport, communication and domestic lighting. Given the large scale dependence on lift irrigation for food production, food processing and preservation industries, the increase in the power-intensive industries such as aluminium, fertiliser, petro-chemicals, etc., and the increasing dependence on electric traction for transport, there is hardly any community or sector in the economy which is not affected by a power shortage today. The future development of the country, therefore, will depend upon the rate of growth of power generation capacity; upon the efficient dispersal of power generated to the consumers' premises and upon the excellence of consumer service. There is thus a challenging situation emerging out of the present shortages and the fast increasing power demands.

Review of the Fourth Plan

4.2. In the Fourth Five Year Plan a target of 23 million KW of installed capacity was adopted. It envisaged the addition of 9.3 million KW of new capacity to the 14.3 million KW installed by the end of March 1969. It is now anticipated that the achievement would be 18.9 million KW, *i.e.* an addition of 4.6 million KW during the Plan period. About 50

per cent of the additional capacity targetted in the Plan period would slip into the Fifth Plan. Briefly, the planned additions and anticipated achievements are expected to be as follows :

Table 1 : Fourth Plan—Targets and Achievements—Types of Generation

(capacity in MW)				
(0)	(1)	(2)	(3)	(4)
	hydro	thermal	nuclear	total
target	3518	4766	980	9264
achievement	1057	2942	580	4579
slippage	2461	1824	400	4685

4.3. The power shortages which developed during 1971-72 have highlighted the urgent need to strengthen the transmission systems with a view to enable inter-State transfers of power; the urgent need for considerable improvement in operation and maintenance of available generation capacity and the need for more effective management and faster implementation of power development programme. Instability of power supply, low voltage conditions, excessive energy losses in the systems and difficulties in transferring from surplus to deficit areas have been experienced in several States. Frequent outages of thermal generating units which had to be run more intensively, in a drought situation which reduced hydro generation, accentuated the power shortages. Capacity additions planned were behind schedule and further increased the gap between demand and supply.

4.4. The actual expenditure in the Power Development Programme during the Fourth Plan period has exceeded the Plan allocations :

Table 2 : Fourth Plan Allocation/Anticipated Expenditure

					Rs. crores.
(0)	(1)	(2)	(3)	(4)	(5)
	generation	transmission and distribution	rural electrification	investigation and research	total
allocation	1254.64	721.58	444.69	26.66	2447.57
anticipated expenditure	1555.00	806.00	568.00	54.00	2983.00

The higher expenditure on power generation and the appreciable shortfall in the target are indicative of the steep escalation in cost estimates of power projects. All pre-construction investigations have to be completed well in advance and realistic cost estimates made on the basis of investigation data.

4.5. The main reasons for the shortfall in the target are :

- (i) lack of adequate project management and monitoring;

- (ii) shortages of key materials like steel, cement, electrodes, explosives.
- (iii) delays in civil works, ordering for plant and equipment (3.17 mKW).
- (iv) delay in the supply of major equipment (0.40 mKW).

4.6. Out of the 4.7 million KW of shortfall, the States account for 3.75 million KW and Centre 0.94 million KW which includes 400 MW under the

nuclear power programmes. Lack of coordination, deficiencies in management and monitoring and adoption of unrealistic schedules largely contributed to the shortfall in the State sector. The poor performance of the States has brought out the very serious lacunae both in the organisation and engineering of the projects which are enumerated in the relevant paras below.

4.7. The Central Ministry took up the execution of three hydro projects and one thermal project with a total capacity of 841 MW. Except for the Salal project, the full benefits of the other projects were expected in the Fourth Plan period. However, only one unit of 100 MW of Badarpur will be in operation and the balance capacity is expected to go into operation in the Fifth Plan with the benefit of the Salal project anticipated in early Sixth Plan.

4.8. In the Fourth Plan, the commissioning of the Tarapur station in 1969 was of great significance in the nuclear development programme and the country became the ninth nuclear nation in the world. Under nuclear power programme, commissioning of both the units of Ranapratap Sagar atomic project (RAPP) (470 MW) and one unit of 235 MW in Kalapakkam station was anticipated. Only one unit in RAPP which is presently undergoing trial runs is expected to be in commercial operation while the benefit of the second unit is expected in 1975.

4.9. While it has been a usual feature to plan for and invest in power generation on an adequate scale in each Plan, there has been a serious shortfall in achievement in all the Plans as follows :

Table 3 : Power Generation—Targets and Achievements

plan	financial outlays		installed generating capacity (mKW)				
	plan allocation (Rs. crores)	actual expenditure	cumulative		additions		percentage short fall
			target	achievement	target	actual	
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. pre first plan	na	na	..	2.30	..	..	..
2. first plan (1951-56)	na	105.0	3.60	3.40	1.30	1.10	15.4
3. second plan (1956-61)	235.0	250.0	6.90	5.65	3.50	2.25	35.7
4. third plan (1961-66)	712.0	773.9	12.69	10.17	7.04	4.52	35.8
5. three annual plans (1966-69)	643.8	676.2	15.60	14.29	5.43	4.12	24.1
6. fourth plan (1969-74)	1254.6	1555.0*	23.00	18.87*	9.26	4.58	50.0

The repeated shortfalls in targetted capacities over the successive Five-Year Plans and the resultant power shortages call for a detailed study of past performances with a view to identify the reasons for the shortfalls. It is apparent that the fulfilment of the fifth Plan targets would depend largely on the improvements in planning, designing, financing and implementation which have to be effected. The success of these measures would in turn hinge on rationalising, re-structuring and strengthening of the organisational set up of the power supply industry at different levels.

Fifth Plan Programme—Target of Generating Capacity

4.10. The generation requirements in 1978-79 are estimated to be of the order of 1,30,000 million Kwh for supplying which an installed capacity of 33 million

KW will be required. However in view of the fact that one million KW capacity of old and obsolete capacity will be retired during the Fifth Plan period, and also because schemes aggregating to about one million KW capacity will be under commissioning trials during the last quarter of 1978-79, it is proposed to add 16.55 million KW of new capacity during the Fifth Plan, with 33 million KW capacity in effective operation in the last year of the Plan.

Target for Rural Electrification

4.11. Energisation of 15,00,000 pump sets and the electrification of 1,10,000 villages, including 36,500 villages benefiting from the Minimum Needs Programme, is programmed during the Fifth Plan period. (Annexure III).

*Anticipated

4.12. The financial investment programme would be as follows:

Table 4 : Fifth Plan Power—Financial Outlays

(Rs. crores)				
item	states	union territories	centre	total
(0)	(1)	(2)	(3)	(4)
1. generation	2765.84	15.00	542.97	3323.81
(a) spillover schemes	984.66	..	241.90	1226.56
(b) new schemes	1781.18	15.00	301.07	2097.25
2. transmission and distribution	1429.81	74.46	130.00	1634.27
3. rural electrification	1079.55	18.69	..	1098.24
(a) minimum needs programme	271.03	1.30	..	272.33
(b) normal state programme	408.52	17.39	..	} 825.91
(c) rural electrification corporation	400.00	..	..
4. miscellaneous	67.37	1.55	64.76	133.68
<i>total</i>	5342.57	109.70	737.73	6190.00

Strategy for the Fifth Plan

4.13. Stabilisation of power supply, achieving implementation of the programme at a faster pace, ensuring power supply to priority industries like steel, fertilizers, coal etc., orienting the power programme to suit the social objectives, and ensuring adequate advance action for the Sixth Plan consistent with the development in science and technology, are the main objectives envisaged in the power development programmes. These objectives are proposed to be achieved by adopting the following strategy.

I. Stabilising and improving power supply by

- (a) maximising the benefits from available capacities by affecting considerable improvement in the operation and maintenance of existing systems;
- (b) constructing adequate inter-connections within the States and interstate tie lines in each region for enabling free transfer/exchange of power and setting up an integrated regional grid operation;
- (c) ensuring an adequate and quality supply of coal to each thermal station;
- (d) strengthening the existing transmission, sub-transmission and distribution systems;
- (e) improving system loading by the installation of capacitors on irrigation pump sets and at selected points in the transmission and distribution system;
- (f) reducing the system losses to a normal level of 14 per cent (All India average) through action on the points enumerated above.
- (g) reducing the effects of droughts on power generation, by providing larger thermal capacity (65 per cent of energy generation in 1978-79 from steam and nuclear stations).

II. Expediting implementation of new capacities by

- (a) restructuring of the organisation and capital structure of the electricity industry;
- (b) extending the existing stations to the extent feasible;
- (c) developing large capacity thermal stations in the coalfields;
- (d) standardising the layout of thermal stations; and
- (e) taking suitable advance action for purchase of castings and forgings, parts and components by the public sector manufacturing units.

III. Coordination with industries and agriculture and social sectors by

- (a) carrying out detailed year by year examination of the position of power supply to priority industries such as steel, fertiliser, non-ferrous industries, etc., and providing for captive generation where required;
- (b) orienting the rural electrification programme for supporting agricultural production through the energisation of irrigation pump sets; and
- (c) providing benefits of electricity in backward and hill areas under the Minimum Needs Programme.

IV. Advance Action for Sixth Plan

- (a) developing a Prototype Fast Breeder Thermal Reactor which will use plutonium as fuel and convert thorium into fissile material leading to the development of 500 MW FBTR in the Sixth Plan period;
- (b) Development of 500 MW thermal-generating plant and equipment;

(c) investigating the hydro resources in the country to expedite the exploitation of hydro resources on a larger scale during the Sixth Plan period;

(d) commencing work on new schemes in the Fifth Plan for benefits in Sixth Plan; and

(e) the development of hydro and thermal projects with the financial participation of the States to their mutual benefits.

Generation

4.14. Addition of 16.548 million KW of new capacity during the Fifth Plan period will be as follows :

Table 5 : Capacity Additions during the Fifth Plan

item	in MW			
	hydro	thermal	nuclear	total
(0)	(1)	(2)	(3)	(4)
<i>utilities</i>				
1. spill over schemes	5541	4490	705	10736
2. new schemes	882	4710	..	5592
3. non-utilities	..	220	..	220
4. total	6423	9420	705	16548

Table 6 : Region-wise break-up of the installed capacity as at the end of the Fourth Plan and Fifth Plan by type of plant

region	in MW							
	as on 31-3-1974				as on 31-3-1979			
	hydro	thermal	nuclear	total	hydro	thermal	nuclear	total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
northern	2186	1950	200	4336	4420	4771	435	9626
western	1046	2865	380	4291	2054	5724	380	8158
southern	3034	1598	..	4682	5667	2438	470	8575
eastern	580	3230	..	3810	1003	5820	..	6823
north-eastern	68	147	..	215	243	237	..	480
union territories	..	18	..	18	..	18	..	18
<i>utilities total</i>	6964	9808	580	17352	13387	19008	1285	33680
<i>non-utilities total</i>				1524				1744
				18876				35424

4.15. Capacity additions planned for the Fifth Plan have been tabulated at Annexure I. The addition of 16.548 million KW during the Fifth Plan would consist of :

- 15.137. million KW in the State Programmes;
- 0.706 million KW in the programme of the Ministry of Irrigation & Power; and
- 0.705 million KW from nuclear stations (Programme of the Atomic Energy Commission).

4.16. A special feature of the generation programme during the Fifth Plan would be the introduction of 200 MW thermal generating sets. About 17 units of 200 MW each manufactured in the country are proposed to be put into operation. These would be installed in large capacity thermal stations located in the coalfields to restrict transport of coal to the minimum. Installation of reversible pump turbines on four pumped storage hydro schemes is a second special feature. A third feature that needs to be high-

lighted is the resumption of transport of coal on a large scale by sea to thermal stations on coastal locations.

4.17. Important factors that are expected to influence the growth of thermal and hydro capacities in the country over the Fifth Plan period are :

- delivery of plant and equipment;
- availability of steel and cement in adequate quantities, and as and when required;
- availability of finances according to the needs of the project; and
- adequate implementation capabilities becoming available in the State Electricity Boards.

Each of these factors are of equal importance and any deficiency in any of these would tend to slow down the power development programme and to give rise to or extend the period of power shortages.

Availability of Major Plant and Equipment

4.18. The capacity additions during the Fifth Plan period would consist of :

Table 7 : Plant and Equipment—Source of Supply

source of supply	(capacity in MW)			
	hydro	ther- mal	nu- clear	total
(0)	(1)	(2)	(3)	(4)
imported	1147	1120	235	2502
indigenous	5276	8300 ¹	470	14046
<i>total</i>	6423	9420	705	16548

4.19. Adequate production capacities have been developed in the public sector heavy electrical manufacturing units for manufacturing the main power generation plant and equipment for thermal, hydro and nuclear power projects. Over the Fifth Plan, import

Table 8 : Indigenous Equipment—Delivery Schedule of Sets.

Year	thermal						hydro	
	unit size in MW						no. of sets	aggre- gate capacity (MW)
	55	100	110	120	200	235		
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1973-74	2	4	10	2	2	..	25	1212
1974-75	2	..	6	3	4	1	17	935
1975-76	..	..	6	2	6	..	15	1247
1976-77	..	..	6	3	6	1	14	1170
1977-78	..	..	6	6	6	..	14	995
<i>total</i>	4	4	34	16	24	2	85	4659

Adequate advance action has been taken for procuring castings and forgings, parts and components for the thermal and hydro sets required to be commissioned during the Fifth Plan period.

Availability of Steel and Cement

4.21. At present, with about 1.3 million KW capacity addition per annum, serious shortages of steel and cement are being experienced. There are projects for which plant and equipment has been/is being supplied but due to the lack of steel and cement the erection of the plant cannot commence and the plant will have to be stored. Over the Fifth Plan period the annual capacity additions will have to be stepped upto 3 to 4 million KW per annum. Creation of steel and cement pools is being planned for ensuring progress on the power projects.

4.22. While standardisation of layout/civil and structural designs would not be feasible on hydro projects for apparent reasons, the standardisation of layout and structural designs in the case of thermal projects is possible because of the standardisation of the main generating equipment (boilers and turbo generator sets). Due to the limited consultancy services available in the country to service the planned power generation projects and also the limited design

of plant and equipment will be marginal, and restricted to small capacity hydro conventional and reversible pump turbines, and about 760 MW of thermal capacity for which arrangements have already been made. This import will be channelled through the public sector manufacturing units. The import of thermal sets will meet a gap between demand and supply in the early part of the Fifth Plan. Import of small capacity hydro sets is aimed at a better utilisation of indigenous production capacity. The country is self sufficient in respect of the balance equipment required for the power programme.

4.20. Firm arrangements have been made for the manufacture and supply of the indigenous plants so as to bring them into operation within the Plan period in a phased manner. The phased production programme of thermal and hydro generating sets are as follows :

and managerial capabilities available in the State Electricity Boards, it appears necessary that standardisation of layout and structural designs of thermal schemes be adopted immediately.

Financing of Power Generation Programme

4.23. Power generation programmes are mostly State Plan programmes and are financed from the State Plan resources. Financing of the generation schemes in the State Plans, however, has not been free from the constraints operating on the State Plan resources in the past, inspite of the high priority accorded by all the States for power generation. The power programmes of each State Electricity Board are financed on Annual Plan basis, the aggregate annual Plan resources of the Board consist of :—

- their internal resources;
- market borrowings;
- loans from L. I. C.; and
- loans and subsidy from State Governments

While the first three sources of finances are fairly reliable and predictable, the loans from the State Government/s vary according to the yearwise resource position of the State/s. Means will therefore have to be evolved to find adequate outlays to finance

¹Includes 200 MW for non-utilities

the power plan from year to year, in the absence of which serious imbalances between Generation, Transmission and Rural Electrification are likely to develop.

Development of Hydro Resources

4.24. The country has vast hydro resources totalling to about 41 million KW capable of yielding about 215 billion kWh energy per year. By the end of the Fifth Plan about 8.8 per cent of this will have been harnessed generating about 45.9 billion kWh in 1978-79. Their uneven dispersal over the regions, the large financial outlays required for their exploitation and their long gestation periods have generally limited their exploitation. In addition, in several cases the interstate water disputes have prevented the exploitation of the hydro resources for power generation.

Table 9 : Hydro Energy Potential and Exploitation
(Hydro Potential m. KW)

region	available (at 60% L.F.)	exploited (at de- signed L.F. i.e. installed capacity).	planned (cumu- lative)
(0)	(1)	(2)	(3)
northern	10.732	2.186	4.420
western	7.169	1.046	2.054
southern	8.097	3.084	5.667
eastern	2.694	0.580	1.003
north-eastern	12.464	0.068	0.243
total	41.156	6.964[†]	13.387[‡]

4.25. The long gestation period of hydro schemes, which sometimes spread over 8 to 10 years, and the large outlays required for exploiting them, have been factors for allocating low priority to hydro schemes in the Five-Year Plans. On expedient grounds—for catching up with the fast increasing power demands—short-term measures were adopted. This has given rise to thermal stations in hydro-rich regions. The economy of the regions will therefore have to bear the burden of this pattern of development.

4.26. Energy demands increase with the economic development. Power development therefore is a continuous process. It is accepted by all that power development does not conform to five-year development plans. Hydro schemes, super thermal stations and nuclear stations with larger gestation period would therefore need to be planned on a longer time span—say on a fifteen-year programme. For implementation purposes, as also for fitting into the country's five-year plans, the programmes for the first five-year period could be firm, that for the next five years semi-firm and for the balance five years tentative. The fifteen-year programme will need to be reviewed and updated every year. In short, a "rolling power plan" for the country is called for.

4.27. Large hydro resources however are located in States which either have small power demands

and/or have no finances for developing the hydro resources for meeting the power demands of the neighbouring States. Large hydro (and also thermal) schemes will however need to be planned on a regional basis. The usual pattern of financing of the schemes through State Plan resources will therefore have to give way to financing by the States in region on a joint basis, sharing the costs and benefits.

4.28. During the Fifth Plan period advance action is proposed to be taken on several new hydro schemes for benefits in the Sixth Plan. For example, four schemes with an aggregate capacity of about 1000 MW involving about Rs. 200 crores outlay are expected to be taken up in Karnataka State for the benefit of the Southern Region. Similarly schemes in Himachal Pradesh aggregating to 1500 MW capacity are proposed to be taken up during the Fifth Plan period for the benefit of the Northern Region. Similar advance action is proposed to be taken in other regions.

Central Generation

4.29. The Ministry of Irrigation and Power have a programme of commissioning the following schemes during the Fifth Plan Period :

spill over schemes

- (a) Badarpur Thermal Scheme 2x100 MW
- (b) Baira-Siul H.E. Project 3x67 MW
- (c) Loktak H.E. Project 2x35 MW

new schemes ¹

- (d) Badarpur Thermal Station Extn. 1x200 MW
- (e) Loktak Hydro-Electric Extn. Scheme 1x 35 MW
- (f) Farakka Thermal Project 1x110 MW

total **816 MW**

Work on the Salal Hydro-Electric Project (3x90 MW) will continue during the Fifth Plan period. In addition, work on a new scheme, Dulhasti H. E. Scheme (3x110 MW) is proposed to be started. These schemes are expected to go into operation during the Sixth Plan.

Nuclear Power Generation

4.30. The fifth Plan programme of nuclear power generation comprises of the commissioning of the second 235 MW unit in Rajasthan Atomic Station and two units of 235 MW each in the Kalapakkam station. The Deptt. of Atomic Energy proposes to commence work on a new nuclear power project at Narora in Uttar Pradesh where benefits will accrue early in the sixth Plan. Provision has been made for advance action on a new project during the Fifth Plan period.

4.31. The Atomic Energy Commission is concentrating on the construction of a prototype 40 MW Fast Breeder Thermal Reactor (FBTR) at Kalapakkam. In this FBTR, plutonium and thorium are proposed to be

¹Corresponding to 60% L.F. 5.153

[‡]Corresponding to 60% L.F. 8.805

used, thorium being converted into fissile material in the process. The AEC proposes to prove the prototype FBTR during the Fifth Plan period and develop large capacity (500 MW) reactors during the 1980's.

Power Position over the Fifth Plan Period

4.32. *Northern Region* : Punjab and Haryana are likely to face power deficit in the first half of 1974 mainly on account of the delay in commissioning of new projects such as Badarpur, Bhatinda and Baira-Siul. Rajasthan Atomic Station also would be under partial operation. The power position in this region may be expected to stabilise after the Beas Hydro-Electric scheme goes into operation by the end of 1975.

4.33. *Uttar Pradesh* is likely to have severe power shortages in 1974 and 1975 because of serious delays in the commissioning of Fourth Plan schemes. When Panki and Harduaganj Thermal Station extensions and Kodri and Ramganga hydro-electric schemes go into operation in 1976 and add about 740 MW capacity, the power situation in the State will ease considerably. The power position in the State may be further expected to improve with the commissioning of five 200 MW sets in Obra Thermal Station in succession and with Maneribhali (105 MW) and Rishikesh-Hardwar (100 MW) Hydro-Electric Schemes going into operation during the same period.

Western Region

4.34. Madhya Pradesh will face power shortages when the large demand from the Bharat Aluminium Company is required to be met towards the end of 1974. Thereafter total demand will increase from the Bhilai Steel Plant and some other industries. The State however would not be ready to meet the increasing demand till the middle of 1976 when the Korba Extension (120 MW) and Amarkantak Extension (240 MW) go into operation. Captive generation for the Bhilai Steel Plant has therefore been planned.

Southern Region

4.35. Tamil Nadu and Karnataka are likely to face deficits in the earlier part of the Fifth Plan. Tamil Nadu's shortages will get reduced with the commissioning of the Idikki hydro-electric scheme, increased generation at Neyveli, commissioning of the 110 MW set in Ennore thermal station in 1976, commissioning of Kalapakkam Nuclear Station (235 MW) in 1977, followed by a 200 MW unit at Tuticorin Thermal Station. In Karnataka the power deficit may disappear with the commissioning of the Kalinadi Hydro-Electric project in 1976.

Eastern Region

4.36. The power position in this Region will depend largely upon the efficient operation and maintenance of the existing thermal plant and equipment and the availability of adequate transmission facilities. Steps have been taken *on priority* to recondition the damaged plants in the Damodar Valley Corporation, Durgapur Projects Ltd. and Talcher Thermal stations. Additional new capacity will be going into operation in the Region year by year from the Santaldih, Chandrapura and Patratu Thermal Stations and provided adequate transmission facilities are available, the power

position in this region should stabilise over the second half of the Fifth Plan period. Captive generation on an adequate scale has been planned for maximising steel production in this region.

4.37. In other Regions/States the power position will largely depend upon the transmission facilities, and the efficiency of operation and maintenance of the existing capacities, as also upon the availability of adequate transmission facilities to transmit power to the load centres particularly in West Bengal, Maharashtra and Bihar.

4.38. The Fifth Plan Power Generation Programme presumes that the State Electricity Boards will construct the necessary transmission lines and switching stations for integrating the States' systems into the Regional Grid Systems and that the Regional Load Despatch Centres would be in effective operation during the Fifth Plan period.

4.39. With the successful implementation of the programme, the power position over the country may be expected to be satisfactory in the second half of the Fifth Plan period.

Coal Supplies to Thermal Stations

4.40. One of the difficulties being faced over the second half of the Fourth Five-Year Plan, in maximising the output from some of the available thermal capacities, is the irregular and inadequate and unsuitable quality of the supply of coal. A 'Control Room' has been set up in the Railway Board for monitoring day-to-day coal supplies to the thermal stations. This situation obtains despite a shortfall of 40 per cent in the targetted thermal capacity. The coal consumption in thermal stations is expected to increase from 19 million tonnes in 1973-74 to 50 million tonnes in 1978-79. A "Linkage Committee" has linked the thermal stations with coal fields and the related rail transport arrangements have also been agreed to. A gap in demand and supply of coal from Singhereni fields in the Southern Region is planned to be made up by transporting coal from Bengal/Bihar coal fields to Haldia/Calcutta port and thence by sea. The progress in the development of generation capacities, coal mines and the related transport arrangements would however need to be kept under constant review with a view to take timely action to evolve fresh linkages where necessary.

4.41. For ensuring the quality supply of middlings, washeries will need to be equipped with three stage washing facilities. The power stations would also need to be equipped with coal blending equipment to ensure the uniformity of quality of the fuel fired into the boilers.

Transmission and Distribution

4.42. The Fourth Five-Year Plan had envisaged the development of Regional Grids, the setting up of Regional Load Despatch Centres and the initiating integrated operation at the regional levels. However, there have been serious delays in the construction of major transmission lines and switching stations. Also, the State Electricity Boards/Regional Electricity Boards (Centre) have not been able to set up the State/Regional Load Despatch Centres. Some beginning in load

despatching has been made in the Southern Region in June 1972 based on telecommunication facilities.

4.43. The transmission and distribution network has to be planned on a long-term basis, particularly when the generation is increasing fast. Adequate outlays would have to be provided for transmission and distribution systems not only to correct the imbalance between generation and transmission, but also to catch up with the fast increasing generation. Inter State transmission lines would need to be provided on priority to enable transfer of power from one State to the other. The transmission losses have shown a tendency to increase in the past four years, from 17 per cent in 1968-69 to 18.8 per cent in 1972-73. In some States, it reached a level of 30 per cent and more. The feasibility of satisfactory transmission facility would have to be first ensured before intensive rural electrification 'crash' programmes are undertaken. Concrete measures will have to be initiated immediately to minimise the transmission losses.

4.44. By the end of the Fourth Plan the total investment in Transmission and Distribution is expected to be of the order of Rs. 1600 crores. The Fifth Plan provision for Transmission and Distribution of Rs. 1600 crores is therefore almost equal to the investment made in this Sector over the last two decades. The length of transmission lines in operations as at the end of 1971-72 are as follows:

Table 10 : Length of transmission lines as on 31-3-1972

region	(circuit kilometers)			
	66kV	110kV	132kV	220kV
(0)	(1)	(2)	(3)	(4)
northern	4978	—	9044	4586
western	6088	6333	8509	3318
southern	10468	9758	5105	5051
eastern	1377	—	7999	695
north-eastern	421	—	829	93
all India	23332	16091	31486	11743

4.45. Energy losses in the System predominates in the Sub-Transmission & Distribution Systems of 33 kV and lower voltages and therefore calls for (a) strengthening of the existing feeder lines; (b) construction of additional feeders; (c) creation of additional feeding points from the main EHV System; and (d) installation of capacitors on the agriculture pump sets and also at selected points in the distribution net work. The Fifth Plan envisages the reduction of energy losses to the level of 14 per cent (All India average). Each of the States, therefore, would need to take priority measures to reduce the energy losses.

4.46. Although work on the construction of 400 kV lines was initiated during the Fourth Plan period, the first 400 kV line in the country is expected to go into operation in 1975. During the Fifth Plan period nearly 3500 kilometers of 400 kV lines are planned to be constructed in the various regions. These lines along with the 220 kV trunk lines are planned for integrating the State System into five Regional Grid Systems. Also five Regional Load Despatch Centres are proposed to be set up with priority, in all the regions to enable the initiation of regional grid operations during

the Fifth Plan period. Briefly, the extra high voltage lines planned for each region are as follows:

Table 11 : EHV lines—Fifth Plan

region	(length in kilometers)		
	400 kV	220 kV	
(0)	(1)	(2)	(3)
northern	1788	242	2335
western	980	280	2194
southern	530	703	2581
eastern	220	501	889
north-eastern	—	—	100
total	3518	1726	8099

4.47. Planning and designing an effective regional grid system will involve extensive net work studies for ensuring the freedom of transfer/exchange of power, for ensuring system stability under the most severe fault conditions and limiting the duties on each equipment to the design parameters. In the construction of a regional grid therefore, the major trunk lines in each State as also the inter tie lines, will have to be designed and arranged in a suitable predetermined configuration, and its control and equipment designed and tuned to the required performance conditions. It is therefore apparent that designing and evolving a regional grid system has to be done at the regional level. Construction of 400 kV and 220 kV lines and substations take three to five years. Also these lines and substations have to go into operation to suit the phased generation schedule for the region. It is therefore important at this stage that studies for each region were given priority and a firm programme of EHV lines and their phased completion to suit the generation is determined at the earliest.

4.48. Meanwhile, keeping in view the long-term system requirements, suitable technical standards, design parameters, performance levels and duty cycles etc., are being evolved/fixed for the various equipments that will be employed in 400 kV power transmission and transformation systems. This is aimed at promoting the gradual evolution of an All India grid.

Inter-State Lines

4.49. During the Fourth Plan period, the Centre undertook the financing of the inter-State lines outside the State Plan, with a view to expedite the construction of interstate lines and the formulation of regional grid systems. This step however has not yielded encouraging results. The States continue to give high priority to the State Transmission Lines. In the context of the shortage of steel, progress on interstate lines has received a serious setback.

4.50. The interstate lines would continue to be financed by the Centre during the Fifth Plan period. The 35 interstate lines (Annexure II) under construction are proposed to be completed on a priority basis during the Fifth Plan. Construction of new lines will however have to be undertaken after comprehensive network studies have been carried out. A sum of Rs. 100 crores has been set apart for financing the inter-

state lines during the Fifth Plan period as against Rs. 32 crores investment made on the programme during the Fourth Plan period. A separate provision of Rs. 14 crores has been made for setting up Regional Load Despatch Centres in all the regions.

4.51. In the Fourth Plan, important trunk transmission lines received earmarked outlays in the Annual Plans. In the Fifth Plan, the important 400 kV and 220 kV trunk lines will receive earmarked outlays. Also outlays on the entire Transmission & distribution programme in each Annual Plan will be earmarked. This is aimed at ensuring adequate investment in Transmission & Distribution leading to the removal of deficiencies in the existing systems, and also the development of adequate new facilities by the end of the Fifth Plan period. Meanwhile interstate agreements regarding tariffs for transfer/exchange of power which is essential for effective load despatch as well as for maximising benefits from available capacities would be evolved.

Table 12 : Rural Electrification—Financing during the Fifth Plan

item	(Rs. crores)			
	states	union territories	centre	total
(0)	(1)	(2)	(3)	(4)
(a) minimum needs programme	271.03	1.30	..	272.33
(b) normal state programme	408.52	17.39	..	825.91
(c) R.E.C. programme	400.00 ¹	..	..
total	1079.55	18.69	..	1098.24

4.54. Rural Electrification under the Minimum Needs Programme (MNP) envisages making electricity available in the backward regions in the States to provide the infrastructure for development. Other rural development programmes such as energisation of irrigation pump sets, providing drinking water facilities, construction of roads, establishment of health centres, etc., are also contemplated under the Minimum Needs Programme. The States would prepare integrated programme under the MNP for developing backward regions. Initially, the programme provides power supply in the rural areas to growth centres such as education centres, health centres, market centres and connections for irrigation pump sets. The allocation for the rural electrification programme under MNP is adequate for spreading electricity in rural areas to cover 40 per cent of the rural population in States where rural electrification benefits are below this level. A project approach will be adopted and the programme will be financed and monitored through the Rural Electrification Corporation. In view of the unremunerative nature of investment, soft term loans are proposed to be made available for the programmes. It is expected that nearly 36,500 villages would benefit in the 15 States as detailed in Annexure III.

4.55. Rural Electrification Corporation, which is a financing institution in the public-sector, was created in the Fourth Plan with an investment programme of Rs. 150 crores for supporting rural electrification pro-

Rural Electrification

4.52. During the Fourth Plan period, with an investment of Rs. 445 crores, 15,00,000 pump sets were targetted to be energised. No target for electrification of rural localities was adopted for the Fourth Plan. The target for electrification of pump sets is expected to be fulfilled and in addition nearly 70,000 villages are expected to be electrified during the Fourth Plan period. By the end of the Fourth Plan nearly 25,00,000 pump sets would be in operation in the country and nearly 1,40,000 villages will have been electrified. A special feature of the Fourth Plan was to provide the benefits of electricity to 5,000 Harijan bastis.

4.53. In the Fifth Plan Rs. 1098 crores have been allocated for rural electrification, including Rs. 272.33 crores under the Minimum Needs Programme. The allocation is considered adequate for energisation of 15,00,000 pump sets and the electrification of an additional 1,10,000 rural localities. The investment has been planned as follows:

grammes and supplementing the efforts of the States. The Corporation has achieved considerable success in the field by adopting an integrated project approach and by evolving suitable pattern for financing the programme for promoting rural electrification programmes in the backward areas, in the hill regions as well as in relatively advanced areas in the States. During the Fourth Plan period REC has sanctioned loans which add up to about Rs. 300 crores for 600 schemes and have been able to disburse nearly Rs. 180 crores. A special feature of REC's activities, apart from the project approach and the special financing pattern, is the close monitoring of the programme and financing supporting programmes of transmission lines, strengthening of the distribution system and the reduction of system losses.

4.56. The programme contemplated for the REC over the Fifth Plan period, apart from the Rs. 272.33 crores investment under the MNP, is Rs. 400 crores. This is considered adequate for the energisation of 7,60,000 pump sets, and the electrification of about 41,000 villages. The Statewise break-up of investment and benefits have yet to be determined.

Consultancy and Construction Services

4.57. Consultancy Services and Construction/Erection Agencies available in the country presently are not adequate for meeting the current demand. The gap between the demand and availability of

¹Investment in the States through Rural Electrification Corporation.

these services may therefore be expected to widen over the Fifth Plan period. The deficiencies in consultancy services are likely to be pronounced in respect of thermal projects. 400 kV lines and sub-stations and would need to be considerably strengthened. There is urgent need for organising additional efficient and resourceful construction and erection services in the public and private sectors for meeting the demand from the considerably large programmes being adopted for the Fifth Plan. Also in the context of the serious power shortages and the urgent need for reducing construction and erection time, greater mechanisation, for civil, mechanical and electrical construction work appears to be called for.

Manpower Training

4.58. Training of engineers and of operators for operation and maintenance of thermal stations has been inadequate and the frequent outages on thermal plants is a direct consequence of this neglect. In the context of limited resources the need for avoiding breakdown of plants due to mal operation and/or inadequate preventive maintenance assumes a significance which can be ignored only at a high cost to the economy. There is, therefore, urgent need for organising the training centres in each region and attaching them to established thermal stations and for special efforts for effective in-plant training of hands in advance, for each and every new thermal station. Similarly, training programme for Load Despatching needs to be undertaken.

Research and Development

4.59. The Research and Development on power engineering, transmission and distribution initiated in the earlier Plans would be continued in the Fifth Plan period. Research work is being carried out primarily in the C.P.R.I. under the Ministry of Irrigation & Power, Central Board of irrigation & Power (C.B.I.P.), in the Electricity Boards, in the Atomic Energy Commission and in the public sector Heavy Electrical manufacturing units. For meeting the increasing demands in the Sixth Plan and onwards, work on the development of 500 MW thermal generating sets has been initiated to put a prototype into operation in 1980-81. Research & Development work is proposed to be undertaken for developing a pilot M.H.D. generation plant. The Atomic Energy Commission proposes to undertake R & D work on evolving designs for a 500 MW reactor. Investigations on geo-thermal resources have been undertaken. The Central Power Research Institute at Bangalore and at Bhopal are proposed to be expanded to facilitate testing of EHV equipment. Development of 400 kV transmission and transformation equipment, development of HVDC equipment etc. and other material development programmes and instrumentation, automation and com-

puter control studies etc. have been undertaken to meet the future demands of the Electricity Supply Industry.

Re-organisation of the Electricity Supply Industry

4.60. Implicit in the planning for the considerably large programme adopted for the Fifth Plan period is the presumption that an effective organisation which can be entrusted with full responsibility for planning, development (including financing), controlling and regulating electricity supply industry in the country will be available. The State Electricity Boards which were created under the Electricity (Supply) Act, 1948 have been functioning for nearly two decades and have played an important role in power development and their contribution has been commendable. The organisational structure as also the financial structure of the State Electricity Boards however has been found to be inadequate for meeting the challenging needs of the 1970's. It is accepted at all levels that the electricity supply industry needs to be reorganised and restructured, both in respect of its organisational set up, and its financial concept, for meeting the ever increasing demands on the industry. The urgent need for restructuring the State Electricity Boards, for the creation of a Central Electricity Authority and five Regional Electricity Authorities arises from the immediate need for effective and timely implementation of a considerably large power programme during the Fifth-Five-Year Plan period; to improve the financial operations of the State Electricity Boards and the heavy losses, to improve the operation and maintenance of the system; and improve the quality of service to the consumers. In the past, the annual addition of capacity has been of the order of one million kW, and this would need to be stepped up to three to four million kW, over the Fifth Plan period, and perhaps twice as much in the Sixth Plan period. Simultaneously the growing imbalance between generation and transmission & distribution will have to be halted and adequate facilities to provide power to the consumers will have to be developed. This can be achieved only if there are effective organisations at the Central, Regional and State levels which can plan in advance, investigate the schemes in all their aspects, design and engineer the projects, arrange for the procurement of materials, plant and equipment, plan the construction and monitor the projects to completion within the limits and cost estimates. The setting up of Central Electricity Authority and five Regional Electricity Authorities (one for each power region) and the restructuring of the State Electricity Boards therefore is a necessary condition for regional power generation and also for a satisfactory power supply position over the Fifth Plan period. It is proposed to restructure the organisation as also the financial structure of the Electricity Supply Industry in the immediate future.

ANNEXURE I

Benefits in the Fifth Plan from Generation Schemes (Public Utilities)

region/scheme	benefits during fifth plan (MW)	region/scheme	benefits during fifth plan (MW)
<i>Northern Region</i>			
Continuing Scheme	4320	40. Bhira tail race H.E. Scheme (Maharashtra)	80
1. Beas H.E. Scheme Unit I (Punjab, Haryana & Rajasthan)	660	41. Paithan H.E. Scheme (Maharashtra)	12
2. Beas H.E. Scheme Unit II (Pong) (Punjab, Haryana & Rajasthan)	240	42. Tillari H.E. Scheme (Maharashtra)	60
3. Faridabad Thermal Station (Haryana)	120	43. Koradi Thermal Station (Maharashtra)	360
4. Panipat Thermal Station (Haryana)	220	new schemes	1660
5. Giri Bata H.E. Scheme (Himachal Pradesh)	60	44. Ukai Thermal Power Station Extn. (Gujarat)	200
6. Chenani H.E. Scheme (Jammu & Kashmir)	9	45. Satpura Thermal Station Extn. (Madhya Pradesh)	200
7. Sumbal H.E. Scheme (Jammu & Kashmir)	22	46. Korba Thermal Station Extn. (Madhya Pradesh)	220
8. Lower Jhelum H.E. Scheme (Jammu & Kashmir)	105	47. Koradi Thermal Station Extn. Stage III (Maharashtra)	600
9. Gurunanak Thermal Station (Punjab)	220	48. Nasik Thermal Station Extn. (Maharashtra)	220
10. Gurunanak Thermal Station Extn. (Punjab)	220	49. Bhusawal Thermal Station Extn. (Maharashtra)	220
11. Yamuna H.E. Scheme Stage II (U.P.)	360	<i>Southern Region</i>	
12. Ramganga H.E. Scheme (U.P.)	198	continuing schemes	2733.2
13. Obra Thermal Station Extn. I (U.P.)	200	50. Lower Sileru H.E. Scheme (Andhra Pradesh)	400
14. Obra Thermal Station Extn. II (U.P.)	600	51. Kothagudem Thermal Station Stage III (Andhra Pradesh)	110
15. Panki Thermal Station Extn. (U.P.)	220	52. Nagarjunasagar H.E. Scheme (Andhra Pradesh)	100
16. Harduaganj Thermal Station Extn. (U.P.)	110	53. Idikki H.E. Scheme (Kerala)	390
17. Yamuna H.E. Scheme Stage IV (U.P.)	30	54. Sharavathi H.E. Scheme Stage III (Karnataka)	178.2
18. Maneribhali H.E. Scheme Part I (U.P.)	90	55. Linganamakki H.E. Scheme (Karnataka)	55
19. Badarpur Thermal Station (Central-Delhi)	200	56. Kalinadi H.E. Scheme Stage I Phases I & II (Karnataka)	775
20. Baira-Siul H.E. Scheme (Central J&K)	201	57. Kundah H.E. Scheme Stage IV (Tamil Nadu)	110
21. Rajasthan Atomic Power Station (Central)	235	58. Suruliar H.E. Scheme (Tamil Nadu)	35
new schemes	969.5	59. Ennore Thermal Station Extension (Tamil Nadu)	110
22. Bassi H.E. Scheme Extn. (Himachal Pradesh)	15	60. Kalapakkam Atomic Power Project (Central)	470
23. Mukerian H.E. Scheme (Punjab)	14	new schemes	1160
24. Shanon H.E. Scheme Extn. (Punjab)	50	61. Upper Sileru H.E. Scheme Extn. (Andhra Pradesh)	120
25. Anandpur Sahib H.E. Scheme	27.5	62. Kothagudem Thermal Station Extension Stage IV (Andhra Pradesh)	220
26. U.B.D.C.H.E. Extn. (Punjab)	45	63. Vijaywada Thermal Station (Andhra Pradesh)	200
27. Obra Thermal Station Extn. III (U.P.)	400	64. Idikki H.E. Scheme Stage II (Kerala)	390
28. Harduaganj Thermal Station Stage VI (U.P.)	110	65. Idamalayar H.E. Scheme (Kerala)	30
29. Rishikesh-Hardwar H.E. scheme (U.P.)	108	66. Tuticorin Thermal Station (Tamil Nadu)	200
30. Badarpur Thermal Station Extn. (Central)	200	<i>Eastern Region</i>	
<i>Western Region</i>		continuing schemes	1305
continuing schemes	2208	67. Kosi H.E. Scheme (Bihar)	5
31. Ukai H.E. Scheme (Gujarat)	300	68. Subernarekha H.E. Scheme (Bihar)	130
32. Ukai Thermal Station (Gujarat)	240	69. Patratou Thermal Station Extension I (Bihar)	220
33. Gandhi Nagar Thermal Station (Gujarat)	240	70. Barauni Thermal Station Extn. I (Bihar)	110
34. Korba Thermal Station Extn. I (M.P.)	120	71. Balimela H.E. Scheme (Orissa)	240
35. Amarkantak Thermal Station Extension (M.P.)	240		
36. Pench H.E. Scheme (M.P. & Maharashtra)	160		
37. Koyna H.E. Scheme Stage III* (Maharashtra)	320		
38. Vaitharna H.E. Scheme (Maharashtra)	60		
39. Bhatgar H.E. Scheme (Maharashtra)	16		

region/scheme	benefits during fifth plan (MW)
72. Santaldih Thermal Station (West Bengal)	360
73. Chandrapura Thermal Station V Unit (DVC)	120
74. Chandrapura Thermal Station VI Unit (DVC)	120
new schemes	1708
75. Patratou Thermal Station Extn. III (Bihar)	220
76. Barauni Thermal Station Extension (Bihar)	110
77. Tenughat Thermal Station (Bihar)	200
78. Talcher Thermal Station Extension (Orissa)	220
79. Jaldhaka H.E. Scheme Stage II (West Bengal)	8
80. Bandel Thermal Station Extension (West Bengal)	200
81. Kolaghat Thermal Station (West Bengal)	200
82. Durgapur Thermal Station Extension (DVC)	200
83. Bokaro Thermal Station Extension (DVC)	200
84. Panchet Hill H.E. Scheme Extension (DVC)	40
85. Farakka Thermal Station (Central)	110

region/scheme	benefits during fifth plan (MW)
<i>North Eastern Region</i>	
cont. Schemes	170
86. Kyrdem Kulai H.E. Scheme (Assam)	60
87. Namrup Thermal Station Extension (Assam)	30
88. Gumti H.E. Scheme (Tripura)	10
89. Loktak H.E. Scheme (Central-Manipur)	70
new schemes	95
90. Chandrapura Thermal Station Extension (Assam)	30
91. Namrup Thermal Station Extension (Assam)	30
92. Loktak H.E. Scheme Extn. (Central)	35
<i>total continuing schemes</i>	10736.2
<i>total new schemes</i>	5592.5
<i>total continuing & new (utility)</i>	16328.7
<i>non utilities</i>	
Chola Thermal Station (Maharashtra)	220
grand total :	16548.7

Inter—State Links

name of the line, voltage no. of circuits.	name of the partici- pating states.	name of the line, voltage, No. of circuits.	name of the parti- cipating states.
<i>Northern Region</i>		<i>Eastern Region</i>	
1. Giri-Yamuna 132. S/C.	Uttar Pradesh H. Pradesh	19. Chandrapura-Santaldih 220 KV S/C	D.V.C. West Bengal
2. Pathankot (Sarana) Chenani (Udhampur) 220 KV S/C.	Punjab Jammu & Kashmir.	20. Chandil-Joda 220 KV S/C	Bihar Orissa
3. Delhi-Jaipur 220 KV S/C.	Rajasthan Haryana	21. Chandrapura-Durgapur (DVC) 220 KV S/C.	D.V.C. West Bengal
4. Dehar—Simla 132 KV S/C.	Delhi (BTPP) H. Pradesh B.C.B.	22. Durgapur (DVC)—Durgapur(West Bengal) 220 KV S/C.	
5. Mathura—Bharatpur 132 KV S/C.	Uttar Pradesh Rajasthan	23. Purnea-Silguri 132 KV S/C.	Bihar West Bengal
6. Delhi-Muradnagar 220 KV (String- ing 2nd Circuit)	Delhi Uttar Pradesh	<i>North Eastern Region</i>	
7. Shamli-Panipat 220 KV S/C.	Uttar Pradesh Haryana	24. Badarpur-Imphal 132 KV S/C.	Assam Manipur
<i>Western Region</i>		25. Loktak-Dimapur 132 KV /S/C.	Manipur Nagaland
18. Satpura-Ambazari 220 KV S/C.	Madhya Pradesh Maharashtra	26. Dimapur-Marianai 132 KV S/C.	Assam Nagaland
19. Chandni-Bhusawal 132 KV (String- ing 2nd Circuit)	Madhya Pradesh Maharashtra	27. Dimapur-Bokajan 66 KV S/C.	Nagaland Assam
10. Navasari-Nasik 220 KV S/C on D/C Towers	Gujarat Maharashtra	<i>Inter Regional Links</i>	
11. Kolhapur-Ponda 220 KV S/C.	Maharashtra Goa	128. Belgaum-Kolhapur 220 KV S/C.	Karnataka Maharashtra
12. Baroda-Burwaha 220 KV S/C.	Gujarat Madhya Pradesh	29. Mughal sarai-Dehri 220 KV S/C.	Uttar Pradesh Bihar
<i>Southern Region</i>		30. Alipurduar-Bongaigaon 220 KV S/C.	Assam West Bengal
13. Munirabad-Hampi 220 KV S/C.	Karnataka Andhra Pradesh	31. Upper Sileru-Balimela 220 KV S/C	Andhra Pradesh Orissa
14. Pamba-Kayattar 220 KV S/C.	Kerala Tamil Nadu	32. Rihand-Morwa-Amarkantak 132 KV (Stringing 2nd Circuit)	Uttar Pradesh Madhya Pradesh
15. Ennore-Nellore 220 KV S/C.	Tamil Nadu Andhra Pradesh	33. Naroda-Udaipur 220 KV S/C.	Gujarat Rajasthan
16. Mysore-Kozhikode-Idikki 220 KV S/C.	Karnataka Kerala	34. Bodhghat-Balimela 220 KV S/C.	Madhya Pradesh Orissa
17. Mangalore-Kasargode 110 KV (Re- conductoring).	Kerala } Andhra Pradesh Karnataka	35. Raigarh-Jharsuguda	Madhya Pradesh Orissa.

¹Likely to be completed during IV Plan.

Fifth Five-Year Plan—Power Development (Rural Electrification)

state/union territories/R.E.C.	total no. of Irrigation pumps energised as on 31-3-74 (anti- cipated)	pump energisation programme		total census villages	village Electrification programme			
		Additional no. of pumps to be ener- gised during fifth Plan	No. of irrigation pumps energised as on 31-3-79		no. of electrified villages as on 31-3-74 (anti- cipated)	additional No. to be electrified during fifth plan	No. to normal	total electrified villages as on 31-3-79
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Andhra Pradesh	253000	97070	350000	27084	10750	481	5300	16531
2. Assam	150	9540	9690	20565	830	2800	510	4140
3. Bihar	100500	28620	129120	67665	9600	7500	1542	18642
4. Gujarat	105000	15500	120500	18584	5850	..	1030	6880
5. Haryana	135000	51500	186500	6669	6669	..	..	6669
6. Himachal Pradesh	800	990	1790	13060	4000	800	130	4930
7. Jammu Kashmir	450	..	450	6559	930	1000	..	1930
8. Karnataka	190000	59880	249880	26377	12200	736	3211	16147
9. Kerala	38000	30000	68000	1573	1423	..	150	1573
10. Madhya Pradesh	130000	38160	168160	70414	10700	6948	2055	19703
11. Maharashtra	315000	64320	379320	35851	16000	..	3110	19110
12. Manipur . . . . .	..	..	..	1866	210	650	..	860
13. Meghalaya . . . . .	..	..	..	4407	80	1000	..	1080
14. Nagaland	2	..	2	814	100	200	..	300
15. Orissa	2000	47240	49240	46466	5350	2312	2314	9976
16. Punjab	125000	39160	164160	11947	7100	..	2132	9232
17. Rajasthan	75,000	28,620	1,03,620	32,241	5,200	2,000	1,542	8742
18. Tamil Nadu	715000	143000	858000	14124	14124	..	..	14124
19. Tripura	35	..	35	4932	110	1000	..	1100
20. Uttar Pradesh	235000	114480	349480	112624	28390	5250	6166	39806
21. West Bengal	2,000	43000	45000	38454	7500	3800	2860	14160
<i>total—states</i>	24,21,937	8,11,080	32,33,017	5,62,276	1,47,116	36,477	32,052	2,15,645
<i>Union Territories</i>	13063	3720	16783	4602	1034	74	497	1605
<i>R.E.C.</i> . . . . .	..	763,200	763200	..	..	..	41108	41108
<i>total—all India</i>	2435000	1578000	4013000	566878	148150	36551	73657	258358

Note :—state-wise programme to be financed by REC to be decided.

Chapter 5

Industry and Minerals

I

REVIEW OF PROGRAMME IN THE FOURTH PLAN

At the time the Fourth Plan was formulated, the economy was recovering from a period of recession and there was considerable under-utilised capacity in the industrial sector, particularly in the capital goods and engineering industries. The main emphasis was, therefore, on reversing the trend in the earlier years and on accelerating industrial growth. It was envisaged that a better utilisation of existing capacities would lead to higher production in the early years of the Plan. Additions to production during the later period was to arise from new capacity to be created during the Plan.

5.2. In furtherance of these objectives, the Fourth Plan provided for a substantial step up of investment on industrial and mineral programmes amounting to Rs. 3,050 crores in the public sector and Rs. 2,250 crores in the private and cooperative sectors. The bulk of the public sector investment was proposed for industries like steel, non-ferrous metals, fertilizers, petro-chemicals, petroleum and iron ore development. In other industries inclusive of cement, paper, sugar, industrial machinery and light engineering, substantial contribution was expected to be made by the private sector.

5.3. Consistent with the new approach to industrial planning, specific targets were laid down only for the core industries, while for other selected industries the Plan merely provided indicative targets of production, leaving a measure of flexibility. A set of policies for achieving the plan objectives were also outlined.

5.4. Based on the proposed targets and investments, it was envisaged that a growth rate of 8 to 10 percent in industrial production would be achieved during the Fourth Plan.

5.5. The performance has fallen short of these expectations. The growth rate of industrial production declined from 6.8 per cent in 1969-70 to 3.7 per cent in 1970-71, but increased to 4.5 per cent in 1971-72 and is estimated at around 5 per cent in 1972-73. Preliminary data for the first half of 1973-74 indicate that there has been little or no growth in industrial production during this period. Even assuming better performance in the latter half of the year, the overall growth may not be better than that of 1972-73. The growth rate has thus been appreciably below the levels envisaged in the Fourth Plan. Annexure III indicates the targets/production estimates projected for the Fourth Plan and the achievements in respect of some of the important industries.

5.6. A number of factors have contributed to this unsatisfactory growth in industrial production. While production lagged behind in certain industries on account of inadequate capacity, in others certain other factors resulted in lower production in spite of adequate capacity. Thus, in some of the critical industries like steel and fertilisers, production remained substantially below the installed capacity primarily on account of the operational problems in the different units, due to lack of maintenance or design deficiencies. In agro-industries like sugar and textiles, which have a large weight in the index of industrial production, the output during the Plan period showed an erratic trend, depending on the production of related agricultural crops. The inadequate pace of investment resulted in a reduced demand for industrial machinery, adversely affecting the level of output of the capital goods industries, while production in other engineering industries was influenced by the shortage of steel and non-ferrous metals. More recently, the widespread shortage of power depressed production in industrial units in different parts of the country to a considerable extent. Shortage of coal and problems in its movements have also contributed to lower utilisation of existing capacity. The output in certain industries was adversely affected because of unsatisfactory industrial relations.

5.7. The investments postulated in the industrial sector have also not proceeded in accordance with the Plan assumptions. Shortfalls in investments are anticipated both in the public and private sectors. As a consequence, several of the capacity targets in the Plan have not been fulfilled. Apart from certain specific reasons as applicable to the public and private sectors, factors like shortage of construction materials and the initial difficulties experienced in the process of indigenisation through larger reliance on domestic technology and equipment have generally impeded the pace of investment.

5.8. In the public sector, the Fourth Plan had contemplated a marked step up in investment, corresponding approximately to double the level achieved in the Third Plan. A pre-condition for the success of such an enlarged investment programme in the public sector was the strengthening of the public sector undertakings at the managerial and technical level. In addition, it also required the creation of an appropriate machinery in the Government for initiating and evaluating project proposals and for monitoring their implementation. To a considerable extent, the slow progress in investment in the public sector can be attributed to the delay in the building up of the requisite administrative, technical and managerial capabilities to cope up with the task.

5.9. The outlay during the Fourth Plan is now estimated at Rs. 2700 crores in the public sector, against the Plan provision of Rs. 3050 crores; the major components are indicated below:

	(Rs. crores)	
	fourth plan	
	approved outlay	estimated expenditure
iron & steel	1053	867
non-ferrous metals	248	209
fertilizers	493	378
petroleum exploration and refining	303	307
petro-chemicals	77	82
coal	110	89
iron ore	88	80

5.10. While the pace of investment in some of the sectors like iron ore, petroleum and petro-chemicals has generally been satisfactory, this has not been so in respect of other sectors like iron and steel, non-ferrous metals, fertilizers and coal. The shortfall is in fact larger than as represented above, if account is taken of the escalation in project cost estimates.

5.11. A major reason for this has been the inadequate preparatory work. Feasibility studies in respect of several projects had not been completed well in time before the Fourth Plan commenced. Similarly, in the case of a number of minerals schemes, sufficient detailed investigations had not been undertaken, and as a result, the Ministries and the project authorities were engaged in the initial years of the Fourth Plan in formulating the new projects, and their implementation was delayed.

5.12. Apart from this late start, which, in turn, has resulted in many of the projects spilling over into the Fifth Plan, implementation of the projects already taken up also did not proceed according to schedule. Many of the projects in vital fields slipped substantially during the construction period, leading to escalation in cost, post-ponment of benefits and increased cost of production. Consequently, even in such projects where the original plan outlay has been fully realised, the physical performance has lagged behind.

5.13. As regards the private sector, the pace of new investment in the early years of the Plan was slow, reflecting the uncertainties that marked the period of recession. With the subsequent revival of the economy, there has been considerable investment interest as represented by the number of letters of intent and licences issued, assistance sanctioned by financial institutions, value of import licences approved etc. However, in spite of these encouraging trends, a review of the position in respect of some of the more important industries shows that whilst the total capacity covered by letters of intent/licences is substantially in excess of what is likely to be required, the progress in terms of implementation has been unsatisfactory.

5.14. A number of measures have been taken to correct these deficiencies. Relating to the private sector, these measures are :

- (i) In order to deal with the problem of sickness in industrial units, the Industrial Reconstruction Corporation of India Ltd. has been set up to assist units which have closed or which are threatened with closure.
- (ii) In January, 1972, a decision was taken to allow fuller utilisation of installed capacity by permitting production in excess of the licensed capacity, subject to certain conditions, in 54 selected industries, which list was further expanded to cover 11 more industries.
- (iii) In order to remove uncertainties, a modified industrial licensing policy was announced in February, 1973, defining *inter alia* the role of the larger houses and foreign companies in more specific terms.
- (iv) To expedite decisions on proposals from the private sector, a combined secretariat called the "Secretariat of Industrial Approvals" has been constituted in the Ministry of Industrial Development, with a time bound schedule for scrutiny of different aspects of such proposals like Industries Act licensing, capital goods licensing and foreign collaboration approvals. Equally important, time limits for taking effective steps on licences and letters of intent would be more closely adhered to and those on which progress is unsatisfactory would be promptly revoked.

5.15. Relating to the programmes of the public sector, the following steps have been taken :

- (i) A high level committee has been set up to go into the problems of public sector undertakings, and to make recommendations to improve their performance. This committee has already submitted reports in respect of a number of public sector undertakings. The recommendations made by the committee cover such areas as the mode of selection of top management, organisational structure, manning at the corporate and plant level, improvement in operation and maintenance, industrial relations, training, personnel management. The implementation of these recommendations has already brought about a measure of improvement in some of the public sector undertakings. Proposals for the more effective functioning of the Bureau of Public Enterprises are also being considered by the Committee.
- (ii) To facilitate and expedite the examination and approval of projects in the public sector, a Public Investment Board has been set up.

- (iii) A high level monitoring and evaluation unit has been constituted in the Planning Commission. Its responsibility will include, *inter-alia* a regular review of implementation and production performance of public sector projects, in consultation with concerned departments of Government so as to assist in the necessary coordination and implementation of such projects.

5.16. Certain other steps have also been taken in pursuance of the broad policies laid down in the Fourth Plan. These are :

- (i) The MRTP Act was brought into force from June 1970 with a view to curbing concentration of economic power.
- (ii) Guidelines have been formulated governing participation by the public sector financial institutions in undertakings assisted by them.
- (iii) As part of the policy for the promotion of the small scale sector, a total number of 124 industries have been reserved for exclusive development in this sector.
- (iv) In pursuance of the policy of dispersal of industries, backward districts have been selected for the purpose of concessional finance from institutions, and an investment subsidy by the Central Government.
- (v) A scheme for transport subsidy has been initiated for industries located in Jammu and Kashmir, States and Union Territories in the North Eastern Region, Himachal Pradesh and the hill districts of Uttar Pradesh.

5.17. In taking an overall view of the Fourth Plan, it may be mentioned that while the targets, as envisaged in the Plan, have not been fulfilled and there have been significant shortfalls in many industries, progress in others has not been altogether unsatisfactory. There has been a substantial increase of production in a number of industries like alloys and special steels, aluminium, paper, automobile tyres, petroleum products, electronics, machine tools, tractors and heavy electrical equipment. The turnover of manufacture in the public sector is expected to increase from Rs. 1345 crores in 1968-69 to over Rs. 3000 crores in 1973-74. The industrial base has also been further expanded and greater degree of sophistication and self-reliance has been achieved. Many industrial products have been produced for the first time. Several of the projects in sectors like steel, non-ferrous metals, fertilizers, tractors, plastics and rubber taken up during the Fourth plan will add significantly to capacity and production during the early years of the Fifth Plan.

II

FIFTH FIVE YEAR PLAN

Objectives and Strategy

5.18. The programmes of development in the industrial and mineral sector during the Fifth Plan have been formulated keeping in view the twin objectives of self-reliance and growth with social justice.

Following these considerations, the plan for the industrial and mineral sector, aiming at an annual growth rate of 8.1 per cent, envisages a pattern of investment and production that lays emphasis on the following :

(i) *Rapid Growth of the Core sector Industries* : The rapid development of the core sector industries is vital for a sustained growth on a long-term basis. These industries contribute to significant import savings and thereby lend strength to the economy. Accordingly, high priority is attached to expansion in steel, non-ferrous metals, fertilisers, mineral oils, coal and machine building.

(ii) *Export Production* : The substantial increase in export earnings envisaged in the Fifth Plan calls for the rapid diversification and growth of exports of manufactured goods. The industrial programmes provide on a selective basis, surplus capacity required for exports.

(iii) *Adequate Supply of Mass Consumption Goods* : In order to provide an adequate supply of mass consumption goods, the industrial programme includes a substantial expansion of production for essential commodities like cloth, edible oils and vanaspati, sugar, drugs and consumer durables like bicycles. Furthermore, the production pattern in these industries would be so adjusted as to cater to those varieties required for mass consumption, at prices which are within the reach of the poorer sections of the population. The production programme will be supported by appropriate distribution arrangements.

(iv) *Restraint on the Production of Inessential Goods* : The growth of production of inessential goods, except as required for exports, will be severely curbed during the Fifth Plan. Measures are also envisaged to prevent the diversion of scarce materials for the production of such goods. The pattern of production envisaged in the Fifth Plan fully reflects this approach.

5.19. The industrial programmes are so conceived as to achieve the other socio-economic objectives of diffusion of ownership, maximisation of employment, dispersed growth of industries and upgradation of scientific and technological capabilities through :

(a) *Encouragement of Village and Small Scale Industries* : The Fifth Plan has assigned an important role to production on a decentralised basis through the further development of small scale industries. Except in circumstances where technological considerations limit the choice to capital intensive techniques, expansion of production will be achieved substantially through employment intensive methods. In addition to 124 industries, the future development of which has been exclusively reserved for growth in the small scale sector, an intensive programme for the development of ancillary industries, as feeder industries to large scale units, is envisaged. A substantial outlay has also been provided for the expansion and promotion of other traditional and small industries like handlooms, handicrafts and sericulture. Apart from generating incomes on a decentralised basis and the growth of widely diffused

entrepreneurship, village and small industries are also expected to make an appreciable contribution to additional exports during the Fifth Plan.

(b) *Development of industrially backward areas* : Special attention will be devoted to the development of industrially backward areas. The scheme for concessional finance and subsidies initiated in the Fourth Plan would be continued. In the last budget, provision has also been made to allow a deduction equal to 20 per cent of the profits derived by the industrial undertakings set up in the backward areas in computing its taxable profits for a period of 10 years. It is, however, realised that the provision of such concessions and subsidies would not, by itself, bring about the desired results.

The main constraints in the industrial development of backward regions are that the strategy for the development of these areas has not been completely mapped out in terms of the inherent problems which have accounted for industrial backwardness and the organisational arrangements necessary to spearhead and support the industrial development programme in backward areas both at the Centre and in the States are inadequate. An integrated approach covering the creation and expansion of basic infrastructure facilities and the provision of an institutional framework to coordinate the essential components of the industrial development programmes constitute the basic prerequisites for the more rapid industrial growth of the backward areas.

In the Fifth Plan it is, therefore, proposed to create an appropriate machinery that is capable of identifying industries suited to the needs and potentialities of the backward areas through techno-economic surveys and feasibility studies; undertaking integrated planning and development of the infrastructure, such as roads, water supply, power etc. in selected growth centres located in the backward areas and providing a package of financial, marketing and other services to potential entrepreneurs for setting up new units in the backward areas. In the execution of such a programme, the concerned State level agencies have necessarily to be fully involved and committed, and indeed a major part of the resources and efforts in implementing such a programme must be provided by the State Governments/agencies. The exact nature of the machinery, both at the Central and the State levels, to be used/set up for this purpose is under consideration. A special provision has been made in the Central Plan to initiate and support programmes drawn up on the basis of such an approach and to assist the State Governments/agencies in the industrial development of the backward areas.

The emphasis placed on accelerated survey of industrial resources and the promotion of agro-industries would also substantially benefit the extension of industrial developments to backward areas.

(c) *Application of Science and Technology to Industrial Development* : An important component of self-reliance is the ability to conceive, design, construct and operate industrial projects in an efficient manner. This would require the development and application of science and technology to the immediate

development needs of the economy. A conscious attempt has been made during the Fifth Plan to integrate the programmes of research, design and development with the programmes of economic development in different sectors, including industries and minerals. The scientific and technological needs of each sector of industry have been identified and provision made for schemes of research, design and development.

5.20. The objectives of industrial growth, as set out above, are proposed to be achieved by means of :

- (i) the maximisation of output from existing capacity;
- (ii) Speedy completion of projects already taken up for implementation;
- (iii) technological improvements and expansion of existing units where substantial additional production could be achieved expeditiously;
- (iv) the creation of new capacity in accordance with the priorities in the Plan, and
- (v) the initiation of advance action on long-gestation projects keeping in view the requirements in the Sixth Plan.

Policy Framework

5.21. It is important to provide an appropriate policy framework conducive to the realisation of investment and production programmes in the Plan. The more important elements of the proposed policy framework for the Fifth Plan are discussed below:

5.22. *Industrial policy* : The Government have reaffirmed that the Industrial Policy Resolution of 1956 will continue to govern the direction of industrial policy during the Fifth Plan. Accordingly, the programmes in the public sector have provided for the expansion of industries in Schedule 'A' of the Industrial Policy Resolution. The public sector will also make a significant contribution to the expansion of capacity in essential consumer industries like cement, paper, drugs and pharmaceuticals and textiles. The co-operative sector will be further encouraged and assisted, particularly in the development of additional capacity in agro-based industries and mass consumption goods. At the same time, the private sector will have a useful role to play in contributing to additional production subject to the priorities and objectives of the Fifth Plan.

5.23. *Industrial licensing policy* : The industrial licensing policy for the Fifth Plan was set out in February, 1973. Industries which are open, along with other applicants, for the participation of larger industrial houses and foreign companies have been defined. These include the core industries of importance to the national economy in the future, industries having direct linkages with such core industries and industries with a long-term export potential. Larger houses and foreign concerns will be eligible to participate in and contribute to the establishment of these industries, along with other applicants, provided the item of

manufacture is not one that is reserved for production in the public sector or in the small scale sector. Larger houses and foreign companies will ordinarily be excluded from the industries not specified above, except where production is predominantly for exports. Government policy will continue to be to encourage competent small and medium entrepreneurs in all industries. Such entrepreneurs, along with cooperatives, will be encouraged to participate in the production of mass consumption goods, with the public sector also playing an increasing role. Other investors will be allowed to participate in the production of mass consumption goods only if there are special factors such as sizable economies of scale resulting in reduced prices, technological improvements, large investment requirements, substantial export possibilities or as part of modernisation.

5.24. *Foreign collaboration policy*: The role of foreign collaboration, both in regard to technical collaboration and investment, must derive at all times from the necessities of the country's developmental requirements. Foreign collaboration must serve to supplement and accelerate the development and utilisation of indigenous technological and production capabilities in a manner which advances the country's efforts to attain overall self reliance as rapidly as possible. In other words, the objective has to be to move towards a position in which the country is not merely a recipient of foreign technology but is also capable of exporting know-how in certain fields to bring about a measure of balance.

5.25. (a) *Technical collaboration*: The approach towards technical collaboration should be an integral part of the total technological strategy for the Plan. This strategy envisages the fashioning of a mix of imported and indigenous technologies in which the proportion of the latter must increase with time. The generation of the indigenous components of this mix is one of the prime objectives of the Science and Technology Plan. Technologies so developed indigenously must be properly evaluated against competing technologies available abroad, and on being found suitable, must be utilised. Towards this end, if it becomes necessary to invest in pilot plants or prototype equipment, the NRDC and the nationalised banks must play their full role.

5.26. At the same time, there will be cases requiring the import of technology, because of the non-availability of suitable indigenous technology, within an acceptable time frame. Once the need to import technology has been established as being of overall advantage to the country, a careful and systematic evaluation should be made both of alternative foreign technologies and alternative modes and terms of acquisition, e.g., the purchase of designs or purchase of know-how only for combination with domestically available engineering and manufacturing capabilities. purchase of technology on a one shot basis, or a technical collaboration agreement covering a limited period

of time. Some of the important considerations on the basis of which both the choice of technology and its mode of import should be made would be net foreign exchange outgo, export potential, characteristics¹ of the technology and appropriateness to our conditions, the access of Indian engineers to the collaborators' design and research activities, freedom to select equipment and raw materials and to decide on the pace of technological development. With the development of a good base for the manufacture of indigenous equipment, it has now become possible to purchase technology without this being tied to the purchase of equipment. It is of great importance and urgency that institutional forms and personnel with the relevant skills are identified and employed on this task of selecting foreign technology as also their mode of import.

5.27. In important cases, every effort should be made to involve fully the relevant design engineering organisations/consulting organisations and R & D laboratories in the import of technology. With adequate advance preparation, this procedure should not militate against the timely completion of projects, a matter of the highest importance. Every effort should also be made to ensure that the collaboration agreement permits sub-licensing viz., the use of such technology by other entrepreneurs and units. Further, it would be necessary to ensure that simultaneously with its imports, a specific programme is formulated to not only assimilate and adapt the technology, but undertake R & D for improving it. Such programmes must then be closely monitored.

5.28. Import of repetitive technology should be avoided as far as possible. A number of different mechanisms could be used for this purpose. Where the import and assimilation has already taken place, all possible measures including appropriate incentives, should be taken to promote 'horizontal' transfer of that technology to other enterprises which wish to make the product concerned. As for prospective import of technology, in cases involving large plants and major investments, detailed forward planning of productive capacity should be carried out, particularly where the Plan indicates the need to set up a number of plants in order to meet the demand. This should be followed by proper selection of the technology to be imported. Such selection should be done, to the maximum extent possible, with the full involvement of the relevant design engineering and R and D laboratories. The resulting advantages of standardisation of raw materials, plant and equipment and the economies which flow from it, merit adoption of this procedure atleast in a few selected areas to begin with. In adopting the above approach, it would be necessary to take into account the desirability of allowing the requisite degree of competition between imported technologies so as to prevent a situation, which, in effect, gives a monopolistic position to a particular overseas technology and to safeguard against obsolescence.

¹ By this is meant. social characteristics (employment potential, environmental effects); economic characteristics (investment needed, operating costs, sales receipts) and technical characteristics (efficiency, optimality from the point of view of design, operation and maintenance under our conditions and extent of utilisation of indigenous raw materials and intermediates),

5.29. All technology import agreements must allow full use of Indian equipment, design engineering and other consultancy services and the application of Indian industrial and other standards. What is necessary, and what the technological capability we have already developed makes possible in many areas, is selective import of only some of the elements of technology e.g. process know-how and foreign experts in sharply defined areas, and combining these with other elements e.g. engineering and equipment to form a total technological package. Only in this way can technologies suitable to our fabricating facilities, operating and maintenance conditions and raw/intermediate material be evolved. It is, therefore, not only unnecessary but is, in fact, undesirable to import technology in complete 'packages'.

5.30. *Foreign Investment* : The policy in respect of foreign capital participation is highly selective and such participation is generally permitted in those areas where the technological gap cannot be filled by indigenous technology. Where such participation is permitted, it is normally not to exceed 40 per cent. Under the recent amendment to the Foreign Exchange Regulation Act, the activities of foreign branches and existing companies in which foreign holdings are more than 40 per cent will come up for review, so as to bring them in line with our objectives and priorities. In balance of payment terms, foreign investment is an expensive form of transfer of technology ; nor is the quantum of foreign investment significant in relation to the country's total import bill. However, foreign investment may be necessary in certain cases.

5.31. Foreign investment will be justified when know-how needed in a particular field of high priority is available only through equity participation, or it is an area where continued access to essential technological improvements is necessary and cannot be secured by any other means. In certain cases foreign equity participation might also enable or promote exports which may not otherwise take place. However, each such case will need to be examined in terms of the net inflow of foreign exchange, assurances in regard to the continuity of such exports on a long-term basis, and the alternative choices available in terms of costs and benefits. The selective policy in regard to foreign investment should be continued and subjected to the foregoing criteria.

5.32. The conditions under which technical collaboration will be permitted have already been discussed. The same approach should be applied where the transfer of technology takes place through equity investment.

5.33. *Price policy* : When there are serious imbalances in supply and demand and social and economic considerations make it necessary to introduce price control, the policy objective has to be oriented to correct this situation by ensuring a rapid increase in the production of articles in short supply. The control on the prices of essential and basic articles should be so operated as to encourage investment and stimulate production.

5.34. In the Fifth Plan it is proposed that with respect to commodities under price control, the price policy would seek to provide a remunerative price so

as to direct investment funds to such industries. The level of prices will be fixed to reflect the production costs of new units and provide a reasonable return on investment. The price policy would also include a differential price mechanism, which while ensuring supplies for priority requirements at controlled prices, would allow the possibility of significantly higher market prices to be charged from non-essential consumers. This policy has been adopted in the case of sugar. It may be extended, in a discriminatory manner, to other industrial products. The rationale of this policy is that if a commodity has both essential and non-essential uses and the latter absorbs a substantial part of the total supply, the inessential uses may be discouraged by charging a high enough price. The success of this approach would require effective distribution arrangements that can prevent leakage from essential to inessential uses. The administrative requirements of this policy are such that it would be worthwhile to adopt it selectively and only for commodities which are mass consumption goods or essential intermediates.

5.35. *Credit policy* : The flow of institutional funds from the term-lending institution will be closely dovetailed with the priorities in the Plan. This will be ensured through appropriate guidelines to the financial institutions and will be facilitated with the constitution of the holding company covering all the term-lending institution in the public sector.

5.36. *Energy Policy* : A comprehensive policy for the development and utilization of energy resources is necessary in view of the significance of energy both in terms of its importance in supporting the growth of economy and the size of the production effort that it calls for. Government had, therefore, set up a Fuel Policy Committee to suggest an overall policy for the energy sector which would be designed to ensure that adequate and reasonably priced supplies of energy needed to sustain the desired rate of economic growth are available over time. The Committee's report on "Fuel Policy for the Seventies" indicates that the country is likely to be faced with serious constraints in the energy sector during the seventies unless remedial actions are initiated forthwith. The suggestions of the Committee have been kept in view in formulating the Fifth Five Year Plan proposals.

5.37. Over the last one year, there have been significant changes in the international oil situation. Prices of crude and oil products have increased beyond all anticipations and the availability of oil in the international market has also become increasingly difficult. This has further underlined the need for concerted action in the energy sector.

5.38. A review of the energy resources and trends in energy consumption reveals that the pattern of consumption has not been compatible with our resource endowments. In terms of resources, the country has adequate coal, other than for metallurgical requirements. Resources of metallurgical coal are in critical shortage. Oil from indigenous sources would be decreasing in proportion to the total requirements of oil products even on the basis of optimistic estimates. The potential for hydel power is considerable; but the long gestations involved in developing

such resources would limit the contribution from hydel resources during the seventies. Finally, the full potential for developing nuclear power based on thorium resources can only be reached around the late eighties or later when the fast breeder reactor technology becomes operational.

5.39. The pattern of growth of commercial energy consumption in the past shows that the rate of growth of consumption of oil which is relatively scarce has been more rapid than the rate of growth of consumption of coal.

5.40. The fact that nearly half of total energy consumption in the country comes from non-commercial resources like cowdung, vegetable waste and firewood consumed in the domestic sector adds another dimension to our fuel problem. Each of these resources has important alternate use which are profitable from the social point of view, but for the domestic user located in rural areas, they are available at zero cost. The difference between social and private costs here calls for corrective action.

5.41. The energy supply programme of the Fifth Five Year Plan has been drawn with care to give directional change to the pattern of consumption of the different fuels.

5.42. Coal production is proposed to be raised to 135 million tonnes by 1978-79. The order of increase envisaged is quite large and calls for massive investments which have been adequately provided for in the plan. The nationalisation of the coal industry has facilitated the formulation of an integrated production plan and further organisational reforms required to implement a large programme of this size are also underway. But the incremental benefit from coal production can be maximised only if adequate arrangements are made for the transportation of coal. Synchronised investment plans between the coal and rail transport sectors have been drawn up. To the extent possible, the burden on transport will be reduced through an increase in power generation capacity located at coal pitheads. In order to provide for the rational development of coal mines in the Bengal-Bihar area and to supply the needs of the energy deficit southern and western regions, coastal shipping of coal to the extent of 5 million tonnes has also been planned.

5.43. In drawing up the investment plan for the railways, due consideration has been given to the long-term national interest in electrifying the mode of traction to the maximum extent possible and to increase the capability of the railway system to meet the transport requirements of the Fifth Plan.

5.44. To conserve our meagre resources of metallurgical coal, a more rational pattern of utilisation of the prime, medium and blendable coals has been drawn up. To the extent necessary, the coals required for metallurgical use would be up-graded through washing. As a long-term solution to the problem of inadequate resources of metallurgical coal, research and development effort will be stepped up during the Fifth Plan by setting up a formed coke

plant in Orissa which would enable utilisation of the non-coking coals for metallurgical purposes.

5.45. To optimise the consumption and production pattern of petroleum products, fertilizer plants during the Fifth Plan period have been based on the use of fuel oil as feedstock and secondary processing facilities have been included for the Mathura refinery. The fuel oil demand has been allowed to increase on short-term considerations to an extent greater than is justified from the national point of view. Limiting the consumption of fuel oil only to sectors and areas where coal cannot be substituted at reasonable cost is implied in the projections of demand for fuel products during the Fifth Plan period.

5.46. As a long-term solution to our oil situation, oil exploration efforts are being stepped up and strategies for oil exploration are being looked into systematically on the basis of techno-economic criteria.

5.47. In the power sector, it would be in larger economic and social interest to increase the share of power production from hydel sources in certain areas; while it has not been possible to increase it significantly within the time span of the Fifth Plan sufficient action will be taken in the Fifth Plan to provide larger benefits in the Sixth Plan and beyond. In the immediate future, our reliance on thermal power stations for meeting the power demand has to increase. But in the light of past experience, careful attention has been paid to the linking of coal supply quantity-wise and quality-wise as well as in time of the requirements of power stations.

5.48. Some action towards correcting the irrational pattern of fuel consumption in the domestic sector has been attempted by providing for increased production of soft coke and by setting up a large commercial scale low temperature carbonisation plant at Singareni in Andhra Pradesh to augment the supply of soft coke to the southern region. All these are only selective efforts towards solving our energy imbalances. A more rational pattern of energy use which would include greater electrification of the railways, more intensive utilisation of water power, greater use of coal for fertilizer production, a considerably augmented contribution from nuclear energy and greater possibilities for obtaining liquid and gas fuels from coal will be possible only during the decade of the eighties. But for this, advance action has to be initiated in the Fifth Plan and this is being provided for.

5.49. As there are serious constraints likely to develop in the energy situation during the Fifth Plan, there is the need for coordinated action for developing energy resources, managing the imports of oil, production and distribution of all energy products and stepping up research and development in the right directions. In this context, a proposal to set up a high-level Energy Board to evolve coordinated and sustained action to meet the energy needs of the economy is under consideration.

5.50. *Industrial development and environment* : It has to be ensured that the pursuit of developmental goals does not lead to a reduction in the quality of life through deterioration in environmental conditions.

It is, therefore, necessary that in the rational development of industrial activity and in the utilisation of natural resources, due weight is given to the impact of such activity on the environment. Timely, specialised advice on environmental aspects can help in proper project design, in averting subsequent adverse effect on the environment, and in preventing the loss of invested resources.

5.51. Process industries like ferrous and non-ferrous metals, fertilisers, petro-chemicals, paper and pulp and cement generate a considerable degree of pollution. Wastes from these industries, in the form of water-borne effluents, atmospheric emissions and solids can be hazards to life, health and property. In most cases, technologies are already available which, at some additional expense, can be employed to reduce pollution. The costs for prevention of pollution will have to be considered an integral part of the project investment. Reduction in these costs can often be made by R & D, technological innovations and proper location of units.

5.52. In the sector of the economy concerned with developing non-renewable resources such as metallic and other minerals, particular care must be taken at both the extraction and the processing stages to minimise environmental damage. At the same time, the rapid consumption of these resources can lead to long-term problems. Such threats can be largely mitigated by a policy of planned utilisation and conservation on the one hand, and an accelerated programme of surveys and investigations to enlarge the availability of resources on the other. Policies and technologies for rational and efficient multiple use and for improved recycling of materials will have to be evolved and implemented.

5.53. In all these fields, the National Committee on Environmental Planning and Coordination, the National Committee on Science and Technology, the agencies concerned with resource surveys and other Government institutions are to play important roles. The NCEPC has been specifically set up to advise the Government and others on all matters relating to the environment. It is charged with the duty to make recommendations on the institutional, legislative and technological changes needed to preserve the quality of the environment. The NCEPC will be closely associated with all major investment decisions, so that the environmental aspects of such projects are fully taken into account. Moreover, the NCEPC will co-ordinate efforts to develop standards for the emission of pollutants and facilities to monitor them. It would also promote, in co-operation with the NCST, areas of research and development within the field of environmental studies. Legal and administrative measures will be instituted during the Fifth Plan to prevent environmental disruption. Laws covering water and air pollution are in the process of enactment.

5.54. *Centre-State projects* : The State Governments have an important role to play in the promotion of industries based on the exploitation of mineral, forest agricultural and other natural resources. Many industrial projects of this nature have already been taken up for development by the States, either in the

State public sector or through State Industrial Development Corporations. Apart from leading to the industrial development of the State concerned, some of these projects would also have importance from the national point of view. In the case of such projects involving financial and technological support of a nature which individual States may not be able to provide, participation between the Centre and the States could lead to a more rapid exploitation of natural resources. Industries of this kind are—cement, paper, raw materials for fertilizers, non-ferrous metallic ores etc. In the Fifth Plan, a beginning in the direction of Centre-State participation will be made, as for example, in the exploitation of rockphosphate in Rajasthan and the establishment of a nickel project in Orissa.

5.55. *Modernisation* : The study of some of the traditional industries has indicated that significant increases in production can be achieved by the existing units through modernisation. Since the per unit cost of output through modernisation (and the resultant expansion of capacity) may be expected to be lower than the per unit cost of production in the case of newly established units, an important role is proposed to be given to the programme of rehabilitation, modernisation and expansion of these industries. A detailed and well-conceived programme of rehabilitation, modernisation and expansion of these industries is being worked out. The appropriate institutional frame work to provide the technical, management and financial inputs for fulfilling the modernisation programme is also being examined.

5.56. *Economies of Scale* : The rate of growth and the volume of demand for several industrial products provide conditions favourable for taking advantage of the economies of scale in terms of lower investments and reduced costs of production through the establishment of plants of larger unit sizes. This would be facilitated through the technological base, consultancy and design engineering services and machine building industries already built-up in the country. Full advantage will be taken of these possibilities during the Fifth Plan period, consistent with the need for spatial distribution and decentralisation of industries. Arising from this consideration, larger unit size plants will be established in such industries where the benefits from economies of scale are considerable.

The possibilities of economies of scale are more prominent in the process industries; the scale-up of unit sizes is, therefore, primarily envisaged in these industries. Thus, the Fifth Plan envisages the establishment of single stream ammonia plants of 900 tonnes and 1350-tonnes per day capacity as compared to 600 tonnes units in the 4th Plan. Petroleum refineries are planned on the basis of 3 million tonnes capacity at Koyali and 6 million tonnes capacity at Mathura both on single stream. Advantage will also be taken of larger capacity blast furnances, L. D. converters and rolling mills in the steel industry. A fair proportion of the additional power capacity in the Fifth Plan will be based on thermal generating sets of larger sizes, i.e. 200 MW instead of 110/120 MW. The sizes of cement plants are being stepped up to 1,200 tonnes per day from 600 tonnes

per day. Several of the paper projects envisaged in the Fifth Plan are in the capacity of 200-tonnes to 250-tonnes per day. In many other industries like sugar and textiles, the average size of the units in the Fifth Plan will be larger.

5.57. *Raw-material planning* : One of the major problems of industry today concerns the availability of raw materials. The present lead time in obtaining replenishment of imported raw-materials, together with the uncertainty as to its availability, leads to a higher level of inventory than necessary, and therefore, to higher costs. Also, in many industries, proper production planning is not possible owing to uncertainties of raw-material availability.

5.58. While the foreign exchange constraint can not permit complete liberalisation of imports, it is necessary that a measure of continuity of supplies on a minimal basis is assured through forward planning by canalising agencies for purchases abroad, particularly with respect to bulk commodities.

5.59. *Management* : With the substantially larger programme envisaged in the Fifth Plan, the management capabilities in the public and private sectors will need to be strengthened through the induction of professional management. Although professional management has been introduced in some important private sector units, in general these units are managed by promoters themselves or by persons who have control over the funds invested but who do not always possess the requisite qualifications and forward looking outlook required for the orderly growth of the industry. In order that the private sector may play its designated role in the Fifth Plan programme of industrial development, it is necessary that steps be taken for the introduction of professional management in the private sector industry.

5.60. In the public sector, steps have already been initiated for the introduction of professional management. These steps will be pushed forward speedily and will be supported by other measures including the training of personnel and career development.

5.61. *Industrial relations* : A pre-requisite to the successful performance of the industrial sector is the maintenance of a climate of healthy industrial relations. To this end, a fresh approach to industrial relations will be necessary. This will entail three distinct steps within a broad policy framework.

5.62. In the first place it will be necessary to provide an equitable system for sharing the gains of higher performance. One effective approach will be to broad-base the reward structure of the industrial employees in terms of wage and non-wage benefits on the one hand, and on the other, to link this structure more directly to the performance records in industrial enterprises. In evolving such a system it is essential to coordinate efforts at all levels, national, state and local.

5.63. There will, however, be the need for obvious safeguards. Employees in the unorganised and depressed sectors of industry will require protection

of their earnings. In addition, such an equitable system should also take into account the interests of the poorer sections of the consumers

5.64. Secondly, in order to sustain conditions of peace for higher performance, an improved institutional framework for effective bargaining relationship between the representatives of employees and the management would need to be created. This would involve the definition of conditions for the determination of the representative character of the bargaining agent too. Bipartite relations would require to be given a predominant role in establishing a desirable state of industrial relations.

5.65. Voluntary arbitration could be the next essential step in the settlement of disputes and resolution of conflicts. The conciliation machinery at the Centre and in the States would have to be geared up and professionalised to underpin the culture of voluntary arbitration.

5.66. The role of third party intervention would require sufficient modification, consistent with the spirit of bipartite relations, voluntary arbitration and expeditious settlement of industrial disputes and unresolved conflicts.

5.67. Thirdly, attention will need to be given to a systematic programme of re-education of employees at all levels in order that the spirit of industrial democracy can be cultivated. It would be essential on the one hand to protect society from the likely adverse effect of a collusive relationship between a representative union and management and on the other, to promote mutual trust and accommodation between the two organised parties to accelerate growth with social justice through the forms and processes of industrial democracy.

5.68. As an essential step, shop councils and such other forums involving the participation of representatives of employees and management will need to be created with adequate authority and status to deal with issues and problems on which convergence of views and mutuality of understanding are necessary in the interests of a sustained production culture (The role of these forums would not be part of bargaining relationship mentioned earlier). The accumulated experience from various countries indicates that active participation in decision-making forums helps in re-structuring the attitudes and values of employees in a positive manner.

5.69. Yet another requirement would be to create an effective supportive system in each industrial enterprise so as to establish long range policies and programmes for the development of internal human resource consistent with the overall national priorities. Such a plan of action will cater to the needs of all employees and would include the following activities:

- (i) Manpower planning, recruitment, selection and induction;
- (ii) Appraisal system, career planning, training and development and promotion.

It is felt that an open personnel policy of this kind will facilitate the attitude re-orientation programme of employees at all levels.

Outlays

The overall outlays envisaged in the Fifth Plan in the organised industry and mining sector are as below :

Public Sector

- (i) Centre Rs. 7,829 crores
 (ii) States and Union Territories Rs. 499 crores
 Total Rs. 8,328 crores

Private and Coop. Sectors Rs. 5,200 crores
 Grand Total : Rs. 13,528 crores

These outlays include new investments for the expansion of capacity and also provision for replacement, modernisation and additions to inventories.

The pre-dominant role of the public sector is reflected in the relative share of the public sector amounting to approximately 62 per cent of the total.

Public Sector Programmes

5.70. The list of projects included in the Central public sector is given at Annexure II. Of the total outlay Rs. 2,812 crores are on account of continuing projects from the Fourth Plan and the balance of Rs. 4,217 crores is for new projects, including limited investments by way of advance action for the Sixth Plan. These figures represent new investments and do not include replacement outlays and additions to inventories, which are estimated to amount to Rs. 200 and Rs. 600 crores respectively.

5.71. The broad break up of the Central investment in the public sector by important groups of industries, is indicated below :

	(Rs. crores)
steel	1622
fertilisers	1149
coal	737
oil refining and distribution	500
oil exploration	436
machinery and engg. industries	496
non-ferrous metals	443
petro-chemicals	284
iron ore	133
paper & news-print	174
cement	124
textiles	55
ship building	160
electronics	70
other industries	646
<i>total of new investment</i>	7029
replacement outlay	200
addition to inventories	600
<i>total</i>	7829

5.72. The bulk of the investments, as will be seen, are in high priority industries like steel, non-ferrous metals, fertilisers, coal, petroleum and industrial machinery. The programmes in the public sector, as

envisaged in the Fifth Plan, will further strengthen the share of the public sector in the core industries. It would also contribute substantially to savings in imports of critical materials, which currently account for a significant share of the total foreign exchange expenditure.

5.73. Included in the Central sector outlay is an amount of Rs. 210 crores for supporting science and technology programmes in the industry and minerals sector. This amount will take care of the total capital expenditure on the science and technology programmes and the revenue expenditure on account of new R & D, design engineering and other scientific/technological institutions to be set up during the Plan. Further separate arrangements are being made for financing the capital cost for the development of prototypes of large value, e.g. 500 MW thermal generating sets, the overhead expenses on such prototypes being met by the enterprises concerned. The capabilities on the technological front will be substantially enhanced with the implementation of these schemes.

5.74. The Central public sector outlay includes funds for mineral exploration, assistance to plantation programmes and also for promotional institutions like the Indian Standards Institution and National Productivity Council.

5.75. The provision of outlay for the States and Union Territories amounting to Rs. 499 crores, is largely for supporting activities of the industrial development corporations and the state finance corporations. A major part of such activities is directed towards providing financial assistance and seed capital for new units, and the expansion of State public sector projects in industries like textiles, cement, and sugar. State programmes also include provision for the extension of basic infrastructure facilities for the growth of medium and large industries.

Private & Cooperative sector

5.76. The investment outlay of Rs. 5,200 crores in the private and cooperative sectors is based on a rough assessment of the requirements of additional investment for achieving the targets of production envisaged for various industries and of the resources likely to be available for investment in the private and cooperative sector. It is necessary to ensure that resources are canalised in the desired direction in accordance with the priorities of the Plan. The policies and measures proposed to be adopted for this purpose have already been discussed.

5.77. Within the framework of priorities and targets for the Fifth Plan, the private and cooperative sector has a useful and important role to play. Substantial expansion in several industries in which the private and cooperative sector has already built up a large base, will be necessary. In particular, a significant proportion of the expansion of capacity and production in industries, like cement, sugar,

paper, textiles, industrial machinery, transport equipments, light engineering industries, chemicals, drugs and pharmaceuticals, rubber goods, glass and ceramics is planned in the private and cooperative sector. In some of these industries like sugar, textile and fertilisers, a large expansion of capacity through the cooperative sector is proposed.

Targets

5.78. Annexure III sets out the capacity and production targets for 1978-79 for selected industries. These targets are based on detailed studies carried out by the Task Forces, specially constituted by the Planning Commission for this purpose, modified on the basis of *inter-se* priorities, and are internally consistent within the framework of the Plan.

5.79. The production targets postulated for the Fifth Plan provide for 8.1 per cent annual growth rate in industrial production, consistent with the overall growth rate of 5.5 per cent for the economy. In several core industries like non-ferrous metals, fertilizers, coal, the investment provided and the capacity expected to be achieved are capable of yielding a substantially higher level of production than the targets assumed in the Plan. Every effort will need to be made to maximise output from these investments through fuller utilisation of capacity. To this extent, not only the overall rate of growth can be better than envisaged in the Plan, but it would also provide a cushion for any unforeseen development of an adverse character, from the point of view of the balance of payments. To the extent targets of production have been under-pitched in this manner, it provides greater assurance of achieving the rate of growth proposed in the Plan.

Industrial programmes

5.80. The salient aspects of the industrial programmes included in the Plan are dealt with in the following paragraphs :

Iron and Steel

5.81. The domestic demand for finished mild steel is estimated at about 10 million tonnes by 1978-79. Against this, the production expected from the integrated steel plants is placed at 8.8 million tonnes in the last year of the Fifth Plan. Taking into account the output from electric steel units and the rerollers, the total production of saleable steel is expected to be 9.4 million tonnes. The deficit will have to be met through imports, which will continue throughout the Fifth Plan.

5.82. The major programmes in regard to mild steel are : (i) expansion of Bhilai to 4 million tonnes, (ii) expansion of Bokaro on a continuous basis to 4.75 million tonnes, and (iii) significant progress in the implementation of the Vishakhapatnam and Vijaynagar steel projects. In addition, the proposal for expansion of TISCO would also be considered after the receipt of the techno-economic study, which has been commissioned. The Fifth Plan also makes pro-

vision for technological improvements in the existing steel plants with a view to increasing their productivity and also for the production of diversified products like CRGO sheets, special plates and seamless tubes. As advance action for the Sixth and subsequent plans, studies will be undertaken on further expansion of Bhilai, Bokaro and other plants.

5.83. As regards alloy and special steels, the programme envisages the setting up of Salem Steel Project to manufacture certain categories of special steels, the fuller utilisation and such expansion as may be required of the Alloy Steel Plant, Durgapur and the provision of additional and balancing facilities to maximise production of this category of steels in the plant of the Mysore Iron & Steel Ltd. In addition, expansion of capacity in the private sector units is also contemplated.

5.84. The projected level of production for 1978-79 is based on a substantial improvement in the utilisation of capacity from existing steel plants. The overall utilisation of capacity of integrated steel plants during 1973-74 is expected to be around 75 per cent. The problems connected with the under-utilisation of capacity have been analysed and remedial steps have been initiated. Based on the recommendation of the Action Committee on Public Enterprises, provision is being made for balancing facilities and technological improvements. With regard to external factors, such as, shortage of coal, inadequate power supply, and transport bottlenecks, special measures are being taken to remedy the situation. The programme for increasing the production of prime and medium coking coal is being speeded up and the availability of washed coal augmented. Captive power generation facilities are being provided at Bokaro and Bhilai.

5.85. The desirability of setting up/expansion of captive power facilities at other steel plants will also be examined. In addition, the feasibility of setting up gas turbines, on an urgent basis at these two steel-plants, to tide over the short-term problems of power shortage is under consideration. With these measures, utilisation of existing capacity will be stepped up to about 90 per cent. Every effort will also be made to attain a reasonable level of production from the additional capacity to be created in the Fifth Plan. As a result of the programmes included in the Fifth Plan the capacity for mild steel is expected to be stepped up to 11.7 million tonnes of saleable steel and of alloy and special steels to 0.98 million tonnes by 1978-79. The overall provision for the steel programmes in the public sector is Rs. 1,622 crores.

5.86. The Steel Authority of India Ltd. which has been recently constituted, is responsible not only for the development of the steel industry but also the major inputs for the industry e.g. coking coal, and iron ore. Apart from coordinating the overall developmental programme of the industry, other important functions like technical consultancy and projecting, construction of steel plants, research and development are also to be carried out by its subsidiary companies. With this it is expected that a coordinated and synchronised development of the industry will be achieved.

Non-ferrous Metals

5.87. The high priority attached to the development of non-ferrous metals is reflected in the increased financial allocation as also the number of new projects being undertaken in the Fifth Plan. These are expected to lead to substantial additions to the production of copper, lead, zinc and aluminium. The public sector would play a major role in the development of non-ferrous metals. While the production of copper, lead and nickel would be exclusively in the public sector, the private sector will contribute to the production of aluminium and zinc.

5.88. In spite of the accelerated production programme, supply from domestic sources would continue to be short of demand except in aluminium. While in the short-term there is urgent need to increase the tempo of exploitation of the deposits where mineable reserves have been established, it is of equal importance to step up the exploratory effort so as to appreciably increase the known limited resources of ores. To ensure accelerated development of non-ferrous metals, there is need to adopt advanced techniques of exploration and exploitation which could compress the period of discovery of new deposits on the one hand and of their exploitation on the other. Whilst every effort is to be made to match production from mines with concentrator and smelter capacities, in some specific cases there may be an advantage in commissioning new smelter capacities ahead of mines and base their utilisation on imported concentrates.

5.89. In the light of the vital importance attached to the production of non-ferrous metals, special measures have to be taken to ensure the availability of power on a priority basis. The large requirements of power for the aluminium industry require to be given special attention.

Aluminium

5.90. The domestic demand for aluminium is estimated at 370,000 tonnes by 1978-79. The programme of production contemplated in the Fifth Plan would be adequate to take care of this requirement in full.

5.91. The additional production during the Plan will be achieved primarily through the completion of the public sector Korba plant which will contribute to a production of 100,000 tonnes per annum, and the expansions contemplated in the private sector. The Plan also makes provision for substantial investments on the Ratnagiri project, which will yield additional metal production of 50,000 tonnes per annum in the early years of the Sixth Plan.

Copper

5.92. The major programmes of production of copper metal are the utilisation of the smelter capacities at Khetri in Rajasthan and Ghatsila in Bihar. Together, these smelters which would have a capacity of 57,000 tonnes per annum, are expected to contribute to a production of at least 45,000 tonnes of copper metal by 1978-79. In order to achieve this, an accelerated programme for the development of the mines to

exploit the proved deposits will be undertaken. These include the stepping up of mining activities to achieve a level of 10,000 tonnes of ore per day at Khetri-Kolihan in Rajasthan and the acceleration of the development of several other mines including Rakha and Surda in Bihar.

5.93. Another important programme relates to the exploitation of the Malanjkhand ore deposits, which are amenable to open cast mining and are expected to eventually sustain a production of 30,000 tonnes of metal per annum. Expeditious development of this deposit would make it possible to expand copper production in the early years of the Sixth Plan.

Zinc

5.94. It is proposed to increase production of zinc from 28,000 tonnes in 1973-74 to 100,000 tonnes by 1978-79. In the public sector, the major programmes consist of the expansion of the Debari smelter to 45,000 tonnes and the establishment of new smelters at Visakhapatnam and Rajpura-Dariba in Rajasthan. These two new smelters would together have a capacity of 80,000 tonnes per annum. In addition, it is also expected that the zinc smelter at Always in the private sector will be expanded to a capacity of 40,000 tonnes per annum. The total capacity for the production of zinc metal at the end of the Plan is thus estimated to be 165,000 tonnes.

5.95. The smelters at Visakhapatnam and Always are based on imported concentrates. The other smelters will be based on indigenous ores, the production of which is to be augmented. The Fifth Plan programmes make adequate provision for the development of mines and for the expansion of the concentrator capacity. The more important mines which would contribute to the increase in the metal production are the Debari, Baroi Zawarmala and Dariba-Rajpura in Rajasthan. Full benefits from the new mines which are expected to be commissioned towards the end of the Plan would accrue in the early years of the Sixth Plan. While it is important to proceed rapidly with the development of mines and concentrator capacity, it might be necessary in the early years to base a part of the production on imported concentrates.

Lead

5.96. Lead production is at present confined to a public sector smelter with a capacity of 6,000 tonnes. The programme of expansion of lead production included in the Plan will enable an output of 20,000 tonnes to be attained in 1978-79. This will be carried out through the expansion of mines in the Zawar area and the development of three new mines at Agnigundala in Andhra Pradesh, Sargipalli in Orissa and Rajpura-Dariba in Rajasthan. The Ambamata-Deri multimetal deposits extending from parts of Rajasthan to Gujarat are also expected to contribute to lead production, besides zinc and copper.

Nickel

5.97. The first major project for the production of nickel will be at Sukinda in Orissa with a capacity to produce 4,800 tonnes of nickel and 200 tonnes of

cobalt per annum. This project is expected to be commissioned by the end of the Plan.

Engineering Industries

5.98. Imports of machinery, components and spares constitute the single largest group of imports, amounting to approximately 25 per cent of the total import bill. Imports of machinery also form the major component of project aid. This dependence on imports/project aid has been an inhibiting factor in accelerating the pace of development in vital sectors of the economy. The creation of technological and physical capabilities for increasing the production of capital goods is, therefore, an important element in the drive towards self-reliance.

5.99. In this, substantial progress has been made in terms of the potential already created. The primary emphasis during the Fifth Plan is on the fuller exploitation of this potential through better utilisation of the existing capacity, diversification of production, and in filling up the gaps in machine building capacity, particularly for chemical plant equipment and metallurgical equipment. Related to this is also the programme for expanding design and development capabilities in the field of equipment design, through indigenous efforts as well as the induction of foreign know-how on a selective basis. In particular, the capabilities of the machinery manufacturing industry will have to be strengthened to meet the requirement for equipment of larger unit sizes needed by the process industries for achieving economies of scale. In this context, emphasis will need to be laid on the development of designs and prototypes of equipments of larger unit sizes, on a continuing basis. A substantial provision has been made for design and development programmes in the engineering industries.

5.100. The time cycle for the fabrication of heavy equipment is often long, requiring *inter-alia* the preparation of detailed designs and assembly of raw materials and components. In order that deliveries of such heavy equipments are available on schedule, it is important that orders are placed well in advance. In the past, the lack of such advance planning has often led to the need to resort to imports even though domestic capacity for fabrication was available. Equally important from the point of view of fuller utilisation of capacity and the maximisation of production of equipment is the need to ensure regular and smooth flow of orders. The somewhat erratic situation in the past, with inadequate orders at times followed by bunching, had also led to pressure for the import of equipment which could have been avoided. In the Fifth Plan, these deficiencies are proposed to be corrected to a substantial extent. The advance planning already undertaken in the context of the Fifth Plan has made it possible to work out, fairly accurately and in sufficient detail, the requirements of heavy machinery for all the priority sectors such as power, steel, fertilizers, coal etc. It is necessary that orders for such equipment are placed well in time and the organisations which have to place orders are put in a position to do so in terms of sanctions and funds. It is also essential that the steel bank which was set up to plan and stock critical sections of steel on an anticipatory

basis is fully geared to effectively discharge this function. If this is done, it would significantly contribute to smoother planning of production in the heavy equipment shops, reduce the delivery schedules and bring down costs of production through fuller utilisation of capacity.

5.101. As a result of these steps, a significant increase in the value of output of engineering industries from the estimated levels of Rs. 2,700 crores in 1973-74 to Rs. 5200 crores in 1978-79 is envisaged. Apart from significant import savings, the larger base of production will enable, an appreciable increase in the export of engineering goods, such exports being estimated at Rs. 400 crores in 1978-79. A substantial proportion of the additional exports would be in the form of "project" exports, engineering services being provided along with equipment supplies.

Heavy Electrical Equipment

5.102. There has been a significant and rapid rise in the output of heavy electrical equipment in the public sector projects of Bharat Heavy Electricals Ltd. and Heavy Electricals (India) Ltd. from Rs. 103 crores in 1971-72 to Rs. 218 crores in 1973-74. The output from these units is envisaged to be further increased in the Fifth Plan, reaching the rated capacity production at Bhopal, Ranipur and Hyderabad by 1975-76. The production of thermal generating sets is expected to be raised to 2.2 million K.W. and of hydro sets to 1.4 million K.W. by 1978-79. The sizes of thermal generating sets to be manufactured by the units of BHEL and HEIL have been standardised at 110 MW, 120 MW and 200 MW. It is proposed to set up a Foundry/forging facility at Ranipur to meet the critical requirement of castings and forgings for the production of generating sets. Matching capacity for power boilers has also been projected through the expansion of the Tiruchi Unit of BHEL and the private sector unit of A.C.C. Vickers Babcocks Ltd. With increased domestic production, the requirements of generating sets in the Fifth Plan would be substantially met from domestic sources. The programmes in the public sector also include expansion in traction motors, power transformers and switch gears and control gears.

Metallurgical Equipment

5.103. On the basis of an assessment of the continuing requirements of heavy metallurgical equipment on a long-term basis estimated at 90,000 tonnes per annum, the programmes for the Fifth Plan contemplate in addition to the realisation of full rated capacity of the heavy machine building plant at Ranchi, the establishment of a new unit with a capacity of 20,000 tonnes per annum for the production of rolling mills. This, along with the supplementary capacity that exists in units like the MAMC, Jessops and units in the private sector for technological structurals and simpler types of equipments would enable the capacity of the steel industry to be stepped up at the rate of 2 million tonnes per annum, largely based on domestic equipment. With respect to the equipment required for the aluminium industry, substantial degree

of self-sufficiency has already been reached. For other non-ferrous metal industries too, a large part of the capital goods could be met from within the country provided design parameters are obtained from abroad.

Chemical Plant Equipment

5.104. The substantial expansion of fertiliser, chemical and petroleum industries during the Fifth and subsequent plans underlines the importance of developing rapidly the capabilities for fabricating chemical plant equipment and machinery. The facilities available at the Bharat Heavy Plates and Vessels, Visakhapatnam have made a significant contribution in this direction. Based on an assessment of the long-term requirements of chemical plant and equipment, the Fifth Plan provides for further expansion of BHPV, Triveni structurals and Structural Engineering Works. In addition, expansions of the existing smaller units in the private sector are also envisaged. A total capacity of 45,000 tonnes per annum for heavy fabricated equipment is expected to be achieved by the end of the Fifth Plan, which will substantially meet the demand for such equipment by that time.

5.105. A major gap in the field of chemical plant and equipment relates to the production of heavy duty pumps and compressors. With the establishment of manufacturing facilities for these at Bharat Pumps and Compressors Ltd., Naini, and at Bharat Heavy Electricals Ltd., Hyderabad, this gap has been substantially met. Production at these units has commenced and will be substantially stepped up during the Fifth Plan.

Machine Tools

5.106. In spite of the fairly rapid progress in the development of machine tool capacity, there is still a fairly large import of a sophisticated range of machine tools. The programme of diversification of Hindustan Machine Tools in the Fifth Plan includes the production of specialised machine tools, covering N.C. adaptations. In addition, the range of production of machine tools is also expected to be broadened in the private sector. Prospects of increasing the exports of machine tools are bright, and sustained efforts will have to be made to reach a reasonable level of exports. The output of machine tools of all types in 1978-79 is placed at Rs. 137 crores as compared to Rs. 65 crores in 1973-74. A large programme of design and development, centred around the Central Machine Tools Institute, Hindustan Machine Tools, and private sector units will be mounted during the Plan.

Agricultural Machinery

5.107. A detailed survey of the demand for tractors carried out by the National Council of Applied Economic Research has estimated the requirements of agricultural tractors by 1978-79 at about 80,000 nos. The programme in the Central sector is limited to the Pinjore factory of the Hindustan Machine Tools for the production of 12000 tractors. This unit has already gone into production and will progressively increase its output in the range of 20-60 horse

power tractors. In addition, a number of new units and the expansion of existing undertakings have been approved. With the implementation of these schemes the requirements of tractors will be fully met from domestic production. It would be desirable to bring about a measure of rationalisation of the programme of these units to enable the standardisation of tractor component parts.

5.108. The demand for power tillers is placed at 25,000 nos. by 1978-79. The State Industrial Development Corporations/Agro-Industrial Corporations have programmes for undertaking the production of power tillers, in addition to the schemes approved in the private sector. The desirability of undertaking the production of self-propelled harvester combines is under study.

Transport Equipment

5.109. Based on the projections of demand of passenger and freight traffic, and taking into account export possibilities, it is estimated that the production of commercial vehicles will have to be raised to 1,10,000 in 1978-79, inclusive of 25,000 to 30,000 nos. of buses and double deckers. While it is expected that the schemes already approved would broadly be able to take care of the requirements of light commercial vehicles, additional capacity would be needed for medium and heavy vehicles, in order to meet this requirement, it is proposed to expand the vehicle factory at Jabalpur to achieve a production level of around 25,000 by 1978-79. The provision required for this purpose has been made in the Plan.

5.110. As regards passenger cars, the demand for which has to be kept within limits, a modest increase in production to 60,000 nos. per annum by 1978-79 is contemplated. This would be achieved through the implementation of some of the new schemes already sanctioned and also through optimum utilisation of the existing capacities, with such additions of balancing equipment as may be necessary.

5.111. Production of scooters, motor-cycles, and mopeds is, however, proposed to be stepped up substantially during the Fifth Plan, from 1,84,000 nos. in 1973-74 to 5,70,000 nos. in 1978-79. The Central Public sector unit, Scooters India Ltd. will have a capacity of 1,20,000 nos. It is also proposed that the State Industrial Development Corporations which have been approved for the manufacture of scooters, will integrate their manufacturing programmes with the Central public sector project in a manner as would bring about economies of scale.

5.112. Auto ancillaries is one of the major items of engineering exports. Taking this into account, the production of ancillaries is proposed to be stepped up substantially, from a level of Rs. 170 crores in 1973-74 to Rs. 740 crores in 1978-79.

5.113. Provision has also been made in the Plan for increasing the capacity for the production of wagons (including the manufacture of special wagons for the transport of heavy equipment and other bulk cargoes), and for initiating advance action for additional capacity for the production of electric locos.

The latter is important from the point of view of a rapid switch over to electric traction on the trunk routes, with a view to reducing the consumption of diesel oil.

Industrial Machinery

5.114. The major gaps in industrial machinery are in the field of paper and pulp machinery, rubber machinery, lamps making machinery and printing machinery. In addition, expansion will also be needed during the Fifth Plan for cement machinery, sugar machinery and cotton textile machinery to meet the domestic and export requirements. The public sector programmes include development of capacity for printing machinery, lamp making machinery, and the production of paper and pulp machinery which is included as a diversification programme of Jessops. The manufacture of rubber machinery will be largely in the private sector, programmes in this regard have already been approved.

Electronics

5.115. Programmes in the field of mass communication, computers and calculators, equipments and instruments, call for an accelerated expansion of the electronics industry. Whilst a large proportion of the demand for consumer electronics will be met through an expansion of capacity in the private sector, a large part of supply of professional grade electronics will be provided in the public sector. Being a science based industry, self-reliance in electronics will require adequate support by way of research and development. The Electronics Commission will provide the broad framework of programmes and policies for the development of the electronics industry. The main emphasis during the Fifth Plan will be on the development of electronic components and materials, which alone can provide a sound base for the rapid growth of the industry.

5.116. The programmes in the public sector include the expansion of the Electronics Corporation of India Ltd. for the manufacture of electronic components, instrument and computers, expansion of Indian Telephone Industries Ltd. for the manufacture of telephone instruments, switching equipment and transmission equipment and the expansion of Bharat Electronics Ltd. for the production of electron tubes, integrated circuits, micro-wave components and guides and professional grade components. To meet the needs of the specialised requirements not covered under the production programme of these undertakings, the Department of Electronics has worked out a "difference profile" which envisages creation of additional facilities for the production of items like semi-conductor devices, special tubes, peripheral controllers, basic peripherals, control components, micro-wave components and instruments, special materials etc. In addition, it is also proposed to set up research, development and testing facilities and establish service and promotional agencies to support the programmes in the electronics industry. The proposal for the establishment of a Software Corporation is also included in the Plan.

5.117. A beginning has been made for establishing an export based electronics industry with the setting up of the electronics export processing zone at Santacruz. It is expected that this will lead to

substantial step up in the export of electronic goods and will, in addition, also give spin off technological benefits to the domestic industry.

Ship Building

5.118. The programme of ship-building in the Fifth Plan contemplates the optimum expansion of the shipyards at Vishakhapatnam, Cochin, Mazagaon Docks and Garden Reach Workshop. This would lead to a total capacity of 4,75,000 GRT. In addition, it is proposed to take up the construction of new shipyards for which preliminary studies have been initiated. With the establishment of new shipyards and the creation of capacities for the construction of large tankers and bulk carriers, the production programme in the various shipyards will be delineated, to attain a degree of specialisation. The objective is to attain a large measure of self-reliance in the requirements of ships by the end of the Sixth Plan. The necessary ancillary capacities, including engine production, is also included in the Fifth Plan. For promoting self-reliance in the design of ships, a Central Marine Design and Research Organisation will be set up during the Plan.

Fertilisers

5.119. Based on the programmes already approved in the public and private sectors, it is expected that a capacity of 4.1 million tonnes of nitrogen and 1.2 million tonnes P_2O_5 will be achieved in the early years of the Plan. In addition, the Fifth Plan programmes envisage the establishment of five new fertilizer projects in the public sector, three of them at inland locations and two on coastal locations. These projects are estimated to contribute an additional capacity of 1.3 million tonnes of nitrogen and 0.6 million tonnes of P_2O_5 . Provision has been made in the Plan for these projects as well as for the establishment of facilities for the production of phosphoric acid at Kandla and Madras. It is also expected that additional capacity of the order of 0.6 million tonnes will be set up in the private sector. Advance action would also be taken on projects, amounting to a capacity of one million tonnes of nitrogen, which are required to be completed in the initial years of the Sixth Plan period. A capacity target of 7 million tonnes of N inclusive of the capacity on advance action projects, and 1.7 million tonnes of P_2O_5 is envisaged for 1978-79.

5.120. To maximise production of fertilisers and reduce dependence on imports during the Fifth Plan, attention has to be given to full utilisation of existing capacity and reducing the gestation period in the implementation of new projects. Currently, whilst some of the fertiliser factories have a good record of capacity utilisation, others have consistently been operating at a low level. There are numerous problems with regard to the latter units. Some of them are relatively old units requiring substantial modernisation and renovation e.g. Sindri; in others, there are technological and design deficiencies which need to be corrected e.g. (Neyveli) and in some others capacity utilisation has been low on account of an inadequate supply of feed stocks e.g. coke oven gas for Rourkela. Problems with regard to all these units have been identified and corrective measures initiated. It is expected that these units will attain a substantially higher level of

capacity utilisation within the next 2/3 years. It is also proposed to devote special attention to the problems of maintenance of fertiliser projects so that the loss of production due to breakdowns is minimised. The experience in regard to the construction of Durgapur and Cochin projects has underlined the need for using only proven process schemes and equipment in every part of the project and for adequate and integrated project management. The necessary improvements in the management and contractual responsibility in the construction of new projects are being introduced. It is expected that with these improvements, the construction period for the new fertilizer projects could be considerably improved. It would, however, be necessary to ensure timely supply of steel and other raw materials and components for local fabrication of equipment; priority allocation of steel and other construction materials; flexibility for import of long delivery items, if the local supplies are delayed; and release of foreign exchange well in time.

5.121. Based on the programmes currently envisaged, production of 4.0 million tonnes of N and 1.25 million tonnes of P_2O_5 is envisaged in 1978-79. As a substantial proportion of the additional capacity will be commissioned in the later years of the Fifth Plan, its contribution to production in 1978-79 would be rather limited. The optimum level of production from these plants will be reached within the first two years of the Sixth Plan. The existing units are expected to operate at an average of about 85% of the installed capacity. The imports of fertilisers have been estimated in value on the above basis and provided for. It is imperative that the dependence on imports should be reduced, not only for the reason that the prices are high and likely to remain so for a number of years but also for the reason that fertilizers are progressively becoming scarce in the international market. Improvement in performance will provide corresponding relief to the balance of payments position.

5.122. In view of the relative supply position of petroleum products, it has been decided that the new fertiliser projects in the Fifth Plan will be based on fuel oil. The measures required to make the production of fertilisers with fuel oil as feed stock competitive with fertilisers using naphtha as feed stock, are under consideration. From the long term point of view, it will be necessary to explore the possibilities of producing fertilisers from domestic sources of coal. In addition to three coal based fertiliser projects already under way, studies have been initiated on identifying other possible locations.

5.123. The optimum use of mineral resources in the country for fertiliser production is also envisaged in the Fifth Plan. The production of rock phosphate from the deposits at Jhamarkotra in Rajasthan is envisaged to be stepped up to 750,000 tonnes per annum during the Fifth Plan period. A preliminary study in this regard has been completed. The sulphurous gases from non-ferrous refineries at Khetri and Zawar will also be utilised for the production of fertilisers.

5.124. A provision of Rs. 1149 crores has been made in the Fifth Plan for the fertiliser programme in the public sector.

Petro-chemicals

5.125. The programme for petro-chemicals in the public sector during the Fifth Plan is limited to the completion of the naphtha cracker and the down stream units at Baroda and the Bongaigaon refinery/petro-chemical complex in Assam. A provision of Rs. 284 crores has been made in the Fifth Plan for these schemes. Within the resources available and the relative priorities of the Plan, no new major programme for petro-chemicals is currently contemplated during the Fifth Plan period. The need and scope for the growth of the petro-chemical industry for the Sixth Plan would, however, be studied. In the light of such a study, the position would be reviewed with a view to examining whether some advance action need to be taken during the Fifth Plan period to contribute to additional production in the Sixth Plan.

Petroleum Refining

5.126. The consumption of petroleum products has risen at a fairly rapid rate over the last two decades; the growth rate during the period 1960-61 to 1970-71 was of the order of 9.4 per cent per annum. It has been estimated that if no deliberate efforts are made to curb consumption, the likely demand for oil products would rise to over 36 million tonnes by 1978-79.

5.127. On the basis of known reserves of petroleum deposits in the country and the emergent situation in regard to supply and prices of crude oil in the international market, the projected growth rate would place an excessive burden on the economy. It would, therefore be necessary to take deliberate steps to contain the growth in demand for oil products, and to fully exploit alternative sources of energy to replace petroleum products. Several steps in this direction have been identified which, whilst contributing to some reduction in consumption during the Fifth Plan period, will lead to more significant results in the subsequent Plans. The more important among these steps are; the conversion of power stations using oil as the primary fuel to coal, reduction of fuel oil as a supplementary fuel in power stations, replacement of fuel oil with coal in industries, expansion of rural electrification and rapid switch-over to electric traction on the railways. Fiscal measures will also have to be taken to curb non-essential consumption of petroleum products. The policies and programmes for restricting the consumption of petroleum products will have to be pursued vigorously and with determination. As a result of these measures, it is estimated that with a through-put of 36 million tonnes of crude in 1978-79, the requirements of petroleum products could be substantially met.

5.128. The refinery programme has been drawn up in line with this target. The schemes already under implementation, including the Haldia Refinery and the revamping of the Barauni Refinery, will contribute to a capacity of 24.6 million tonnes. In addition, the Fifth Plan includes construction of the Bongaigaon Refinery (1 million tonne), Mathura Refinery (6 million tonnes), and expansion of Koyali

Refinery (3 million tonnes). This will bring up the refinery capacity up to 34.6 million tonnes. The refinery capacity target is tentatively placed at 39 million tonnes for 1978-79. To achieve this target from among alternative possibilities the optimal choice of creation of additional capacity required will be further studied.

Oil Exploration

5.129. Even with the restricted consumption of petroleum products, the gap between the requirements of crude and the domestic production will continue to widen. In this context the establishment of additional reserves of crude assumes high priority. Maximum effort is, therefore, proposed to be put into the explorations programme, as well as on the programme to develop proved reserves. A ten year perspective plan for oil exploration has been drawn up, which envisages the establishment of crude reserves of 70 million tonnes which are expected to yield an additional production of 4 million tonnes of crude towards the end of the Fifth Plan. Thus, the total domestic production of crude oil by the Oil and Natural Gas Commission will be raised to 8.42 million tonnes per annum. The Oil and Natural Gas Commission would expand its activities in foreign countries. Apart from the concessions already secured in Iran, which is expected to yield a quantity of about 0.6 million tonnes of crude oil in 1978-79, the Commission has also secured concessions in Iraq. An intensive programme of off shore exploration on the Indian continental shelf is envisaged. While the ONGC will undertake off-shore exploration in selected areas, foreign collaboration is envisaged for carrying out oil explorations in other off-shore regions. A Plan provision of Rs. 420 crores has been made for ONGC programmes of exploration and production.

5.130. The tasks to be undertaken in the Fifth Plan on exploration and production, both off-shore and on-shore, will require the strengthening of the organisation and management of the Oil and Natural Gas Commission. Measures will have to be taken to augment the capabilities of the Oil and Natural Gas Commission for seismic and geophysical surveys, data processing, prospect evaluation, drilling, reservoir engineering and production. Urgent measures also need to be taken to strengthen the technological capabilities of ONGC, along with indigenous capabilities for the design, construction and operation of off-shore facilities. Based on the foregoing considerations, it would be necessary to clearly define the maximum contribution that ONGC can make to the country's off-shore efforts. A decision could then be taken on the question of foreign collaboration that may be necessary to supplement ONGC's efforts in the exploration and production of off-shore oil.

5.131. Oil India Ltd. has a programme of oil exploration in Dumduma and Nigru areas of Assam, envisaging an outlay of Rs. 16 crores during the Plan. It is anticipated that this will sustain the present level of 3 million tonnes of crude production per year.

5.132. With the above programme of ONGC and Oil India, an overall indigenous production of about 12 million tonnes of crude oil per annum is expected to be reached by 1978-79. However, if the off-shore exploration proves successful, this would provide the

basis for a substantial step up in the production of crude oil.

Coal

5.133. The target for the production of coal has been arrived at after taking into account the requirements of major sectors like power generation, steel plants, railways and other users. The overall requirements of coal by the end of the Plan are estimated at 135 million tonnes, consisting of 32 million tonnes of coking coal and 2 million tonnes of blendable coal, and 101 million tonnes of non-coking coal. The coking coal requirements include 4.8 million tonnes of coal needed by the merchant cokeries. Of the non-coking coal requirements, the power sector alone would require 43 million tonnes, excluding middlings which will be available from the washeries.

5.134. The magnitude of expansion in the production of coal from 79 million tonnes in 1973-74 to 135 million tonnes in 1978-79 will put severe strain on the managerial and technological capabilities of the organisations engaged in coal raising and will require coordinated and energetic action both on the part of the public sector undertakings and the Government. The nationalisation of coal mines makes it possible to reorganise and rationalise production, and to restructure the overall management pattern in a coordinated manner. Action in this regard has already been initiated. The establishment of the Coal Mines Authority, with NCDC as a subsidiary, provides the institutional structure for the coordinated management of coal mines, which produce non-coking coal. In planning additional production of coal, the appropriate linkage between power stations and coal mines, as well as the development of necessary rail capacity for the movement of coal, will have to be ensured. The synchronisation of the production of coal with the railway programme and the construction of power stations will have to be closely monitored and coordinated. This is of the utmost importance, as the desired growth in industry and power is critically dependent on the fulfilment of the production target for coal.

5.135. Considerable advance action has already been taken in order to ensure that the programmes in the coal sector are fulfilled. The mines from which the additional production would be achieved have been identified and all the new mines to be developed during the Fifth Plan would have been demarcated by December 1973. In order to expedite the preparation of the detailed project reports, a Central Mine Design Institute will be established. The equipment required for the coal programme has been worked out in detail, and standardised to the extent possible. Special purchase procedures will need to be adopted to curtail delays in the placement of orders. The total equipment requirements are estimated to be Rs. 400 crores. The availability of equipment from domestic sources has been assessed in some detail. Allocation of foreign exchange for import will have to be accorded on a priority basis. A detailed manpower plan has also been worked out. While these steps have been taken, special attention will need to be paid to the NCDC projects, since the bulk of these are in the nature of new mines, which would have to be closely monitored.

5.136. Taking into account the requirements of washed coal for the steel plants and merchant cokerries, the Fifth Plan provides for stepping up the washery capacity for prime and medium coals by 10 million tonnes. Provision has also been made in the Plan for sand gathering for stowing. Furthermore, the Plan also includes provision for setting up an explosives project in the public sector, the establishment of a low temperature carbonisation plant at Singareni, and for research and development on the production of formed coke. The feasibility of taking up in addition, one or more low temperature carbonisation plants for implementation during the Fifth Plan is under consideration.

Lignite

The overall provision in the Plan for the programmes on coal production and related facilities is Rs. 737 crores, as compared to Rs. 110 crores in the Fourth Plan. While this fully provides for the Fifth Plan programmes, the adequacy of the funds included for advance action for the Sixth Plan will be reviewed later.

5.137. The major programme during the Plan is to step up production of lignite at Neyveli to 6.0 million tonnes so as to match the requirements of the power plant, the fertiliser plant, and the domestic fuel plant located at Neyveli. A provision of Rs. 39.8 crores has been made for this purpose. In order to meet the future energy requirements in the Southern region, several alternatives including the opening of a second mine cut at Neyveli are under examination.

Iron Ore

5.138. The programme for expansion of production of iron ore is related to the requirements of the domestic steel industry and to increasing the level of exports on an optional basis with minimum investment. Based on the programme of steel production the requirements of iron ore for the steel industry is estimated at 23 million tonnes. Taking into account the committed programmes of mine development, railway facilities and port capacities, it is reckoned that with a marginal investment, the level of export could be stepped up from 22 million tonnes in 1973-74 to 35 million tonnes. On this basis, the production target for iron ore is placed at 58 million tonnes.

The production from the public sector mines of the steel plants, the National Mineral Development Corporation and the Orissa Mining Corporation is expected to amount to 34 million tonnes. The share of the private industry in the overall production will be 24 million tonnes at the end of the Fifth Plan, the step up in the production being expected from the mines in Goa, Bihar, Orissa and the Bellary-Hospet area in Karnataka. The Plan provides for the establishment of a pelletisation plant of a capacity of 2 million tonnes in the Bellary-Hospet region in Karnataka. The creation of additional pelletisation capacity will also be considered. The public sector programmes of iron ore development including pellet plants would involve an outlay of Rs. 133 crores during the Fifth Plan period.

Paper & Newsprint

5.139. The production of paper and paper board will be stepped up to a level of 1.2 million tonnes by 1978-79 from 830,000 tonnes in 1973-74. Whilst substantial capacity has been approved, implementation of the projects will take time and therefore, significant additions to capacity can be expected only in the later years of the Plan. Additional production in the initial years will have to come primarily from the marginal expansion of existing paper plants, for which action has already been taken.

5.140. The production of newsprint is envisaged to be stepped up to 150,000 tonnes in 1978-79, as against the estimated demand of 350,000 tonnes. The main contribution to the production of newsprint would come from the public sector; apart from the expansion of Nepa Mills to 75,000 tonnes, a new project for the production of 70,000 tonnes of newsprint will be established in Kerala. Whilst schemes have been approved in the private sector for the production of newsprint, progress in their implementation has been slow. Considering the gap between demand and expected production, it would be necessary to take up additional projects that would increase the availability of newsprint during the Fifth Plan.

5.141. Apart from the two newsprint projects, the other main programmes in the public sector relate to the establishment of 3 paper projects by the Hindustan Paper Corporation in the North Eastern Region.

Cement

5.142. From the estimated level of production of 16 million tonnes in 1973-74, production of cement will be stepped up to 25 million tonnes by 1978-79. The public sector, both at the Centre and in the States, will make a significant contribution to the additional capacity during the Fifth Plan period. The programmes of the Cement Corporation of India envisage the construction of six new projects, in addition to the completion of programmes already under way. With the implementation of these projects the Cement Corporation of India would account for a capacity of over 3 million tonnes. The State sector is expected to contribute to an additional capacity of 2 1/2 to 3 million tonnes during the Fifth Plan period, and approximately 3 to 4 million tonnes of capacity is expected to be developed in the private sector. In view of the importance of ensuring an adequate supply of cement for the timely implementation of Plan programmes, the programme for expansion of capacity of cement will need to be closely monitored. It will also be necessary to introduce a suitable system of allocation and distribution of cement to priority users in view of the anticipated shortage in the early years of the Plan.

Sugar

5.143. The production of sugar will be stepped up from 4.3 million tonnes to 5.7 million tonnes by the end of the Plan. Additional sugar capacity will continue to be encouraged primarily in the cooperative sector, with emphasis being laid on integrated and larger plants to secure the advantages of economies of scale. This would also facilitate economic utilisation of by-products of the industry, leading to an overall improvement in its performance. Significant

advance is also expected to be made in the diversification of the raw material base with the production of beet sugar; programmes for the cultivation of sugar-beet form a part of the agricultural development plan.

Vegetable Oils and Vanaspati

5.144. A major step-up in the production and availability of vegetable oils and fats is envisaged in the Fifth Plan. On the basis of the programmes for the production of oil seeds, the overall availability of vegetable oils from cultivated seeds is envisaged to be 3.5 million tonnes in 1978-79. This would be supplemented by fuller utilisation of cotton seeds for oil extraction and additional availability from rice bran and coconut.

5.145. The production of vanaspati will be increased from the level of 575,000 tonnes in 1973-74 to 740,000 tonnes in 1978-79. Adequate capacity for attaining the projected level of output already exists.

5.146. In order to moderate the fluctuations in the prices of oil and to ensure reasonable supplies on an equitable basis, during period of shortage, it is proposed to set up an Oil Seeds and Oil Corporation in the public sector.

Cotton Textiles

5.147. The overall production of cotton cloth is proposed to be stepped up to 10,000 million metres in 1978-79 against the estimated level of 7800 million metres in 1973-74. In accordance with the policy of encouraging the decentralised sector, a significant share of the additional production during the Fifth Plan is allocated to this sector. The contribution of each of the sectors in the overall production of 10,000 million metres is envisaged as follows:—

Mills	5200	million metres
Handlooms	3000	"
Power looms	1800	"

In order that the requirements of yarn for the decentralised sector are adequately met, the spinning capacity in the mill sector would be expanded so as to provide a marketable surplus of 580 million kg. of yarn by 1978-79.

5.148. The pattern of production of the textile industry will have to be oriented towards meeting the requirements of the vulnerable section of the population. Production will have to be supported with adequate distribution arrangement. A measure of control on the textile industry in order to subserve these objectives will be unavoidable. An integrated policy covering the production, distribution and pricing of cotton textiles will be evolved.

5.149. The recent international trends in the production and trade of textiles suggest increasing possibilities of exports of textile goods. The industry will have to be geared to exploit this potential and to

increase the level of export. Tentatively an export target of 1350 million metres has been projected for 1978-79.

5.150. From the consideration of exports as well as for meeting the needs of common clothing, an effective programme of modernisation of the industry is important. The institutional framework to lend support to a modernisation programme, is currently under study.

5.151. The National Textile Corporation which has the management responsibility for over 100 mills for a programme of modernisation and expansion of the mills under their charge, is expected to play a role, along with the rest of the textile industry, in supporting the programme for the production of common clothing and for the supply of yarn to the decentralised sector. A provision of Rs. 55 crores has been made in the Plan to support the activities of the National Textile Corporation. This will be supported by a further flow of institutional finance.

Drugs and Pharmaceuticals

5.152. The Fifth Plan envisages substantial rise in the production of drugs from a level of about Rs. 300 crores in 1973-74 to Rs. 500 crores in 1978-79. The emphasis will be primarily on the expansion of capacity for producing essential drugs to cater to the requirements of the enlarged public health programme in the Fifth Plan. The public sector will assume a more prominent role in the production of drugs. Major expansion and diversification programmes of the two public sector Companies—Indian Drugs and Pharmaceuticals Ltd. and Hindustan Antibiotics Ltd. have been included in the Plan. A provision of Rs. 70 crores has been made for this purpose.

Other Industries

5.153. Apart from the above, the Plan provides for the expansion of a number of other industries including inorganic chemicals, light engineering goods, rubber goods, glass and ceramics and food processing industries.

Industrial and Minerals Programmes relating to Atomic Energy

5.154. The major programmes in this field are the completion of heavy water plants, the schemes under the nuclear fuel complex and the expansion of public sector undertakings under the Department of Atomic Energy. The public sector programmes include an expansion in the production of atomic minerals and their processing, and a major programme of expansion of the Electronics Corporation of India Ltd. in a number of fields including control instruments, computers and electronic components.

ANNEXURE I

Outlay on Industrial and Mineral Programmes in the Central Sector

(Rs crores)

ministry/department	fifth plan outlay		
	continuing schemes	new schemes	total
(0)	(1)	(2)	(3)
1. Ministry of Steel & Mines (Department of Mines)	279.25	860.77	1140.02
2. Ministry of Steel & Mines (Department of Steel)	1208.00	751.00	1959.00
3. Ministry of Industrial Development	139.18	314.43	453.61
4. Ministry of Petroleum & Chemicals (Department of Petroleum)	274.32	677.89	952.21
5. Ministry of Petroleum & Chemicals (Department of Chemicals)	715.22	858.20	1573.42
6. Department of Atomic Energy	51.21	67.56	118.77
7. Ministry of Heavy Industry	88.60	407.86	496.46
8. Ministry of Commerce	5.91	54.68	60.59
9. Ministry of Finance	5.17	39.82	44.99
10. Ministry of Shipping & Transport	45.00	115.00	160.00
11. Department of Electronics	—	70.00	70.00
Total	2811.86	4217.21	7029.07

Central Industrial and Mineral Programmes

(Rs. crores)			(0)	(1)	(2)
organisation/project	location	fifth plan outlay	(g) Sidheswar Copper Mine . (h) Nickel Project		
(0)	(1)	(2)			
1. Min. of Steel and Mines (Deptt. of Mines) (2+9)		1140.02			
2. continuing schemes (2-8)		279.25			
3. <i>Bharat Aluminium Co.</i>	Korba	101.86			
4. <i>Hindustan Zinc Ltd.</i>					
(a) Debari Smelter Expansion	Debari	} 33.41			
(b) Balaria Mines	Balaria				
(c) Maton Rock Phosphate					
(d) Vizag Zinc Smelter	Vizag				
(e) Antimony Smelter					
(f) Tundoo Lead Smelter	Tundoo				
5. <i>Hindustan Copper Limited</i>					
(a) Khetri	Khetri	} 17.23			
(b) Rakha	Rakha				
(c) Daribo	Daribo				
(d) Chandmari	Chandmari				
6. <i>Bharat Gold Mines Ltd.</i> Investigation and installation of various equipments		1.77			
7. <i>Neyveli Lignite Corporation Ltd.</i>					
(a) equipment for 6.0 mt. production	Neyveli	} 39.84			
(b) conversion of boilers	-do-				
8. <i>Coal mines</i>					
(a) N.C.D.C. Mines		81.93			
(b) Singareni Collieries Co. Ltd.		3.21			
9. <i>new schemes (10-21)</i>		860.77			
10. <i>Bharat Aluminium Co.</i> Ratnagiri Project		50.00			
11. <i>Hindustan Zinc Ltd.</i>					
(a) Rajpura Daribo (Zinc-Lead)		} 90.00			
(b) Baroi Zawarmala Mine					
(c) Vizag Lead Smelter					
(d) Sargipalli Lead Mine					
12. <i>Hindustan Copper Limited</i>					
(a) Malanjkhand		} 150.00			
(b) Rakha (II)					
(c) Bandalamottu lead mines					
(d) Nallakonda Copper Mine					
(e) Surda Mine Exp.					
(f) Turamdih					
			(g) Sidheswar Copper Mine . (h) Nickel Project		
			13. <i>Bharat Gold Mines Ltd.</i> re-organisation and installation of various equipments, invest- tigations	Kolar	1.00
			14. <i>Mineral Exploration Cor- porations</i> detailed exploration of mineral deposits.		23.00
			15. <i>Geological Survey of India</i>		
			(a) geological mapping, regio- nal mineral survey, off- shore exploration and equipment		
			(b) airborne mineral survey & exploration, aero-mag- netic surveys and ground follow-up action		40.00
			16. <i>Indian Bureau of Mines</i> ore dressing, technical consul- tancy, mine control & conser- vation programme		
			17. <i>Coal Mines Authority (CMA)</i>		
			(a) N.C.D.C. Mines		204.93
			(b) development of mines taken over		125.00
			(c) prospecting, drilling and advance action		75.00
			(d) sand gathering and trans- port		30.00
			18. Singareni Collieries Co. Ltd.		28.79
			19. Explosives plant		6.05
			20. L.T.C. Plant		8.00
			21. Science and technology pro- grammes		29.00
			22. Min. of Steel and Mines (Deptt. of Steel) (23+28)		1959.00
			23. <i>continuing schemes (24-27)</i>		1208.00
			24. <i>Hindustan Steel Limited</i>		
			(a) Bhilai (4 million tonnes) .	Bhilai	457.00
			(b) Durgapur	Durgapur	24.00
			(c) Rourkela (CRGO sheets plant, special plates plant and balancing facilities) .	Rourkela	105.00
			25. Bokaro (4 million tonnes)	Bokaro	510.00
			26. <i>N.M.D.C.</i>		
			(a) Bailadila—14	Bailadila	} 35.00
			(b) Kiriburu Expansion	Kiriburu	
			(c) Bailadila—5	Bailadila	
			(d) Donimalai	Donimalai	

(0)	(1)	(2)	(0)	(1)	(2)	
27. Bharat Coking Coal Ltd.		77.00	54. Indian Standards Institution		2.60	
28. new schemes (29-42)		751.00	55. Promotion of industries in backward areas—			
29. Hindustan Steel Ltd.			investment subsidy		10.00	
(a) ASP	Durgapur	21.00	transport subsidy			
(b) refractory plant and spiral welded pipes plant		33.00	56. National Institute of Design, Ahmedabad—completion of workshop	Ahmedabad	0.26	
(c) seamless tubes plant		47.00	57. new schemes (58-74)		314.43	
30. Ferro vanadium plant		10.00	58. Cement Corporation of India			
31. Metallurgical & Engg. Consultants Ltd.		5.00	(a) Neemuch	Neemuch	} 95.96	
32. Bokaro (4.75 million tonnes)	Bokaro	10.00	(b) Akaltara	Akaltara		
33. Visakhapatnam project	Visakhapatnam	} 250.00	(c) Kurkunta (Exp.)	Kurkunta		
34. Vijayanagar Project	Vijayanagar		(d) Adilabad	Adilabad		
35. Salem Steel Ltd.	Salem	120.00	(e) Tandur	Tandur		
36. Mysore Iron & Steel Ltd.			(f) Yerranguntla	Yerraguntla		
(a) Expansion	Bhadra vati	10.00	(g) new projects/participation in other projects		} 9.00	
(b) Forge Plant	Bhadra vati	19.00	(h) prospecting and investigation			
37. Studies on further expansion of steel plants.		1.00	59. Hindustan Paper Corporation			
38. N.M.D.C.			(a) two new projects		102.00	
(a) Meghahataburu		33.00	(b) participation in other projects		10.00	
(b) Malangtoli, Bailadila and Kumaraswami		25.00	(c) investigations for VI Plan projects		2.00	
(c) Donimalai—pellet plant	Donimalai	33.00	60. NEPA mills—effluent treatment plant	Nepanagar	0.56	
(d) Bailadila—pellet plant	Baladila	1.00	61. National Instruments Ltd.			
(e) Feasibility studies		2.00	(a) camera project	Jadavpur	0.80	
39. Manganese Ore India Ltd.		10.00	(b) infra-red devices project	-do-	1.00	
40. Iron Ore Board		4.00	62. Instrumentation Ltd.			
41. Bharat Coking Coal Ltd.		97.00	(a) unified systems	Kotah	2.50	
42. Science and technology programmes		20.00	(b) pollution control, instruments etc.	-do-	1.50	
43. Ministry of Industrial Development (44+77)		453.61	63. Bharat Ophthalmic Glass Ltd.—continuous process glass manufacture		11.00	
44. continuing schemes (45-56)		139.18	64. Hindustan Cables—expansion		6.06	
45. Cement Corporation of India			65. Tannery & Footwear Corporation—export oriented project	Kanpur	5.00	
(a) Paonta	Paonta	} 19.17	66. National Textile Corporation—strengthening and expansion		15.00	
(b) Mandhar Expansion	Mandhar			67. Hindustan Salts Ltd.—salt washery, sodium sulphate recovery etc.		2.33
(c) Bokajan	Bokajan			68. Hindustan Photo Films—X-ray and graphic arts	Ooty	20.00
46. Hindustan Paper Corporation			69. Precision tools and instruments Plant (J and K)		0.72	
(a) Nagaland	Tuli	10.80	70. Automobile tyres project		10.00	
(b) Kerala	Vaikom	36.00	71. Feasibility and technical studies		1.00	
(c) Mandya	Balagula	10.00	72. Leather Development Corporation		2.00	
47. NEPA Mills—expansion	Nepanagar	2.49	73. Processed fruit & vegetable products development corporation		1.00	
48. Instrumentation Ltd. control safety valves etc.	Kotah	2.34	74. Science and technology programmes		25.00	
49. Hindustan Cables—Rupnarainpur and Hyderabad Units	(Rupnarainpur & Hyderabad)	0.93				
50. Tannery and Footwear Corporation—balancing facilities	Kanpur	0.82				
51. National Textile Corporation		40.00				
52. Hindustan Photo Films plant improvement	Ooty	1.98				
53. National Productivity Council		1.79				

(0)	(1)	(2)	(0)	(1)	(2)
75. Ministry of Petroleum and Chemicals (76+87) (Deptt. of Petroleum)		952.21	<i>fertiliser plants</i>		
76. continuing schemes (77—86)		274.32	107. P.P.C. Sulphuric Acid Plant	Sindri	0.04
77. Haldia Refinery Haldia		3.00	108. Sindri Rationalisation do		13.37
78. Barauni Refinery Barauni		5.60	109. Durgapur Durgapur		3.22
79. North West Refinery Mathura		93.00	110. Namrup expansion Namrup		6.68
80. Expansion of Koyali refinery Koyali		27.00	111. Barauni Barauni		4.21
81. Salaya-Koyali-Mathura crude oil pipeline		120.00	112. Talcher Talcher		47.44
82. UHF for Haldia-Barauni-Kanpur pipeline		1.55	113. Ramagundam Ramagundam		45.52
83. I.O.C. Research Centre		3.56	114. Korba Korba		114.87
84. Lubrizol India Ltd.		0.60	115. Haldia Haldia		85.30
85. Oil India—pipeline expansion		5.01	116. Nangal expansion Nangal		67.71
86. Bongaigaon Refinery Bongaigaon		15.00	117. Sindri modernisation Sindri		91.56
87. new schemes (88-104)		677.89	118. Gorakhpur Gorakhpur		1.56
88. Two coastal refineries		60.00	119. Debottlenecking of NPK Plant Trombay		2.19
89. Indian Oil Corporation (marketing)		34.00	120. Mathanol plant Trombay		0.07
90. Wax project		2.19	121. Phosphoric Acid Plant, Trombay		1.28
91. Debottlenecking, MEX de-waxing unit		1.10	122. Sodium Nitrate/Nitrite Trombay		0.02
92. Lubrizol (new project)		2.00	123. Pollution control Trombay		0.40
93. Indo-Burmah Petroleum Co.		1.25	124. Argon recovery Plant Gorakhpur		0.37
94. Expansion of lube capacity		25.00	125. Debottlenecking of urea plant		1.35
95. Paraffin wax plant of Lube India		3.00	126. Guanadine nitrate plant Sindri		0.75
96. Paraffin micro-crystalline wax plant Haldia		4.00	127. Ammonia tank wagons		1.50
97. Paraffin wax plant Barauni		4.00	128. Cochin Phase II Cochin		14.67
98. pipeline projects			129. Indian Petro-Chemicals Corporation Ltd. Baroda		
(a) Bombay-Poona		12.00	(a) Gujarat Olefins		5.45
(b) Mathura-Ambala		20.00	(b) Acrylonitrile		11.22
(c) Koyali-Ahmedabad expansion		0.50	(c) Polybutadiene rubber		13.92
(d) Gauhati Siliguri expansion		1.00	(d) Polyethelene		20.97
99. Oil and Natural Gas Commission		420.00	(e) Polypropylene		14.61
100. Oil India Ltd.—exploration		16.12	(f) Detergent Alkylate		8.86
101. Reserve crude storage		30.00	(g) Ethylene Glycol		6.23
102. Installation of facilities at port terminals		10.00	(h) Acrylic fibre		16.38
103. Bitumen Corporation		15.00	(i) Integrated utilities		3.28
104. Science and technology programmes		16.00	(j) Polyester filament yarn		21.43
105. Ministry of Petroleum and Chemicals (Deptt. of Chemicals) (106+131)		1573.42	(k) Polyester film		7.50
106. continuing schemes (107—130)		715.22	130. Assam Complex		79.29
			131. New schemes (130-145)		858.20
			132. Five new fertiliser projects		560.00
			133. I.F.F.C.O. Kandla Kandla		54.00
			134. Madras Fertilisers Ltd. Madras		27.50

(0)	(1)	(2)	(0)	(1)	(2)
135. Argon recovery plants	Talcher and Ramagundam	0.70	154. Reactor fuel reprocessing plant		5.00
136. N.P.K. granulation units	Gorakhpur and Durgapur	1.00	155. Indian Rare Earths Ltd.		15.55
137. Jhamarkotra rock phosphate project		6.00	156. Electronics Corporation of India Ltd.		12.30
138. <i>Indian Petro-Chemicals Corporation Ltd.</i>			157. Uranium Corporation of India Ltd.		21.00
(a) P. V. C.		36.70	158. Development of mining by Atomic Minerals Division		0.43
(b) S.A.N.		0.80	159. Ministry of Heavy Industry (160 + 170)		496.46
139. Detergent alkylate project		12.50	160. <i>Continuing schemes (161-169)</i>		88.60
140. Aromatic complex		25.00	161. Hindustan Machine Tools		13.50
141. Hindustan Organic Chemicals		200	162. Machine Tools Corporation of India	Ajmer	2.25
142. Hindustan Antibiotics Ltd.		30.00	163. Scooters India Ltd.	Lucknow	3.10
143. Indian Drugs & Pharmaceuticals Ltd.		40.00	164. Bharat Pumps & Compressors Ltd.	Allahabad	6.85
144. Hindustan Insecticides Ltd.		25.00	165. Bharat Heavy Plates & Vessels Ltd. (BHPVL)	Visakhapatnam	0.93
145. Science and technology programmes		15.00	166. Heavy Engineering Corporation	Ranchi	7.00
146. Department of Atomic Energy (147 + 151)		118.77	167. Bharat Heavy Electricals Ltd. (BHEL)	Tiruchi, Hardwar, Ramachandrapuram	44.04
147. <i>continuing schemes (148-150)</i>		51.21	168. Heavy Electricals (I) Ltd.	Bhopal	10.71
148. <i>Bhaba Atomic Research Centre Central Workshop Phase II</i>		0.43	169. Tungabhadra Steel Products Ltd.	Tungabhadra	0.22
149. Heavy Water Plants		44.83	170. <i>New schemes (171-188)</i>		407.86
150. Nuclear Fuel Complex—Spillover projects		5.95	171. HMT diversification programme		45.00
151. <i>New schemes (152-158)</i>		67.56	172. Jessops		15.00
152. <i>Bhaba Atomic Research Centre</i>			173. Richardsons and Cruddas		3.00
(a) cobalt-60, handling facility at MAPF		0.60	174. Braithe-waite		2.00
(b) radiation sterilisation plant for medical products		0.70	175. Indian Standard Wagons Butler, Burn		15.00
(c) radio pharmaceuticals production unit		1.00	176. Structural Engineering works		5.00
(d) irradiators for potatoes		0.96	177. Scooters India Ltd.	Lucknow	3.00
(e) plutonium plant expansion		2.40	178. Jabalpur Vehicle factory expansion including grey iron foundry	Jabalpur	50.00
(f) uranium metals plant expansion		0.27	179. BHPVL—expansion and provision of balancing facilities	Visakhapatnam	8.00
(g) irradiators for food preservation		0.62	180. Mining & Machinery Corporation	Durgapur	2.00
(h) nuclear Fission products isolation facility		0.85	181. Heavy Engineering Corporation—balancing facilities	Ranchi	30.00
(i) radioactive products production facility		0.35	182. New heavy engineering unit		90.00
153. <i>Nuclear fuel complex</i>			183. Triveni Structurals Ltd.	Allahabad	3.94
(a) expansion facility for production of non-enriched fuel		0.35	184. Engineering Projects (India) Ltd.	New Delhi.	5.00
(b) Invar and Kovar plant		0.30			
(c) housing		1.00			
(d) refractory metal plant		1.01			
(e) seamless steel tubes plant expansion I and II		2.87			

	0	1	2		0	1	2
185. BHEL.		Tiruchi, Hardwar and Ramachandrapuram	40.87	(c) housing schemes			1.00
186. HE(I)L		Bhopal	19.05	214. Hyderabad mint- expansion of coinage and metal making capacity	Hyderabad		4.00
187. Feasibility and technical studies			1.00	215. Ministry of Shipping and Transport (216 + 219)			160.00
188. Science and technology programmes			70.00	216. <i>Continuing schemes</i> (217-218)			45.00
189. Ministry of Commerce (190 + 195)			60.59	217. Hindustan Shipyard Ltd.	Visakhapatnam		6.00
190. <i>Continuing schemes</i> (191-194)			5.91	218. Cochin Shipyard Ltd.	Cochin		39.00
191. Tea Trading Corporation			0.42	219. <i>New schemes</i> (220-224)			115.00
192. Kerala Plantation Corporation			1.03	220. Hindustan Shipyard Ltd. — expansion and integrated development programme II			9.00
193. Cardamom plantation schemes			3.71	221. Cochin Shipyard Ltd.— expansion			33.00
194. Weights & Measures—All India Training Institute, Patna			0.75	222. Subsidy for ship building and ancillaries			13.00
195. <i>New schemes</i> (196-203).			54.68	223. Central marine and design research organisation			10.00
196. Tea plantation schemes			12.58	224. New ship-building yards			50.00
197. Coffee plantation schemes			8.59	225. Department of Electronics			70.00
198. Rubber plantation schemes			17.47	226. <i>New schemes</i> (227-247)			70.00
199. Cardamom plantation schemes			0.21	227. Production of semiconductor devices			4.00
200. Electronics export processing zone, Bombay			2.72	228. Complex for production and R & D of special SC devices			5.00
201. Pilot Test House		Bombay	3.11	229. Custom manufacture of special tubes			2.10
202. Marine Products Export Development Authority			5.00	230. CPU and peripheral controllers			1.80
203. Science and technology programmes			5.00	231. Basic peripherals			0.60
204. Ministry of Finance (205 + 210)			44.99	232. Software Corporation			2.30
205. <i>Continuing schemes</i> (206-209)			5.17	233. Automation promotion centre			1.80
206. India Security Press-housing		Nasik	0.27	234. Production of control components			4.40
207. Bombay mint-housing		Bombay	0.62	235. Computer network project			1.40
208. Security Paper Mill-mould cover manufacturing plant		Hoshangabad	0.25	236. Regional computer Centres			3.60
209. Bank Note Press			4.03	237. Production of microwave components/instruments			1.20
210. <i>New schemes</i> (211-214)			39.82	238. Trade and tech. liaison unit			2.00
211. New security paper mill				239. Custom production of capital equipment			2.00
(a) expansion of capacity for production of bank note paper				240. Two-way communication			2.00
(b) production of coated and adhesive stamp paper			22.97	241. Masses and ceramics			6.40
212. Bank note press-expansion			4.10	242. Test and development facilities			3.00
213. India security press		Nasik		243. Facilities for component and material testing			3.00
(a) expansion and modernisation of currency note press			3.50	244. Computer maintenance agency			1.00
(b) expansion and modernisation of stamp press			4.25	245. State agencies for rural market promotion			1.00
				246. Medical electronics development			1.40
				247. Science and technology programmes			20.00
				Grand total			7029.07

Plan Achievements and Targets of Capacity and production—Selected Industries

industry	unit	1965-66		1968-69		1973-74		1978-79 (target)	
		production	production	target		estimated		capacity	production
				capacity	production	capacity	production		
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. iron and steel									
(i) steel ingots	million tonnes	6.53	6.5	12.0	10.8	10.6	7.14	15.15	12.77
(ii) finished steel	"	4.51	4.7	9.0	8.1	8.1	5.44	11.7	9.4
(iii) pig iron for sale	"	1.2	1.3	4.2	3.8	1.65	1.8	1.28	2.5
(iv) alloy and special steel	000 tonnes	40	43	250	220	450	400	900	752
2. non-ferrous metals									
aluminium	000 tonnes	62.1	125.3	230	220	195	190	400	370
copper	"	9.4	9.4	47.5	31	57	18	57	45
nickel . . . . .	"	..	..	..	..	..	..	4.8	1.5
zinc	"	..	26.3	76	70	38	28	165	100
lead	"	..	1.9	..	..	..	3	41	20
3. industrial machinery									
(i) chemical plant and pharmaceutical equipment (including heavy fabricated machinery	Rs. million	74	133	600	515	762	300	1150	800
(ii) printing machinery	"	..	1	100	80	25	15	160	110
(iii) rubber machinery	"	1.4	1.7	150	120	122	50	250	180@
(iv) paper and pulp machinery	"	16.8	27	150	135	130	100	450	360@
(v) machine tools	"	294	247	760	650	950	650	1600	1370
(vi) heavy metallurgical machinery	000 tonnes	11	25	*	75	90	30	120	75
(vii) coal and other mining machinery	Rs. million	30.6	48	*	130	290	120	350	240
(viii) cotton textile machinery	"	216	138	*	450	500	350	800	560
(ix) cement machinery	"	49	81.8	*	190	260	50	400	280@
(x) sugar machinery	"	77	118	*	210	230	200	450	400@
4. ship building	'000 GRT	28.3	18.7		53	100	46	475	475
5. agricultural tractors	000 Nos.	6.3	15	68	50	47	40	125	80
6. power tillers	"	..	0.5	35	25	36	2	36	20
7. crawler tractors	Nos.	..	..	*	1200	340	325	600	490
8. dumpers and scrapers . . . . .	"	..	..	*	500	520	320	650	590
9. steel castings	000 tonnes	57	50.4	*	225	160	80	250	230
10. steel forgings	"	68	44.5	*	220	200	86	300	240
11. welding electrodes	million metres	200	182	*	*	*	400		550
12. ball and roller bearings	million Nos.	8.3	12.7	*	20	23.45	22.5	45	43
13. automobile and ancillary industries									
(i) commercial vehicles	000 Nos.	35.3	35.6	*	85	73.4	48	140	110
(ii) passenger cars	"	24.79	37.3	*	*	47.4	42	65	60
(iii) motor cycles, scooters and mopeds	"	40.7	85.6	*	210	200	184	700	570
(iv) auto ancillaries	Rs. million	497	842	*	*	2000	1700	8200	7400
14. road rollers	Nos.	1116	198	*	*	1900	900	2500	1790
15. railway rolling stock and components									
(i) diesel locomotives	Nos.	39	87		204		184		211
(ii) electric locomotives	"	32	48		70		65		152
(iii) railway coaches	"	1401	1275		1450		1450		1700

@excluding standard bought out items.

ANNEXURE III (Contd.)

(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(vi) railway wagons	000 Nos.	33.5	16.48		17	30.8	13	45	40
(in terms of 4 wheelers)									
16. heavy electrical equipment									
(i) turbines—hydro	Million KW	Negl.	0.1	*	1.65	1.4	0.53	1.7	1.4
(ii) turbines—thermal	"	Negl.	0.4	*	1.3	2.7	1.7	2.9	2.2
(iii) power boilers	"	Negl.	0.4	*	1.3		1.1	3.5	2.5
17. electric transformers									
above 33 KV	Million kva	1.2	3.5	*	6.4	18.38	12.5	30	20
33 kv and below	"	4.46	4.8	*	3.5				
18. electric motors									
above 200 HP	million HP	0.5	0.5	*	0.68	5.45	3.6	6.5	5.8
200 HP and below	"	1.75	2.13	*	2.72				
19. electric cables and wires									
(i) ACSR & AA conductors	000 tonnes	40.6	62.5	*	125	104	85	200	170
(ii) PVC & VIR cables	million metres			*	*	900	600	1250	900
20. electric fans (organised sector)									
	000 Nos.	1358	1481	*	3000	3000	2625	4400	4000
21. electric lamps—									
(i) GLS & others	million nos.	72.14	96.85	*	*		125	200	190
(ii) fluorescent	"						13.4	12.8	18	17
22. dry batteries									
	million nos.	283	436	*	600	1162	670	1700	1300
23. storage batteries (organised sector)									
	000 Nos.	708	940	*	1800	1300	1100	2000	1600
24. fertilizers									
(i) nitrogenous (in terms of N)	000 tonnes	232	541	3000	2500	2284	1162	6000	4000
(ii) phosphatic (in terms of P ₂ O ₅)	"	123	210	1200	900	560	350	1715	1250
25. caustic soda									
	"	218	304	*	500	518	450	1000	785
26. soda ash									
	"	331	405	*	550	618	500	1100	880
27. sulphuric acid									
	"	662	1038	*	2500	2225	1400	4000	3200
28. industrial gas—oxygen									
	million cubic metres	29	34.4	*	50	85	62	165	110
29. thermoplastic resins									
	"					130.5	128	325	280
30. synthetic rubber									
	000 tonnes	14.3	26	70	70	30	30	55	48
31. DMT									
	"	..	..	23	20	24	10	57	50
32. caprolactam									
	"	..	..	23	23	20		20	20
33. methanol									
	000 tonnes	..	14.9			30	25		60
34. pesticides (basic chemicals)									
BHC	"	13	19	69	85	50	30	90	70
BHC	"		18.2			23.8	18	30	25
DDT	"		3.0			4.2	3.8	9.2	8
35. petroleum									
oil exploration and production of crude	million tonnes	3.02	6.06	..	8.5	..	7.7	..	12
refinery products including lubricants(b)	"	9.4	15.4	28	26	24	21.5	39	34.6
36. newsprint									
	000 tonnes	30.3	31	165	150	75	43	205	151

b :—Capacity is in terms of crude throughput.

ANNEXURE 11 (Contd.)

(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
37. paper and paper board	000 tonnes	558	646.6	*	850	1025	830	1400	1200
38. automobile tyres	million nos.	2.31	3.75	*	6	5.2	5.2	11	10
39. bicycle tyres (organised sector)	"	18.46	24.57	*	35	31.3	25	35	30
40. rubber footwear	million pairs	52.7	55.8	*	*	52.0	43	70	60
41. cement	million tonnes	10.8	12.2	*	18	19.76	16	29	25
42. refractories	000 tonnes	695	629	*	1250	1311	830	2000	1600
43. iron ore	million tonnes	24.5	28.1	*	51.4	..	37	..	58
44. coal (including coking coal)	"	67.74	71.41	*	93.5	..	79	..	135
—of which coking coal	"	16.96	17.1	*	25.4	..	17	..	32
45. lignite	"	2.56	3.98	*	..	..	3.4	..	6.0
46. <i>cotton textiles</i>									
(i) cotton yarn	million kgs.	907	959	*	1150	..	1000	..	1270
(ii) cotton cloth (mill sector)	million metres	4401	4297	*	5100	..	4200	..	5200
47. art silk fabrics	million metres	870	1090	*	1500	..	1500	..	2000
48. (i) rayon filament	000 tonnes	36.2	37.5	*	64	42	42	55	50
(ii) rayon staple fibre	"	38	60	*	90	82	80	145	130
(iii) rayon tyre cord	"	10	13.5	*	*	19	17.5	25	23
49. <i>synthetic fibres</i>									
(i) nylon filament and staple fibre	000 tonnes	1.5	6.5	*	29	17.12	16.2	19	19
(ii) nylon tyre cord and other industrial yarn	"					2.4	2.4	10	9
(iii) polyester filament and staple fibre	"	1.4	4.8	*	22	25.5	20.0	59	43
(iv) acrylic fibre	000 tonnes	..	..		..	..		16	14
50. jute manufactures	"	1399.3	1088.5	*	1400	1300	1220		1500
51. woollen fabrics	million metres	9.2	12.6	*	20		17		27
52. bicycles (organised sector)	000 Nos.	1574	1990	*	3200	4030	2630	4030	3500
53. sewing machines (organised sector)	"	430	427	*	600	537	415	730	670
54. drugs and pharmaceuticals	Rs. million	1500	2000	*	2500		3000		5000
55. glass	000 tonnes	296	250	*	450	345	340	673	520
56. soap (organised sector)	"	163	219	*	250	225	300	340	340
57. synthetic detergents	"	8.4	17	*	*	108	85	350	300
58. leather footwear (organised sector)	million pairs	16	21	*	25	23	16		21.5
59. paints & varnishes	000 tonnes	68	65	*	140	118	70	250	108
60. typewriters	000 tonnes	39.6	46.9	*	*		45		81
61. sugar	million tonnes	3.54	3.56	*	4.7	4.3	4.3	6.0	5.7
62. vanaspati	000 tonnes	401	466	*	625	1250	575	1250	740

ANNEXURE III (Contd.)

(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
63. electronics	Rs. million	43	106				2570		7360
(i) consumer electronics	„						760		1330
(ii) medical electronics	„								180
(iii) instruments	„						7		510
(iv) computer and calculators	„						390		600
(v) control and industrial electronics	„						7		260
(vi) components	„						540		1820
(vii) materials	„						100		320
(viii) general facilities	„								30
(ix) telemetry and two-way communication	„								170
(xi) civil navigation	„								40
(x) mass communication	„						included in (i)		190
(xii) tele-communication	„						730		1910
Others	„						50		—

* specific target had not been fixed.

Chapter 6

Village and Small Industries

THE village and small industries' sector covers a wide range of traditional and modern small scale industries including handloom, khadi, powerloom, sericulture, coir, handicrafts, village industries, and mechanised small scale industries (with a capital investment not exceeding Rs. 7.5 lakhs in plant and machinery and Rs. 10 lakhs in the case of ancillary units manufacturing parts and components). These industries with varying levels of investment, technology, scales of production and forms of organisation, have an important role to play in the context of some of the major tasks to be achieved in the Fifth Plan including the removal of poverty, a reduction in the disparities in income and wealth and the regional imbalances. The sector has a definite potential for providing increasingly larger employment opportunities with a relatively smaller capital investment. Establishment of these industries also involves a comparatively shorter gestation period. The products of these industries are capable of meeting a substantial part of the essential and other requirements of the masses and also for earning larger foreign exchange through exports.

6.2. From the data regarding the entire factory sector for 1968, the fixed capital per employee, on an average, in small scale industrial unit was as low as about Rs. 3,170, as compared to about Rs. 22,000 in a large scale unit. Moreover, while the small scale sector accounted for about 7.5 per cent of the total fixed capital investment in the factory sector, its share in the total output was as high as nearly 28 per cent. If account is also taken of small industries below the factory level including the household units, the share of the entire small industries' sector in total industrial output would be considerably larger. In fact, in the case of cotton cloth, the decentralised sector of the textile industry (*viz.*, handlooms, powerlooms and khadi) accounts for as much as 47 per cent of total output. Excluding the value of the products of modern small scale industries for which data are not available, the current level of exports of the products of other small industries is valued at nearly Rs. 150 crores per annum.

I

REVIEW OF PROGRESS

6.3. Lack of adequate and up-to-date statistical data about small industries continues to be a serious handicap for reviewing the progress of the sector in the Fourth Plan period. However, from the available data, the progress made by a number of these industries has been rapid in terms of the creation of

larger opportunities for fuller and additional part-time and full-time employment, and also in the increase in the number of units, range of production and value of exports. However, the pace of growth of most industries continued to be uneven in different States and Union Territories. Besides, progress has also not been upto expectations in realising certain other objectives envisaged in the Fourth Plan including the progressive improvement of skills and production techniques, promotion of these industries in semi-urban and rural areas and the rapid development of agro-based and ancillary industries. Nevertheless, the overall picture of the progress made so far contains not only these disconcerting features, but also several significantly healthy and encouraging trends of development.

6.4. More important problems which stood in the way of the full achievement of some of the aims of the development programmes for different small industries including industrial cooperatives were the shortage of certain raw materials and the inadequacy of statistical data, credit facilities, industrial extension services and marketing facilities. To an extent, short-term solution of some of these problems are somewhat difficult owing largely to the unorganised and widely dispersed nature of these industries, especially the traditional and rural industries. There were also delays in the formulation and sanction of the schemes at the Centre and in the States and in organising and strengthening institutional and other arrangements for providing assistance and facilities in various forms to these industries. Moreover, the shortfalls in production of a number of large industries which supply raw materials to and purchase their requirements of parts and components from small industries, followed by the recent shortage of power, also adversely affected the production of a good number of small industries, including the handloom industry and ancillary units.

6.5. In order to overcome these problems, a number of policy and other measures have been taken over the last few years. These measures include a progressive increase in the allocations of imported and indigenous raw materials in short supply, the control on production and prices of yarn required by weavers, reservation of additional items for exclusive development in the small sector, the provision of concessional finance and investment and transport subsidies for the promotion of industries in selected backward areas, surveys of industrial cooperatives, launching of special schemes for assisting educated and technically qualified persons to set up small units, and an increase in the tempo of developmental activities at the Centre and in the States. These measures, coupled with the inherent dynamism of the sector, appear to be the

main contributing factors accounting for certain distinct healthy and encouraging trends of development. There is evidence to confirm a growing dependence of small artisans and entrepreneurs including technically qualified persons on institutional finance. There is also an encouraging response to the incentives offered for the promotion of industries in selected backward areas. The pace of the utilisation of Plan outlays for enlarging the promotional activities has also picked

up at the Centre and in several States and Union Territories.

6.6. In the Fourth Plan, a total outlay of over Rs. 290 crores had been made in the public sector for the development of different small industries. Against this, the expenditure is estimated at about Rs. 250 crores. The break-up of these figures for different small industries in the Central and State sectors is given below :

Table 1 : Outlay and Expenditure in the Fourth Plan.

(0)	(Rs. crores)				
	fourth plan				
	central and centrally sponsored			states and union territories	
	outlays		estimated expenditure	outlays	estimated expenditure
original	reappraised				
	(1)	(2)	(3)	(4)	(5)
1. small scale industries	37.65	27.33	15.09	67.02	55.24
2. industrial estates . . . . .	..	..	..	18.03	15.73
3. khadi and village industries	95.00	111.00	99.55	1.56	3.11
4. handloom industry	} 4.50	1.10	0.64	26.48	28.57
5. powerlooms				7.67	3.26
6. sericulture	2.00	1.30	0.94	7.94	7.45
7. coir industry	1.50	1.00	0.78	3.51	3.71
8. handicrafts	8.00	2.60	1.29	5.49	4.95
9. rural industries projects ¹	4.50	9.00	10.13	..	..
10. collection of statistics ¹	0.60	0.60	0.57	..	..
<i>total</i>	153.75	153.93	128.99	138.36+	122.02

¹ Centrally-sponsored schemes.

+Includes Rs. 0.66 crore for Uttarakhand and Ladakh.

Additional outlays were made at the Centre for special schemes to assist the educated unemployed to set up small industrial and service units. Although the utilisation of the Plan outlays in the States and Union Territories is expected to be higher, the position varied from State to State as shown in the statement at the end of the Chapter.

6.7. In addition to the outlay in the public sector, about Rs. 560 crores were expected to be invested from private sources including banking and financial institutions. The credit extended by the commercial banks to small industries (including term-loans and advances made to craftsmen and qualified entrepreneurs) rose from Rs. 286 crores by June, 1969 to Rs. 597 crores by June, 1972 and to Rs. 645 crores by December, 1972. It is estimated that about 18 per cent of the credit advanced by the commercial banks

consisted of term loans. The advances by the State Financial Corporations to small industries also increased from Rs. 7 crores in 1969-70 to Rs. 20 crores in 1970-71 and Rs. 21 crores in 1971-72. During the 3-year period 1969-72, the National Small Industries Corporation supplied machines on hire-purchase terms valued at Rs. 20.8 crores, including Rs. 10.7 crores in 1971-72. Taking into account the term loans likely to be advanced during the remaining period of the Fourth Plan as well as the investment from private sources, the total amount of investment in the private sector is expected to exceed the estimate of Rs. 560 crores envisaged in the Plan.

6.8. Some estimates were made in the Fourth Plan regarding the likely increase in the production and exports of certain small industries. These estimates

are shown below along with the available data regarding the achievements :

Table 2: Physical progress in the Fourth Plan

	1968-69 (actuals)	1972-73 (actuals)	1973-74 (estimated)	fourth plan target
(0)	(1)	(2)	(3)	(4)
<i>production</i>				
1. cotton cloth (handloom, powerloom and khadi) (m. metres)	3,584	3,830	3,650	4,250
2. raw silk (m. kgs)	2.3	2.7	3.1	3.0
<i>exports</i>				
3. cotton handloom fabrics and manufactures (Rs. crores)	8.2	15.6*	17.0	15.0
4. silk fabrics and waste— (Rs. crores)	6.0	9.0	12.5	10.0
5. coir products (Rs. crores)	14.5	14.9	15.5	17.0
6. handicrafts („ „)	76.5	108.0	125.0	100.0

*relates to calendar year 1971

It will be noted that whilst the production of cloth in the decentralised sector and exports of coir products are likely to fall short of the targets, the production and exports of other industries would exceed the targets. Some of the other important developments relating to these industries are briefly outlined in the following paragraphs.

6.9. Small Scale Industries.—The main aims of the development programme for small scale industries in the Fourth Plan were fuller utilisation of capacity, rapid growth of ancillaries and the modernisation of selected industries, promotion of these industries in the semi-urban and backward areas, evolution of appropriate technology and assistance to technically qualified persons to set up industries. Some of these aims, as mentioned earlier, have not been achieved to a significant extent. However, it is gratifying that the tempo of growth of these industries in number and range of production has generally been maintained over the last decade. The number of units registered on a voluntary basis with the Industries Directorates of the States and Union Territories increased from nearly 2 lakhs in 1969 to about 3.18 lakhs in 1972, when the total employment in these units was estimated to be at 41.4 lakh persons. A further list of 77 items was added to those reserved for exclusive development in the small scale sector, bringing the total to 124. In these as well as some other industries, the small scale sector continued to compete successfully with the large scale units. Although the allocations of scarce raw materials have been progressively enhanced to a substantial extent, a number of small scale industries continued to experience difficulties in obtaining their full requirements.

6.10. As mentioned earlier, there was a substantial increase in the flow of institutional credit for these industries. The Credit Guarantee Scheme, administered by the Reserve Bank, was further extended and liberalised. A total of 183 credit institutions including all the major commercial and cooperative banks and the State Financial Corporations, had joined the

scheme upto the end of 1972. The State Bank of India and most of the major banks initiated special schemes for providing credit to technically qualified entrepreneurs on liberal terms. The terms for the supply of machinery on a hire-purchase basis by the National Small Industries Corporation were liberalised in June, 1970. Training courses in industrial entrepreneurship for technically qualified persons were started by the Small Industries Service Institutes and certain other organisations.

6.11. The value of purchases from small industries by the Directorate General of Supplies & Disposals rose from about Rs. 30 crores in 1968-69 to about Rs. 86 crores in 1971-72. Consolidated guidelines were issued to public sector enterprises for encouraging and coordinating the development of ancillary units. There are estimated to be about 150 ancillary units, established around public sector undertakings and the total purchases from them by the public undertakings amounted to about Rs. 8 crores during 1970-71.

6.12. Industrial Estates : In pursuance of the aims of the programme for industrial estates envisaged in the Fourth Plan, most States concentrated efforts on consolidating the position of the estates already completed and ensuring the essential facilities in those under construction. As a result, there was considerable improvement in the programme, as indicated below :

Table 3 : Progress of Industrial Estates

	March, 1969	March, 1972
(0)	(1)	(2)
<i>no. of estates completed</i>		
functioning	285	401
not functioning	104	164
<i>no. of sheds</i>		
constructed	8,670	10,840
functioning	5,110	7,070

During the period under review, the annual production of the units in the estates is estimated to have increased by about Rs. 127 crores and employment by 23,350. The number of non-functioning sheds in the estates set up in the rural and semi-urban areas continued to be very high, due largely to their unsuitable location. In the urban areas, a number of new schemes were also taken up for the establishment of industrial areas and developed sites.

6.13. Khadi and Village Industries : The Fourth Plan envisaged that additional production of traditional khadi including Ambar Khadi would be on a self-sufficiency basis. Pursuant to the recommendations of the Evaluation Team on New Model Charkhas, it had also been decided to instal 1040 sets of 6-spindle and 230 sets of 12-spindle new model charkhas during the Fourth Plan period. The production

of all varieties of khadi is estimated to have increased from about 60.0 million sq. metres in 1968-69 to about 77.2 million sq. metres in 1972-73. Employment is estimated to have declined slightly from about 1.3 to 1.2 million.

6.14. The progress of the production units for village industries assisted by the Khadi and Village Industries Commission, is given below:

	1968-69	1972-73
production (Rs. crores)	66.1	101.8
sales (Rs. crores)	63.8	74.31
employment (lakh persons)	8.2	11.9

relates to 1970-71

6.15. *Handloom and Powerloom Industries* : When the Fourth Plan was formulated, it was felt that substantial progress had been made in the rehabilitation of the handloom industry, which is estimated to provide mostly full-time employment to about 70 lakh weavers. However, the programme for the development of the industry in the Fourth Plan period was formulated to assist the weavers' cooperative societies in obtaining their requirements of credit for working capital from the State cooperative banks, yarn and other raw materials at reasonable rates, training in improved appliances and enforcing effectively the restrictions on production of special varieties of cloth reserved exclusively for the handloom sector. Most of these aims could not be fully achieved due largely to the rapid growth of unauthorised powerlooms, shortage of yarn, inadequacy of credit facilities, high percentage of dormancy among the handloom weavers' societies, and marketing difficulties. Besides the imposition of controls on production and prices of yarn required by the weavers referred to earlier, control on distribution of yarn was also imposed which has been gradually relaxed in respect of yarn of certain specified counts. In addition, steps were also initiated by a number of States for strengthening and organising cooperative and other institutional agencies for assisting the weavers in respect of the supply of yarn, credit and marketing.

6.16. Up to the end of April 1972, the total number of authorised powerlooms was about 2.9 lakhs. This included about 32,500 powerlooms out of over 1 lakh powerlooms allotted to the States and Union Territories in 1966, in pursuance of the recommendations of the Powerloom Enquiry Committee. While the slow pace of installation of the powerlooms allotted to the States and Union Territories is reported to be largely due to the inadequacy of the pre and post-weaving facilities, there has been a steady growth of unauthorised powerlooms in some States.

6.17. *Sericulture* : The main aims of the development programme for sericulture in the Fourth Plan were to bring down the cost of production by

increasing the yield of mulberry per acre, supply of disease free layings and the improvement of reeling equipment. The progress made in achieving these aims has been encouraging. As a result of special schemes taken up for the development of both mulberry and non-mulberry silk, the area under mulberry cultivation and production of all varieties of raw silk has already registered appreciable increases. Exports of silk fabrics and waste which went up sharply from about Rs. 6 crores in 1968-69 to Rs. 18 crores in 1969-70, fell to Rs. 9 crores in 1972-73, largely due to a sharp fall in the exports of silk scarves which formed the main item of exports. The industry continued to provide employment, both part-time and full-time, to over 30 lakh persons.

6.18. *Coir Industry* : In the initial years of the Plan period, the progress made in the implementation of the schemes was slow, both at the Centre and also in the coir-producing States. Consequently, there has not been any appreciable increase in the output of coir fibre and other products, exports and internal sales. The industry continued to provide mostly part-time employment to about 5 lakh persons, mainly in Kerala. However, a special scheme has been taken up for restructuring the coir cooperative societies in Kerala so as to bring them to a viable level and to enable them to obtain institutional finance. Recently, some schemes have also been initiated to improve the methods of production and processing to diversify production and to increase the sales of the products, both within and outside the country.

6.19. *Handicrafts* : The development programme for handicrafts in the Fourth Plan included measures for improving the productivity and earnings of craftsmen and also for increasing the sales, both outside and inside the country. Despite the slackening of the developmental activities at the Centre and in most States, there has been a steady increase in exports and also domestic sales through public emporia which rose from Rs. 4.4 crores in 1968-69 to Rs. 6.5 crores in 1971-72. It is estimated that about 14 lakh craftsmen are employed in the production of handicrafts, both on part-time and full-time basis.

6.20. *Rural Industries Projects* : Based on an earlier review, the Fourth Plan envisaged a re-orientation and contraction in the programme of the 49 Rural Industries Projects, which was initiated as a Centrally-sponsored scheme in 1962-63. However, as a result of the steps taken since then, the progress has continued to be satisfactory. The number of existing units assisted and the number of new units set up, have progressively increased. The estimated gross value of production of the assisted units increased from about Rs. 22 crores in 1969-70 to Rs. 34 crores in 1971-72. Employment is also estimated to have increased from 1.16 lakh to 1.47 lakh persons. The coverage of the existing Projects has been extended to the whole district excluding towns with population of more than 15,000. Besides 5 new projects already taken up, preliminary work for starting an additional 57 new Projects in the

Fifth Plan has been also initiated. The Fourth Plan outlay for this programme was substantially increased.

6.21. *Collection of statistics*: Under the Annual Survey of Industries, statistics for the small scale sector of certain priority industries have been collected on a census basis, but the data relate to 1968. A Centrally-sponsored scheme for the collection of statistics of small industrial units below the factory level in the urban areas is also under implementation.

II

PROGRAMMES FOR THE FIFTH PLAN

Objectives and Strategy

6.22. A significantly large number of persons already dependent on traditional industries like handloom, sericulture, coir, khadi and village industries, are living below the poverty line. They are mostly concentrated in rural and backward areas and some of them also belong to the backward classes. Therefore, the principal objectives of the programme for the development of different small industries in the Fifth Plan are to facilitate the attainment of some of the major tasks for the removal of poverty and inequality in consumption standards of these persons through creation of large-scale opportunities for fuller and additional productive employment and improvement of their skills so as to improve their level of earnings. Furthermore, the programme would be reoriented to step up the production of some of the basic and essential articles for the masses and also the products which have a larger potential for exports. Taking into account the shortcomings in implementation of the programmes during the Fourth Plan period and the recommendations of the Task

Forces set up in connection with the formulation of the programmes for these industries, the broad strategy of the programmes will be to :

- (i) develop and promote entrepreneurship and provide a 'package of consultancy services' so as to generate maximum opportunities for employment, particularly self-employment,
- (ii) facilitate fuller utilisation of the skills and equipment of the persons already engaged in different small industries,
- (iii) progressively improve the production techniques of these industries so as to bring them to a viable level, and
- (iv) promote these industries in selected 'growth centres' in semi-urban and rural areas including backward areas.

Outlay

6.23. The broad strategy to be followed in the Fifth Plan would entail a considerable enlargement of the development programmes for providing assistance and facilities in various forms to these industries. It would also be necessary to expand the Central programmes to a substantial extent so as to supplement the promotional activities of the States and Union Territories. For this purpose, a total outlay of about Rs. 611 crores in the public sector is envisaged in the Fifth Plan. This outlay is double the outlay made in the Fourth Plan and nearly two and a half times the estimated expenditure of about Rs. 250 crores during the Plan period. The allocations of the total outlay of about Rs. 611 crores as between the Centre, the States and Union Territories and also for different small industries are given below :

Table 4 : Outlay for Village and Small Industries in Public Sector

(Rs. crores)

industry	fourth plan estima- ted ex- penditure	outlay for fifth plan			Total
		Centre	Centrally sponsor- ed schemes	States & Union Territories	
(0)	(1)	(2)	(3)	(4)	(5)
1. small scale industries	70.33	95.00	..	121.31	216.31
2. industrial estates	15.73	..	..	24.97	24.97
3. khadi and village industries	102.66	180.00	..	5.59	185.59
4. handloom industry	29.21	11.80	..	43.52	55.32
5. powerlooms	3.26	0.25	..	10.75	11.09
6. sericulture	8.39	8.00	..	26.90	34.90
7. coir industry	4.49	2.48	..	13.02	15.50
8. handicrafts	6.24	8.00	..	13.58	21.58
9. rural industries projects	10.13	..	45.00	..	45.00
10. collection of statistics	0.57	..	0.95	..	0.95
<i>total</i>	251.01	305.53	45.95	259.64	611.12

The total outlay of about Rs. 611 crores is exclusive of the funds likely to be utilised for the development of these industries from the separate outlays envisaged for the backward areas including the tribal and hilly areas and for schemes for industrial areas included under the programme for large industries. In addition to the outlays in the public sector, about Rs. 1,050 crores are expected to be invested from private sources including banking and financial institutions as against about Rs. 560 crores envisaged under the Fourth Plan. Thus, for the Fifth Plan, a total outlay of about Rs. 1,660 crores would be available for the development of small industries.

6.24. The enlarged development programmes formulated for the Fifth Plan would have to be supported by suitable policy measures of protection and incentives. In this context, within the framework of the Industrial Policy Resolution, 1956, the policies relating to industrial development and licensing have been recently reviewed. On the basis of this review, the Government's policy will continue to be to encourage competent small and medium entrepreneurs in all industries, who will also be preferred *vis-a-vis*, the larger industrial houses and foreign companies, in the setting up of new capacity. The existing policy of reservation for the small sector will not only be continued but also extended consistent with the potentialities and performance of the sector. Licensing policy will seek the promotion of small ancillaries, wherever feasible and appropriate. Small entrepreneurs including their cooperatives will be encouraged to participate in the production of mass consumption goods. It is also contemplated to enlarge and intensify a variety of positive measures designed to promote the growth of small and medium entrepreneurs.

6.25. Some of the other more important measures proposed to be initiated for achieving the objectives for the Fifth Plan are briefly set out below :

- (i) *Package of Consultancy Service* : It is considered essential that suitable agencies may be organised at the State, regional and, wherever considered necessary, at the district levels, to provide a 'package of consultancy services' to small entrepreneurs, so that they do not have to approach all the individual agencies concerned with giving technical advice and financial and other facilities. These facilities will be provided to the existing industrial units for the purposes of modernisation and expansion including diversification, and to new entrepreneurs from pre-investment to post-investment stages. The existing administrative procedures for giving essential facilities to small entrepreneurs including power, water, machinery, etc., will be reviewed so as to avoid unduly long delays.
- (ii) *Fuller Utilisation of Skills and Production Capacity* : Prompt and adequate availability of credit and scarce raw materials are two of the essential pre-requisites for fuller utilisation of the skills and equipment of artisans and entrepreneurs. As regards credit facilities, the broad approach in the

Fifth Plan will be to assist them in securing institutional finance to the maximum extent possible. For this purpose, provisions for 'seed' capital and 'margin' money and, wherever necessary, for interest subsidy have been made for the Central and State level corporations engaged in the promotion of small industries so as to enable them to obtain their requirements of credit from financial institutions. Recently, guidelines have been issued to the nationalised banks for ensuring prompt and adequate availability of finance for setting up viable small industries including small business and service units and also for the establishment of industrial estates. In the case of traditional and rural artisans, greater efforts will be made to help them to obtain loans under the Differential Interest Rates Scheme. It is also proposed by the Reserve Bank of India to undertake a comprehensive survey of the credit and other requirements of the small industries sector on the lines of the Rural Credit Surveys with a view to evolving a suitable institutional framework for meeting the credit and other needs of the sector.

- As regards the supply of scarce raw materials, it should be possible, after collection of the essential statistical data about small units including handlooms and handicrafts, to arrange for the more equitable allocation of such indigenous and imported raw materials as between the small and organised sectors of different industries. Provisions have been made in the State Plans for strengthening and organising cooperative and other institutional agencies for assisting these industries for the supply of scarce raw materials, credit, marketing, processing facilities, etc.
- (iii) *Technical Improvements and Research* : Provisions have been made in the State Plans and also at the Centre for strengthening the agencies engaged in providing industrial extension services, establishment of testing centres, expansion of training and common service facilities and identification of appropriate technologies. In addition, for the first time, the technological needs of traditional as well as modern small industries have been studied and specific schemes for research and development have been included in Central and State Plans.
- (iv) *Dispersal* : Although several traditional and rural industries are already located largely in semi-urban, rural and, to some extent, backward areas, one of the main aims of the programmes formulated for the Fifth Plan for all small industries including sericulture, village industries and handicrafts, is to progressively extend the promotional activities to selected rural and backward areas including tribal and hilly areas. Details of the measures proposed to be taken for development of backward areas and promotion of

industries in selected backward areas are outlined in the Chapters on Industry and Minerals and backward and Special Areas. Several specific schemes have also been included in the State Plans and the Central programmes for expansion of industrial extension services in selected 'growth' centres in backward areas. In addition, a special scheme will also be formulated for the provision of certain essential infra-structure facilities for accelerating the growth of small and medium scale industries including ancillaries in selected backward areas.

- (v) *Industrial Co-operatives* : In order to undertake a programme for restructuring different small industries organised on a cooperative basis into viable societies, some States have already taken up schemes for conducting a quick survey with a view to identifying viable and potentially viable societies and the provision of the necessary financial and managerial assistance to them by the financial institutions and the Government. Provisions have been made in the State Plans for loans for share capital and interest and managerial subsidies for the existing viable and potentially viable industrial co-operatives and also for the organisation of new cooperatives. The Central programme also includes certain schemes for providing consultancy services, training and marketing and other assistance to industrial co-operatives.
- (vi) *Coordination and Monitoring* : In order to avoid overlapping and duplication of activities, suitable steps will be taken for co-ordinating different programmes like those for village industries and the Rural Industries Projects, and also other schemes such as those for the collection of statistics, training, marketing and process development, etc. Facilities already available in the existing research, technical and educational institutions and in the public sector undertakings for consultancy, training and for product and process development will be utilised more fully for meeting the requirements of small industries to the extent possible. At the State level too, it is expected that arrangements will be made for coordinating the activities of the Departments of Industries and Cooperation with the State corporations concerned with the promotion of industries including the State Financial Corporations, the Agro-Industries Corporations, the State Khadi & Village Industries Boards, the State Electricity Boards and other financial and research institutions and associations of industries. It is also essential that arrangements are made at the Centre and in the States and Union Territories for the expeditious clearance of new schemes, speedier implementation of the development programmes and the monitoring of progress.

- (vii) *Statistics* : Basic statistical data for small industries are essential for both reviewing the impact of the programmes and for formulating the new programmes. Therefore, provisions have been made in the Plan for the continuation of the on-going schemes for the collection of statistics and new schemes for keeping the data upto-date.

6.26. The contents of the programmes and physical targets for the Fifth Plan in respect of different small industries are briefly outlined in the following paragraphs.

Small Scale Industries

6.27. The programmes for the development of modern small scale industries will be reoriented in the context of the principal objectives and strategy outlined earlier, along with a greater emphasis on the rapid promotion of small units as ancillaries to large undertakings and arrangements for providing marketing services to them and industrial cooperatives. It is, therefore, proposed to review the existing arrangements for the promotion of small ancillary and feeder units by large industrial undertakings particularly those in the public sector, and to assist ancillary units to overcome their problems relating to the payment of bills, supply of scarce raw materials, etc. Some new subcontracting exchanges will be started for the promotion of ancillaries. Suitable schemes will be formulated for providing marketing services to small units by setting up trade centres in the country and display centres abroad and arranging marketing research and intelligence.

6.28. The Central Small Industries Development Organisation including the Small Industries Service Institutes and Extension Centres will be strengthened with technical staff and equipment and new Institutes and Centres will be set up in selected backward areas. The activities of the Central Institutes of Designs for tools and electrical measuring instruments will be expanded and regional testing centres will be established. Private consultants and consultancy agencies will be assisted to provide techno-managerial consultancy services. Some new proto-type production and training centres will be started for specific industries and the schemes for assisting educated and technically qualified persons to set up small industries and service units will be continued. The present range of activities of the Small Industry Extension Training Institute and the Appropriate Technology Cell will be expanded. To enable the National Small Industries Corporation to supply a larger number of machines on hire-purchase basis, provisions have been made for increasing its equity base and interest subsidy for obtaining institutional finance.

6.29. The development programmes to be implemented in the States and Union Territories will also be enlarged so as to extend the range of assistance and the facilities to be provided to small scale industries, particularly in the backward areas. For this purpose, provisions have been made for strengthening their Directorates of Industries and Corporations engaged in the distribution of scarce raw materials, provision of certain infra-structure facilities including the

establishment of industrial areas and industrial estates, supplying instalment credit and a package of consultancy services and marketing assistance. Schemes have been included in the State Plans also for the expansion of facilities for common services, quality-marking, testing, training and development of specific industries like electronics, leather, plastics, etc.

6.30. It is envisaged that the combined programmes of the Centre, States and Union Territories will create additional employment opportunities for about 15-16 lakh persons through the expansion of existing units and the establishment of new units in the Fifth Plan period. It is expected that semi-urban and backward areas will have a substantially large share in the number of new units as well as the additional employment.

Industrial Estates and Areas

6.31. In the State Plans, as mentioned above, provisions have been made for 'seed' capital and 'margin' money for the States corporations to enable them to obtain institutional finance for establishment of industrial areas and developed sites and for assisting small entrepreneurs to set up their own factory buildings in the vicinity of large cities and in large towns. Common service facilities required by units in estates engaged in the production of specific industries like leather and electronics, will also be provided. It is also proposed to construct flatted factories for craftsmen and small entrepreneurs. Provisions have also been made for the construction of industrial estates, complete with factory buildings to be set up in selected 'growth' centres in semi-urban, rural and backward areas. Besides conducting quick techno-economic surveys for the selection of suitable sites for the location of industrial estates and areas, functional type of factory buildings would be constructed so as to minimise the use of scarce building materials and to reduce the level of rent. Establishment of estates and developed areas by industrial cooperatives and public sector undertakings will continue to be encouraged and assisted.

Khadi and Village Industries

6.32. The main thrust of the programmes for the development of khadi and village industries will be to reach a larger proportion of artisans belonging mostly to socially backward and vulnerable sections of society and upgrading their techniques of production. The programme for cotton khadi envisages the introduction of 2-spindle charkhas for replacing the traditional charkhas and also 6 and 12-spindles sets of new model charkhas under controlled conditions. Over the Fifth Plan period, employment is expected to increase by about 2 lakh persons.

6.33. The programmes for the development of village industries, based on a study of the pattern of demand for different products, will be expanded substantially, both in terms of value and the range of production, so as to augment the supplies of essential articles required for mass consumption. The programmes for these industries as mentioned earlier, will be

coordinated with those of the **Rural Industries Projects**. Arrangements will be made for meeting the working capital requirements of these industries from financial institutions at a reasonable rate of interest. It is envisaged that employment in the units to be assisted by the Khadi and Village Industries Commission will increase by about 11.5 lakh persons.

6.34. A total outlay of Rs. 180 crores is envisaged for the development of these industries in the Fifth Plan, excluding the funds likely to be utilised for the development of these industries from the separate outlays made under the Plan for the development of backward areas including tribal and hilly areas. Provisions have been made in the State Plans for strengthening the staff of their State Boards for these industries and for taking up schemes which do not conform to the pattern of the Khadi and Village Industries Commission.

Handloom and Powerloom Industries

6.35. Of the total Fifth Plan target of 10,000 million metres of cotton cloth, the share of the handloom and powerloom industries are envisaged at 3,000 and 1,800 million metres, respectively. In allocating these shares, account has been taken of, among other factors, the under-utilisation of the production capacity of the handloom industry due to a variety of reasons including the rapid and haphazard growth of unauthorised powerlooms. With a view to reducing the dependence of the majority of the handloom weavers on the master weavers and money lenders, it is proposed to strengthen and organise the cooperative and other suitable institutional agencies for assisting them to overcome their problems relating to the supply of yarn, credit, marketing etc. It will also be necessary to ensure adequate production of yarn of the categories and varieties required by the handloom weavers and for arranging their supply at reasonable prices. As regards powerlooms, it is considered essential to take more effective measures for prohibiting further growth of unauthorised powerlooms and also for enforcing the restrictions on the production of specified varieties of cloth already reserved exclusively for the handloom sector.

6.36. A special study of the handloom industry is proposed to be taken up which would help in taking concrete policy and other measures for the development of the industry, including the attainment of the share allotted to the industry for meeting the additional requirements of cloth during the Fifth Plan period. In the meanwhile, provisions have been made in the State Plans for the expansion of some of the existing and establishment of new cooperative spinning mills; strengthening and establishment of cooperative and other organisations for supplying raw materials, credit, marketing assistance and common processing facilities; rebate on sale of handloom cloth; supply of improved appliances, etc. These developmental activities in the States and Union Territories will be supported by a substantially enlarged Central programme which includes the establishment of new institutes of technology and service centres for training, design, research and extension services and the promotion of exports and domestic sales.

Sericulture

6.37. In the context of the distinctly important position of our sericulture industry amongst the silk-producing countries of the world and the large number of persons engaged in it, the programme for the development of the industry will be expanded substantially in the Fifth Plan in order to increase the production of mulberry, tasar, eri and muga silk; to reduce the cost of production and to expand exports. To achieve these aims, it is proposed to strengthen and expand the activities of the Central Silk Board relating to research, training and collection of statistics and extension of technical and service facilities to assist the silk producing States and Union Territories in formulation and implementation of their development programmes, particularly in the tribal and hilly areas. Besides improving the quality of silk products through the conversion of cottage basins into mini filatures and the introduction of automatic reeling, it is also proposed to expand the activities of the existing raw material bank and to take suitable steps for stabilising the prices of raw silk. In view of the abundant resources of oak trees suitable for the rearing of worms for the production of tasar silk in the entire sub-Himalayan region, special organisational arrangements will be made for the development of tasar silk in this region.

6.38. Certain special schemes have already been initiated for increasing the production of mulberry silk in Karnataka and tasar silk in Manipur. Most of the other silk producing States have also formulated detailed schemes for stepping up the production of suitable varieties of silk, in consultation with the Central Silk Board. These schemes envisage a sizeable increase in the areas under mulberry cultivation along with the extension of irrigation facilities, establishment of basic seed farms and graft nurseries, construction of grainages, setting up of chowkie rearing centres and the organisation of functional and other types of cooperatives. The provisions made in the State Plans are expected to be supplemented to a considerable extent by institutional finance. It is envisaged that over the Fifth Plan, the production of raw silk will increase from about 31 lakh kgs. to over 46 lakh kgs., including 35 lakh kgs. of mulberry silk and over 11 lakh kgs. of non-mulberry silk. The value of exports of silk fabrics and waste is expected to increase from Rs. 12.5 crores to about Rs. 21 crores and fuller and additional employment from about 30 lakh to 38 lakh persons.

Coir Industry

6.39. Like sericulture, the coir industry also occupies an important position among the coir-producing countries and provides employment to a very large number of persons, mostly in Kerala. In order to provide fuller employment and to expand further the level of exports and internal sales, the development programmes for the industry have been designed with considerable emphasis on research for product diversification and improvement so as to modernise the industry and upgrade the quality of products. Detailed schemes have been drawn up for the purpose and also for the

promotion of sales within and outside the country, extension services, training, and collection of statistics. In addition, as mentioned above, special schemes have already been initiated for re-structuring the existing coir cooperatives into viable societies and provisions have been made for continuation of these schemes. In States, other than Kerala, which do not have retting facilities, it is proposed to encourage and assist the establishment of a large number of mechanised units for the production of mattress, bristle and curled fibres and also ropes. It is envisaged that over the Fifth Plan the production of coir fibre will increase from 1.6 lakh tonnes to 2.4 lakh tonnes, exports from about Rs. 15.5 crores to Rs. 19 crores and internal sales from about Rs. 15 crores to over Rs. 21 crores.

Handicrafts

6.40. The main aims of the development programme for handicrafts in the Fifth Plan are to increase production and exports and to improve the earnings and working conditions of craftsmen. In addition, more intensive efforts will be made to progressively reduce the role of middlemen and intermediaries in internal sales and exports. Greater attention will also be given to development of lesser known and tribal crafts. For achieving these aims, the activities of the Handicrafts Board will be considerably enlarged to supplement the efforts of the States and Union Territories, particularly for training, evolution of improved designs establishment of common service facilities, collection of statistics and organised production centres. All these activities will be oriented towards the increased production of selected crafts, especially those which have larger export potential like woollen carpets. In the State Plans, provisions have been made for training facilities, marketing assistance including the organisation of procurement depots, the establishment of industrial estates including flatted factories at selected and suitable sites, financial assistance to cooperatives of craftsmen and the provision of essential facilities.

6.41. Although credit has been taken in the export projection for handicrafts in the Fifth Plan for Rs. 220 crores in 1978-79, endeavour would be made to increase it further to Rs. 250 crores. Over the Fifth Plan, the internal sales through public emporia are expected to increase from Rs. 8 crores to Rs. 20 crores. Besides fuller employment to the existing craftsmen, it is also envisaged that additional employment would be generated for about 4 lakh persons.

Rural Industries Projects

6.42. In addition to the continuation of the existing 49 Rural Industries Projects, which is a Centrally-sponsored scheme, it has already been decided to start 62 new projects mostly in selected backward areas. Action has already been initiated for the appointment of staff for the new Projects and for conducting rapid industrial potential surveys with a view to formulating development programmes to be implemented during the Fifth Plan, which will be coordinated with the programme for the development of village industries.

6.43. The development programmes for different small industries will be implemented with the combined

and coordinated efforts of the Central and State-level organisations and institutions concerned as well as the financial institutions, industrial cooperatives and associations of small industries. Along with the State Governments and their developmental institutions, the all-India financial institutions will also have to play a more dynamic role with a view to integrating the credit facilities with those for other related facilities, such as, techno-managerial consultancy services and marketing. It is also proposed to encourage and assist

associations of small industries to enlarge their activities for the dissemination of technical and other information relating to appropriate technologies, marketing intelligence, maintenance of accounts, etc. It is expected that the implementation of these development programmes will help not only in providing opportunities of productive work and reasonable income all over the country, but also in making the entire sector of small industries more self-reliant and self-supporting.

ANNEXURE

Fourth Five Year Plan : Village and Small Industries

(Rs. lakhs)

state union territory	fourth plan	
	app- roved outlay	esti- mated ex- pendi- ture
(0)	(1)	(2)
<i>I. states</i>		
1. Andhra Pradesh	850	541
2. Assam	576	494
3. Bihar	700	646
4. Gujarat	298	310
5. Haryana	500	354
6. Himachal Pradesh	200	221
7. Jammu & Kashmir	385	270
8. Karnataka	500	711
9. Kerala	1043	1011
10. Madhya Pradesh	537	506
11. Maharashtra	750	1086
12. Manipur	71	131
13. Meghalaya	125	88
14. Nagaland	66	62
15. Orissa	322	326
16. Punjab	850	522
17. Rajasthan	87	115
18. Tamil Nadu	2500	2057
19. Tripura	112	81
20. Uttar Pradesh	2010*	1441
21. West Bengal	614	576
<i>total—I</i>	13096	11549
<i>II. union territories</i>		
1. Andaman & Nicobar	5	4
2. Arunachal Pradesh	45	45
3. Chandigarh	28	39
4. Dadra & Nagar Haveli	10	2
5. Delhi	475	412
6. Goa, Daman & Diu	57	76
7. Lakshadweep	4	3
8. Mizoram	@	30
9. Pondicherry	50	40
<i>total—II</i>	674	651
<i>grand total (I+II)</i>	13836	12200

*Includes Rs. 66 lakhs for Uttarakhand and Ladakh.

@Included in Assam.

Chapter 7

Transport, Tourism and Communications

I TRANSPORT

THE transport system provides the essential infrastructure for the development of the country. While the demand for expansion of transport generally derives from the needs of the other sectors of the economy, to an extent, the transport sector also acts as a leading factor in stimulating socio-economic development. The transport system comprises a number of distinct services such as railways, roads, road transport, inland water transport, shipping, ports and air transport. The system is characterised by long range and lumpy investments which are devoted to the creation of basic infrastructure facilities such as rail tracks, roads, ports and harbours, air terminals etc. The programmes in this sector have, therefore, to look beyond the current needs and have to take into account future technological and scientific developments. It is necessary not only to make careful and realistic projections of transport requirements in advance, but also to review them continually so that suitable adjustments are made from time to time.

7.2. Significant developments have taken place in transport since the commencement of the First Five Year Plan. Investments in transport and communications have accounted for about 23.6 per cent of the total outlays in the public sector during the period of the first three five-year Plans and the three years of the Annual Plans (1966—69). In the Fourth Five Year Plan, outlays for transport and communications formed 20.4 per cent of the total Plan outlay. Efforts in the First Plan were concentrated largely on the rehabilitation and replacement of over-aged assets which had been subjected to great pressure during the preceding decade. In the Second Plan, the emphasis shifted to programmes required to augment capacity on the railways and other transport media. The development of roads and road transport also received increasing emphasis to meet the relatively more dispersed traffic requirements all over the country. The process of expansion of transportation capacities was carried further from the Third to the Fourth Plan with due regard to the future economic map of the country. The table at Annexure I shows, categorywise, the progress made since 1955-56.

7.3. While there has been continuing expansion in the transport system under the Five Year Plans, there have been some shifts in the relative emphasis on different modes of transport and the share of different modes of transport in total traffic has undergone substantial variation with the change in the pattern of economic development and in the nature of the demands on the transport system. Thus, there has been a

significant change in the relative share of rail and road transport in the total traffic; the share of roads in the total traffic, both passenger and goods, has been increasing faster than that of railways even though in absolute terms, traffic on both the modes of transport has increased. The growth and relative shares of rail and road in goods and passenger traffic is shown in the table below:

Table 1 : Estimated Relative Share of Rail and Road in Goods and Passenger Traffic

year	railways	road transport	percentage share	
			railways	road transport
(0)	(1)	(2)	(3)	(4)
I. goods traffic (billion tonne-kilometres)				
1960-61	88	17	83.8	16.2
1965-66	117	34	77.5	22.5
1968-69	125	40	75.8	24.2
1973-74	147	65	69.3	30.7
II. passenger traffic (billion passenger kilometres)				
1960-61	78	57	57.8	42.2
1965-66	96	82	53.9	46.1
1968-69	107	98	52.2	47.8
1973-74	135	130	50.9	49.1

7.4. There has been a stagnation in coastal shipping and both coastal tonnage and coastal traffic have shown a declining trend over the years. A number of old vessels which had outlived their economic utility were scrapped without being replaced. The importance of inland water transport has also not been growing though in some regions such as north-eastern and southern, it has considerable potential. There has, however, been rapid progress in the field of civil aviation in the country and efforts have been made to keep pace with important technological changes taking place all over the world in this field. The growth of passenger traffic carried by Indian Airlines in the past ten years has been considerably faster than the growth of traffic on rail or road transport.

7.5. The process of expansion of transport services will continue during the Fifth Plan period. It is anticipated that while there may be a strengthening of past trends in several respects, there may be

a marked departure from the past pattern in the development of certain modes of transport. Different modes of transport have different economic and technological characteristics and it is envisaged that in the Fifth Plan, new investments will be undertaken having regard to the inherent suitability of various modes of transport for different types of traffic. The main emphasis in the Fifth Plan will be on a coordinated and 'systems' approach to the development of the various parts of the transport system so that the system is viewed as a whole with different parts being interdependent and supporting and supplementing each other as far as possible.

7.6. In the case of Railways a large proportion of the freight traffic comprises a small number of specific bulk commodities and the share of these commodities in the total traffic is expected to continue to increase during the Fifth Plan period. The pattern of traffic on the railways is characterised by a concentration on the trunk routes interlinking the major cities of Bombay, Calcutta, Delhi and Madras. A large part of the incremental traffic is expected to arise on these trunk routes. The emphasis in the Fifth Plan will, thus, have to be laid on high volume operations on a limited system of rail trunk routes. A significant step-up is envisaged, in particular, in the production of coal in the country during the Fifth Plan from about 80 million tonnes anticipated in 1973-74 to about 140 million tonnes in 1978-79. Coal will continue to remain the principal source of domestic and commercial energy in the country. The requirements of coal transport particularly from the Bengal-Bihar coalfields, which will remain the main belt of coal production, will need to be given particular attention during the Fifth Plan. The emphasis in the railway development programme will generally be on modernisation and improvement of the existing network rather than on its extension.

7.7. With the expansion of the various sectors of the economy, decentralisation of production, development of backward and under-developed regions and emphasis on an increase in agricultural production, the importance of developing roads and road transport will be even greater in the Fifth Plan than in the past. The complexion of development of the national highway system will undergo a change with a greater emphasis on the improvement of road standards than on the removal of elementary deficiencies like missing links and missing bridges in respect of which considerable leeway will have been made with the completion of the Fourth Plan programmes. In the State road programmes, rural roads will receive even greater attention than in the Fourth Plan as they meet the needs of a large number of people living in rural areas and also constitute the essential infrastructure for rural development. In fact, the programme for rural roads is one of the components of the 'Minimum Needs Programme' which is proposed to be taken up in the Fifth Plan.

7.8. The expansion of road transport is envisaged in the Fifth Plan in keeping with the needs of the economy and to enable the proper utilisation of the roads which are being constructed. The Railways will in future concentrate more and more on moving bulk traffic between selected points and from these points

further distribution will have to be arranged by road transport. More dumps for coal and steel are proposed to be set up at railway terminals. Road transport will have to operate for the movement of these materials from the dumps. Railway stations in remote areas will increasingly be connected by road links and the provision of road transport on these road links will have to be ensured. The need for diversification of the sizes and types of commercial vehicles will be taken into account in the vehicle manufacturing programme, but there will be relatively greater stress on the manufacture of large sized public carriers. In passenger transport, a higher priority is proposed to be given to the requirements of public transport as compared with privately owned transport.

7.9. It is proposed to utilise coastal shipping more fully in the Fifth Plan than has been possible in the past. A significant recent development which is expected to offer new opportunities for coastal shipping is the development of Haldia as ancillary to Calcutta Port. The economics of coastal movement of coal which is the most important single cargo for coastal shipping is expected to improve substantially with the commissioning of Haldia Port. A sizeable increase is expected in the volume of total coal movement from West Bengal-Bihar coalfields to destinations in Southern and Western India. Utilisation of coastal shipping to the extent possible for this long distance haulage of coal will help in the optimisation of the use of the country's transport system. The role of inland water transport is also expected to expand in the Fifth Plan, particularly in the eastern region. A number of major ports will be ready to receive large sized bulk carriers and tankers during the Fifth Plan period. An off-shore terminal, the first of its kind in India is also likely to be completed during the plan period. Modernisation and standardisation of air transport fleet will receive high priority in the development of air transport in the Fifth Plan.

Outlays

7.10. The total outlay on Transport in the public sector during the Fifth Plan is reckoned at Rs. 5697 crores including Rs. 4343 crores in the Central sector and Rs. 1354 crores in the Plans of States and Union Territories. The distribution of the outlay between different programmes is shown below:

Table 2 : Outlays on Transport in the Fifth Plan

head of development	(Rs. crores)				
	centre	central-ly sponsored	states	union territories	total
(0)	(1)	(2)	(3)	(4)	(5)
1. railways	2550 ¹	..	..	..	2550 ¹
2. roads	620	94	981	79	1774
3. road transport	26	..	257	2	285
4. ports	320	10	19	4	353
5. shipping	258	..	..	2	260
6. inland water transport	48 [†]	14	6	1	69
7. lighthouses	12	..	..	..	12
8. civil air transport	391	..	2	1	394
9. total	4225	118	1265	89	5697

¹Including Metropolitan Rail Transport.

[†]Including Rs. 22 crores for Farakka Barrage Project.

A detailed table indicating the distribution of out-lays in the entire transport, tourism and communications (including broadcasting and television) sectors is given in Annexure II.

RAILWAYS

7.11. The Railways will continue to play a pre-dominant role in our transport economy. Given the geographical disposition of our natural resources, the character of our development plans, with its emphasis on basic/heavy industries, the basic form of fuel used in the country namely coal and the requirements for fast, economical long distance passenger movement, it is inevitable that Railways continue to perform the major transportation task in the country.

7.12. It is anticipated that at the end of the Fourth Plan, the railway system will have a total route length of about 61,000 kilometres of which about 50 per cent will consist of broad gauge, 43 per cent metre gauge and 7 per cent narrow gauge. About 20 per cent of the railway route kilometreage will be double or multiple lines and the balance will be single line. The electrified sections on the railway system totalled to about 4000 route kilometres at the end of 1972 and diesel locomotives were operating over nearly 26,000 route kilometres. Being the largest public undertaking in the country Railways employ a total number of about 1.4 million people.

7.13. The Fourth Plan originally envisaged a freight traffic target of 265 million tonnes by the end of 1973-74. This target was subsequently revised downwards to 240.5 million tonnes at the time of the Mid-Term Appraisal. The traffic likely to materialise by the end of 1973-74 was expected to be about 215 million tonnes but less may actually materialise. Whilst the traffic in terms of originating tonnage in the Fourth Plan period had not materialised as anticipated, the average lead of traffic on the railways had shown a larger increase than what had been anticipated. The average lead had increased from about 610 kilometres at the beginning of the Fourth Plan to about 675 kilometres by the end of the Fourth Plan. In the case of passenger traffic, suburban traffic had increased faster than non-suburban traffic.

7.14. In the Fourth Plan there had been sluggishness in the growth of traffic carried by rail due to the slow rate of growth of the economy particularly in sectors like coal and steel. At the same time, difficulties have been experienced in the movement of certain commodities like coal from the Bengal-Bihar coal fields, foodgrains from northern India to destinations in south and eastern India, cement from south India to north etc. The difficulties had arisen due to a number of factors. Whilst capacity on the Indian Railways system had been built in the form of modernised traction, newer and bigger wagons etc., full advantage of the modernised facilities could not be reaped due to the lack of supporting or ancillary facilities. Train load movements in block-rakes created loading and unloading difficulties, and undue detentions to wagons. There were also difficulties due

to the incompatibility of the coupling arrangements among wagons. Further, shortages were also felt at times for covered wagons for the movement of certain items like foodgrains, cement and fertilisers. Railway operations were also affected by law and order situations in certain areas, by power shortages, labour problems etc.

7.15. The anticipated expenditure in the Fourth Plan including the expenditure on replacement is about Rs. 1419 crores, of which the expenditure on rolling stock, track renewals and line capacity works constituted about 70 per cent. Only a limited programme of project oriented new railway lines were taken up during the Fourth Plan. A significant measure of electrification will be completed on Howrah-Delhi and Howrah-Bombay trunk routes. Considerable progress will also be achieved towards the modernisation and improvement of signalling and telecommunication systems.

7.16. The Fifth Five Year Plan for Railways has been drawn up keeping in view certain broad trends which have been noticed and which are likely to persist in the future. These trends are the followings:

- (i) The busy arterial routes which form only about 24 per cent of the route kilometreage of the Indian Railways carry about 72 per cent of the traffic;
- (ii) The share of bulk commodities such as public coal, iron and steel, ores, stones, cement, fertilisers, foodgrains and petroleum products which formed 58 per cent of the total revenue earning tonnage in 1950-51 accounted for as much as 80 per cent in 1971-72; and
- (iii) The demand for through and 'limited stop' fast passenger services between main centres of industry and population has been increasing rapidly.

All these factors are of crucial importance for the efficient functioning of the railway system and would continue to influence the railways' Fifth Plan Programme.

7.17. *Freight Traffic:* The Fifth Five Year Plan for Railways envisages that the originating traffic by the end of 1978-79 will be about 300 million tonnes. The traffic targets have been arrived at after taking into account the likely growth in production envisaged in the Fifth Five Year Plan for important commodities like steel, coal, mineral oil, foodgrains etc. Short lead traffic to steel plants is likely to increase substantially during the Fifth Plan and this increase will have an impact on overall lead.

7.18. *Passenger traffic:* In respect of non-suburban passenger traffic, the objective will be to clear fully, as far as possible, the long distance and medium distance traffic for which the railways are a relatively

more convenient form of transport. The measures proposed to be adopted are as follows:

- (i) The development of adequate passenger terminal and yard capacities particularly in metropolitan centres;
- (ii) Longer passenger trains on long distance routes; and
- (iii) The introduction of coaches of higher carrying capacity.

7.19. In the Fifth Five Year Plan, provision has been made for an increase in the capacity of railways for non-suburban passenger traffic to cater to a rate of growth of about 4 per cent (simple) per annum. It is envisaged that short distance passenger traffic would be gradually shifted from rail to road transport so that costly rail capacity can be released for long distance traffic. On the whole, it may be possible to provide for about 6 to 7 per cent growth in rail passenger traffic on long distance trunk routes. The needs of suburban/intra-city traffic are proposed to be met during the Fifth Plan period mainly by optimising the existing suburban services. Substantial progress is also expected to be made with the development of a rapid transit system in Calcutta and a beginning is also proposed to be made in certain other metropolitan cities.

7.20 *Development Programme* : The total outlay envisaged on railways (excluding metropolitan transport) in the Fifth Plan is Rs. 2350 crores with a foreign exchange component of about Rs. 330 crores. About 68 per cent of the outlay proposed is for rolling stock, track renewals and line capacity works. Considerable emphasis is also being laid on cost-reducing and safety oriented investments. The details of the programme are given in the table below:

Table 3 : Outlay on Railway Development Programmes in the Fifth Five Year Plan

(Rs. crores)

programme	fourth plan			fifth plan
	original outlay	revised outlay	likely expenditure	outlay
(0)	(1)	(2)	(3)	(4)
1. rolling stock	620	568	609	900
2. workshop and sheds	30	30	22	120
3. machinery & plant	15	25	22	40
4. track renewals	200	180	161	200
5. bridge works	28	29	30	60
6. line capacity	315	234	230	500
7. signalling and safety	40	49	59	110
8. electrification	82	73	68	120
9. other electric works	12	15	18	20
10. new lines	83	86	32	100
11. staff welfare	15	20	16	20
12. staff quarters	30	36	65	40
13. users' amenities	20	20	20	20
14. other specified works	10	10	11	20
15. investment in state road transport corporations	10	10	14	30
16. inventories	15	15	61	50
17. take-over of open line works of P.&T. . . . .	..	..	2	..
18. probable savings . . . . .	..	..	(- )21	..
19. total	1525	1400	1419	2350

The Railways are expected to make a contribution of about Rs. 779 crores towards their Plan from their own resources. The railway development programme envisages the acquisition of about 1300 locomotives, about 100,000 wagons (in terms of 4 wheelers) and about 7500 coaches. Whilst the provision for rolling stock has been made to enable the movement of 280 million tonnes with an average lead of about 660 kilometers, it is anticipated that with the improvement of operational efficiency, more modernised tractions, increasing block rake movements, more mechanised handling facilities at loading and unloading points, it would be possible for Railways to handle a larger originating tonnage *i.e.* of about 300 million tonnes by 1978-79. The traffic trend will be reviewed continuously and adjustments in the provision of rolling stock will be made whenever necessary. As regards line capacity works which are relatively long lead items adequate provisions are being made in the Fifth Plan to cater to a traffic volume to the tune of about 330 millions of originating tonnage so that the development of transport infrastructure should not act as a constraint to the development of other core sectors of the economy. It would also be necessary for the main users of Railways namely steel plants, power houses etc. to modernise their handling facilities to reduce detention of wagons. It is also proposed to confine railway operations to block rake movements between principal points and to effect further distribution through road transport wherever necessary. This will also have to be supported by a programme of building dumps/warehouses/silos to even out peak demands for rail transport. Certain studies about the likely pattern of coal traffic in the Fifth Plan have been undertaken by the Railways and the investment programme for the development of capacity will be reviewed in the light of these studies and in consultation with the user Ministries.

7.21. In the Fifth Five Year Plan it is proposed to electrify about 1800 route Kms of the Indian Railway system. The question of setting up some captive power stations for the Railways to assist in the uninterrupted operation on their electrified routes is also visualised in the Plan.

7.22. With the increase in the railways rolling stock in the Fifth Plan, it will be necessary to expand the existing loco-sheds and workshops for the repair and maintenance of rolling stock and for the manufacture of certain components like wheel sets, axles and traction motors. A provision of Rs. 120 crores has been made in the Fifth Plan under workshops and sheds. With the considerable increase in traffic density, it will also be necessary to undertake a programme of strengthening tracks and bridges to permit movements of rolling stock with higher axle loads particularly on sections carrying heavy mineral traffic. The Fifth Plan envisages an outlay of Rs. 200 crores for track renewals. A provision of Rs. 100 crores has been made for the construction of new railway lines. This programme includes Rs. 40 crores for schemes continuing from the Fourth Plan and Rs. 60 crores for new lines which will be mainly project oriented lines such as those required in connection with mineral development or specific heavy industries.

7.23. The production of steam locomotives in the country has already been stopped and no new steam locomotive will be added to the fleet during the Fifth Five Year Plan. As for electric locomotives, the manufacturing capacity at the Chittaranjan Locomotive Works will be augmented to the level of about 80 locomotives per annum and thus about 400 electric locomotives would be added during the Fifth Plan period. In addition, the production capacity of diesel shunters at the Chittaranjan Locomotive Works will be about 60 per annum during the Fifth Plan period. The present capacity of diesel locomotives at the Diesel Locomotive Works, Varanasi, is about 160 per year which is expected to be substantially utilised in the Fifth Plan. The existing capacity available in the country for manufacturing railway rolling stock including wagons and coaches will be generally adequate to meet the requirements in the Fifth Five Year Plan. The table below shows the position regarding additions and replacements in the rolling stock programme in the Fifth Plan.

Table 4 : Anticipated Additions and Replacements in Rolling Stock Programme in the Fifth Plan

item	additions	replac- ment	total
(0)	(1)	(2)	(3)
1. locomotives			
(a)—steam	900	400	1300
(b)—diesel			
(c)—electric			
2. wagons	80000	20000	100000
3. coaches	3000	3500	6500
4. rail cars	50	..	50
5. electric multiple units	1000	50	1050

7.24. The Railways also intend to increasingly adopt modernised methods like the use of containers, the extension of quick transport services and the introduction of super-express goods trains. In consonance with the current trend, the Indian Railways have to work to the principle that the traffic particularly high rated traffic, is more "service sensitive" than "price sensitive."

7.25. *Metropolitan Rail Transport:* The Fourth Plan had provided Rs. 50 crores for metropolitan rail transport projects in the form of rapid transit facilities in the cities of Bombay, Calcutta, Delhi and Madras. During the Fourth Plan, the design and construction of the Dum-Dum-Tollyganj rapid transit

line in Calcutta was taken up in 1972-73. Techno-economic feasibility studies were in progress with reference to the provision of rapid transit facilities in Bombay, Delhi and Madras. The likely expenditure in the Fourth Plan period is Rs. 12 crores. In the Fifth Plan, a provision of Rs. 200 crores has been envisaged for metropolitan rail projects in Calcutta, Bombay, Delhi and Madras and for undertaking techno-economic feasibility studies on rapid transit systems in five more cities namely, Ahmedabad, Bangalore, Hyderabad-Secunderabad, Kanpur and Poona.

ROADS

7.26. The Fourth Five Year Plan made a provision of Rs. 871 crores for the development of roads in the Central and States sectors. The anticipated expenditure is reckoned at Rs. 810 crores including Rs. 284 crores in the Central sector and Rs. 526 crores in the States sector.

7.27. At the time of the formulation of the Fourth Plan, it was recognised that despite the substantial progress made in road development since the commencement of the First Plan, the road system still had large deficiencies. As regards the national highways system for which the Central Government is directly responsible, the Fourth Plan envisaged the completion of 16 major missing bridges out of the total number of 17 such bridges, the completion of all the missing road links, the improvement of all the low grade sections and the widening of all important sections of the national highways to two lanes. It is anticipated that during the Fourth Plan period, 8 major missing bridges will be completed and work on the remainder will be in progress at the end of the Plan. Missing links on 200 kilometres and improvements to low grade sections on about 320 kilometres will be completed. At the beginning of the Fourth Plan, the total length of national highways in the country was 24,000 kilometres and during the Fourth Plan period 4800 kilometres of new national highways were added to the system. With the completion of the schemes taken up during the Fourth Plan period, on about 90 per cent of the total length of the national highways existing at the beginning of the Fourth Plan, two-lanes will be completed. The progress on the Central roads programme was slow during the Fourth Plan period. This was due partly to constraints of financial resources and partly to certain other reasons such as the lack of advance investigatory action on schemes included in the Fourth Plan, organisational inadequacies, procedural delays, shortage of essential materials etc. Certain measures were taken during the Plan period to accelerate progress on the Central roads programmes including streamlining of procedures, greater delegation of powers to the States, strengthening of organisation, providing funds to States in advance for project preparation etc. However, it is anticipated that there will be a spillover of about Rs. 404 crores to the Fifth Plan on account of continuing schemes in the Central roads programme. A provision of Rs. 714 crores has been made for the road development programme in the Central sector

in the Fifth Plan as shown in the table below. The programme provides for the following schemes :

Table 5 : Outlay on Roads in the Fifth Plan — Central Sector

(Rs. crores)	
item	outlay
(0)	(1)
1. national highways :	
(a) carry over works	326
(b) new works on existing national highways	
(i) works on national highways existing on 1-4-69	
(1) widening roads to 4-lanes	65
(2) other schemes	60
(ii) works on new national highways added in the fourth plan	10
(c) new additions to the existing national Highway system	20
(d) machinery	20
(e) total—national highways	501
2. strategic roads :	
(a) carry over works	54
(b) new works	15
3. roads of inter-state or economic importance	
(a) carry over works	24
(b) new works	30
4. special area development schemes and central ministries' requirements	
	10
5. highways research development & planning studies	
	5
6. road communications in sensitive border areas	
	30
7. special provision for bridges across level crossings	
	25
8. special road/bridge works of national significance	
	20
9. grand total	
	714

The first priority in the Fifth Plan will be given to the completion of works spilling over from the Fourth Plan. It is essential to complete these works as early as possible and to consolidate the position in regard to works in progress at the end of the Fourth Plan so that the investments already made could be taken due advantage of during the Fifth Plan period. Apart from the spill over schemes, the most important new scheme in the national highways programme is the widening to four-lanes of certain sections of the national highways totalling about 1000 kilometres. Only such roads are proposed to be considered for four-laning as would satisfy the traffic criterion of 10,000—12,000 PCUs (Passenger Car Units) by about 1982, considering that the lead time for construction of such roads is about 3-4 years. Out of the provision of Rs. 65 crores for this programme, an amount will be earmarked for advance survey and investigations for schemes to be considered in the Sixth Plan. This scheme marks a certain shift in

the priorities for the national highway programme in so far as the main emphasis in the past has been on the removal of elementary deficiencies like missing links and missing bridges.

7.28. A provision of Rs. 60 crores has been made for certain "other schemes" including the strengthening of pavements, the construction of bypasses around congested towns, the widening to two lanes of certain remaining single lane sections, replacing railway level crossings with over/under bridges, etc. The programme has been drawn up after inventorising the deficiencies in the national highway system which will remain at the end of the Fourth Plan and the traffic intensities which are expected to develop. These schemes, by bringing about essential improvements in the road system, will enable an uninterrupted flow of traffic. Special care is proposed to be taken to improve the capacity of certain roads and bridges for carrying over-sized consignments which will require to be moved on account of the setting up of large industrial plants during the Fifth Plan period.

7.29. Certain new additions to the existing national highway system are proposed to be made in the Fifth Plan taking into account the criteria which have been laid down for taking over existing roads as national highways. It will also be necessary to make improvements in the new national highways which were added during the Fourth Plan to bring them into conformity with overall national highway standards. In the Fourth Plan, a serious shortage of road rollers was experienced in carrying out road construction programmes. It is proposed to suitably step up the indigenous road roller manufacturing capacity so that indigenous production is matched to the requirements.

7.30. The programme for roads of economic and inter-State importance is a Centrally sponsored programme for which the Central Government gave 100 per cent loan assistance to the States in the Fourth Plan. Maintenance of roads under this programme is the responsibility of the State Governments. For schemes which are required for the development of mining, for industrial projects, for anti-dacoity operations and for promoting tourism etc., a specific provision of Rs. 10 crores has been proposed in the Central roads programme. As these schemes can be taken up only on a limited scale in the Central Plan, these will have to be taken up either as part of State Plans or as part of specific projects/programmes for which they may be required. A programme for highway research development and planning studies is proposed to be undertaken. It is also proposed to take up some roads in sensitive border areas as part of the Central roads programme. The programme will include only those schemes which have considerable development potential in the area.

7.31. Adequate provision has not been made in the past for the provision of over/under bridges to replace railway level crossings. This programme has acquired special significance with increasing urbanisation, growth in the size of towns and an increase in the intensities of traffic on a number of roads running across railway lines. A specific provision of Rs. 25

crores has been made for this programme in the Fifth Plan. This outlay is over and above the provision included for over/under bridges in the Railway and National Highway sectors.

7.32. There are certain major projects of national importance for which Central assistance was provided in the Fourth Plan outside the Plan, such as the Ganga bridge at Patna in Bihar and the second Hooghly bridge in Calcutta. A provision of Rs. 20 crores has been made in the Central sector to ensure the progress of such schemes in the Fifth Plan period.

7.33. For the road development programmes in States and Union Territories a provision of Rs. 1060 crores has been made in the Fifth Plan. It is proposed to take an integrated view of the road programmes in the States covering roads of different categories built under the aegis of various authorities, so that within the framework provided by the Central and State road plans, the road network can be planned and executed in a systematic manner. The first priority will be given to the completion of works in progress. Adequate emphasis will also be given to the removal of deficiencies in the existing road systems such as missing links, unbridged river crossings and the improvement of low grade sections and reconstruction of weak bridges. The road systems will be strengthened to some extent to meet the requirements of metropolitan cities. Special emphasis is also being laid on roads required in hilly and backward regions. It should be possible to increase the length of surfaced roads from about 450,000 kms. at the end of 1973-74 to about 550,000 kms. at the end of the Fifth Plan. A large part of this additional surfaced road kilometrage will be in the rural areas.

7.34. The programme for rural roads will be given even greater emphasis in the Fifth Plan than it received in the Fourth Plan. A specific provision of Rs. 500 crores has been made for the development of rural roads under the Minimum Needs Programme. The objective of the programme is to link by the end of the Fifth Plan all villages in the country with a population of 1500 and above with all-weather roads. In coastal or hilly areas where the population is sparse, the objective is to provide an all-weather road to clusters of villages with a population of a certain minimum size. Apart from the Minimum Needs Programme, some additional provisions have also been made in the State Plans for rural roads to connect villages with a smaller population. It is proposed to suitably dovetail the rural roads with the rest of the road network and to frame their alignments in such a manner as to secure optimum benefits. It will be necessary to develop suitable machinery for the implementation and monitoring of this programme.

7.35. Proper maintenance of existing roads is of great importance to secure the maximum benefits from the assets built with large inputs of national resources. Allocation of funds for maintenance is made outside the Plan provisions. Efforts will be made to ensure that adequate budgetary provisions are made by the Central and State Governments for the maintenance of roads.

4 PC/73—12

ROAD TRANSPORT

7.36. It is estimated that the total goods traffic by road transport may increase from about 65 thousand million tonne kms. in 1973-74 to about 110 thousand million tonne kms. in 1978-79. The passenger traffic is expected to increase from about 130 thousand million passenger kms. in 1973-74 to about 180 thousand million passenger kms in 1978-79. In order to cater for the estimated increase in traffic, it is reckoned that the number of trucks on the road will need to be increased from 410 thousand in 1973-74 to 575 thousand at the end of 1978-79. The number of buses will need to be increased from about 110 thousand in 1973-74 to about 150 thousand in 1978-79. The production of commercial vehicles is estimated to increase from about 40 thousand in 73-74 to about 100 thousand by the last year of the Fifth Plan.

7.37. The pattern of development of road transport in the Fifth Plan will be considerably affected by developments envisaged in regard to rail and road. The Railways will concentrate in future more and more on the movement of specific bulk commodities between selected points and from these points further distribution will have to be arranged by road transport. More dumps are proposed to be set up for coal and steel at railway terminals. Road transport will have to operate for the movement of these materials from the dumps. A number of railway stations are proposed to be connected by road lengths and provision of road transport will be necessary on these lengths. It is thus anticipated that there will be a large increase in The demands on bus transport for short distance movement of large volumes of cargo. In the field of passenger transport, there is expected to be a substantial step up in the demands for mass transport in metropolitan towns and large cities. Substantial demands for passenger buses are expected to arise particularly in metropolitan towns and large cities. As regards non-suburban traffic, Railways will concentrate more and more on long distance movements of passengers on trunk routes and will give a lower priority to short distance passenger transport. The demands on bus transport for short distance passenger movements will, therefore, show a large increase. Since a lower priority will be given in the Fifth Plan to the manufacture of privately owned cars, this will be another factor which will add to the demands on public transport. Within the overall target of production of 100 thousand commercial vehicles, a specific number, say about 20—25 thousand will have to be earmarked for passenger buses. As regards personalised transport, increasing emphasis will have to be laid on motor cycles, mopeds, scooters etc. in the Fifth Plan period. The scarcity of diesel oil in the Fifth Plan is however likely to act as a constraint on the expansion of road transport, and measures will have to be devised to achieve economy in the consumption of fuel oil without impairing reasonable expansion of road transport industry in keeping with the demands of the economy.

7.38. Licensing policies for road transport have been gradually liberalised over the years. Whereas in 1966 there were only six States where permits for public carriers were issued, valid for operation in the

State as a whole, permits are now issued with State-wise validity in all the States. For inter-State road transport, two zonal schemes are in operation in the Southern and Western regions and similar schemes are being formulated in other zones. The system of octroi is vexatious and obstructive in the operation of road transport. Whilst the need for the abolition of octroi is generally recognised, alternative sources of revenue for local bodies will have to be found since octroi constitutes the mainstay for many of them.

7.39. In the Fifth Plan, a provision of Rs. 26 crores has been made for road transport in the Central sector including Rs. 23 crores for the Delhi Transport Corporation. At the end of the Fourth Plan, the total number of buses with the Delhi Transport Corporation is estimated to be about 1640, besides about 200 private buses in operation. With the outlay provided, it will be possible for the Corporation to acquire about 2000 buses of which about 650 may be needed for replacement. Some provision has also been made in the Plan for additional workshop facilities and other essential requirements.

7.40. In the States sector, a provision of Rs. 259 crores is proposed for the nationalised road transport undertakings in the States and Union Territories. The programmes for both the replacement of an obsolete fleet and for expansion are included in the Plan. A provision of Rs. 30 crores has been included in the Railway Plan for contribution to the capital of the Corporations. In the programmes of the undertakings, priority will be given to the strengthening of the services on the existing routes as against the extension of services to new areas. It is envisaged that the undertakings will take suitable measures for improving their operational efficiency and keeping down the costs of operation to the minimum so that they are in a position to contribute resources out of their earnings to finance at least a part of their development programmes.

7.41. Non-availability of adequate finance at reasonable terms has been one of the major handicaps of the road transport industry. In the Fourth Plan, institutional finance was made available to the road transport industry by the State Finance Corporation, Industrial Development Bank of India, State Bank of India and scheduled commercial banks. Although in the latter part of the Fourth Plan period, there was a substantial increase in the resources made available by these institutions, the availability of total credit facilities still fell short of the requirements. There have been some constraints on road transport operators fully availing of the loan assistance provided by the nationalised banks in so far as these banks have stringent criteria for determining the credibility of the operators. In the Fifth Plan, the total amount of funds which may be needed to achieve the expansion of road transport in the public and private sectors, as envisaged in the Plan, is estimated at about Rs. 2000 crores. Suitable means of liberalising the procedures will have to be found so that the industry is able to make use of institutional finance to the maximum extent.

7.42. Road transport is a significant employment generating sector and it is envisaged that expansion in road transport will provide considerable additional employment in the Fifth Plan.

MAJOR PORTS

7.43. In the Fourth Plan it was anticipated that the traffic handled by major ports would increase from about 55 million tonnes in 1968-69 to about 77 million tonnes in 1973-74. However, the actual growth of traffic at the ports lagged considerably behind original anticipations and the traffic is expected to be about 65 million tonnes in 1973-74. A number of new major port projects were taken up during the Fourth Plan period. However, there have been delays in the execution of different projects which resulted, *inter-alia*, in increase in costs. Some of the projects in respect of which there has been slippage in the target date of completion are the Haldia Dock project and Madras Oil Dock.

7.44. On the basis of targets of export and import of major commodities envisaged for the Fifth Plan period, it is estimated that the traffic at the major ports might increase from about 65 million tonnes in 1973-74 to about 110 to 115 million tonnes in 1978-79 *i.e.* by about 45 to 50 million tonnes. A major part of the expected increase in traffic will be on account of bulk commodities such as crude oil and petroleum products, iron-ore, fertilisers (including raw-materials) and coal. These four commodities taken together may account for about 80 per cent of the total increase in traffic expected at major ports during the Fifth Plan period. The traffic in iron-ore and crude oil is expected to show a substantial increase in the Fifth Plan followed by coal and fertilisers. The increase in the coal traffic at major ports will be on account of a significant step up expected in the movement of coal by coastal shipping.

7.45. In making provisions for major ports in the Fifth Plan, account has been taken of the un-utilised capacity likely to be available at different ports at the beginning of the Fifth Plan consequent upon the shortfall in traffic during the Fourth Plan period. Efforts have also been made to properly integrate port development with inland transport facilities. Where major port schemes are linked with bulk exports such as iron ore, the entire complex covering mining, inland transport and ports has to be viewed as a whole. Similarly an attempt has been made to take an integrated view of the requirements of off-shore terminals, the acquisition of appropriate tankers and adequate inland transport facilities. A provision of Rs. 308 crores has been made for major ports in the Fifth Plan. This includes about Rs. 100 crores to be contributed by the Port Trusts from their own resources.

7.46. Three major ports namely Visakhapatnam, Madras and Mormugao are expected to handle 25 to 30 million tonnes of iron-ore by 1978-79 which constitutes about 80 per cent of the total iron-ore traffic handled at major ports. In the Fourth Plan, Madras and Visakhapatnam could handle ships of 35,000 DWT each and Mormugao of about 60,000 DWT

and that too in midstream. On completion of the Fourth Plan schemes, Visakhapatnam will be capable of receiving bulk ore carriers of 1 lakh DWT. Provision has been made in the Fifth Plan for developing capacity of the Visakhapatnam Port for handling ships of 1.5 lakh DWT. As regards Madras and Mormugao, it is proposed to develop the port capacity to receive ships of 1.5 lakh DWT and 1 lakh DWT respectively. This is in keeping with the world tendency for operation of bigger sized ships for handling bulk cargo. Thus, with the completion of the schemes included in the Fifth Plan, it will be possible to have three major ports namely Visakhapatnam, Madras and Mormugao each capable of receiving bulk ore carriers of 1 to 1.5 lakh DWT. As regards other ports, namely Haldia and Paradip some marginal investments would be needed to enable them to handle the balance of iron-ore traffic. In the case of Haldia, however, it will be necessary to undertake substantial dredging in the approach channel leading to the port and the necessary provision for this purpose has been included in the Fifth Plan. In case of Mangalore which is likely to handle about 0.5 million tonnes of iron-ore traffic by 1978-79, provision has been made for improving the draft facilities to about 9 meters.

7.47. At present Madras Outer Harbour is already receiving 87,500 DWT tankers. An important scheme connected with the traffic in crude oil is the construction of super-tanker berth at Cochin which was approved in the Fourth Plan period. Provision has been included in the Fifth Plan for completion of the scheme. It is also envisaged to develop oil handling facilities at Bombay to enable the port to handle about 9 million tonnes of crude. A firm view on this scheme will be taken after detailed techno-economic study has been made and the possibility of constructing an off-shore terminal in the vicinity has been fully explored. It is proposed to take up construction of a satellite port for Bombay at Nhava-Sheva. An off-shore terminal has been envisaged at Salaya to meet the requirements of crude for the Mathura and Koyali refineries. Whilst the necessary provision for the off-shore terminal has been included under the Industries and Minerals Programmes, provision has been made in the transport sector for shore facilities.

7.48. In planning for the development of capacity at different ports for handling traffic in fertilisers (including raw-materials), account has been taken of the requirements arising from the expansion of existing factories and the proposals for setting up new factories at different locations during the Fifth Plan period. As part of the Fourth Plan, a separate fertiliser berth is under construction at Haldia which will be provided with mechanical handling equipment. At Madras port, two existing berths in the Jawahar Dock Basin will be utilised for handling fertiliser traffic when the iron-ore traffic is diverted to the Outer Harbour. The major new schemes included in the Fifth Plan specifically for fertiliser traffic are fertiliser berths at Cochin and Tuticorin and a separate jetty at Kandla. Further, it may also be necessary to earmark a separate berth for fertiliser traffic at Paradip. Handling facilities for fertilizers at all ports other than Haldia will be provided by the User Ministry.

7.49. The coal traffic through major ports which is pre-dominantly coastal has been declining in recent years. However, it is expected that during the Fifth Plan period, there might be a substantial step up in the coastal movement of coal and therefore in the coal traffic handled at major ports. At Haldia which is the loading port for coal, a separate berth for handling coal is being constructed as part of the Fourth Plan programme. Further, a new coal loading plant with a capacity to handle two thousand tonnes per hour is being installed at the coal berth. In the Fifth Plan special emphasis will be given to the development of facilities at the destination ports viz. Madras, Tuticorin, Bombay, Cochin and the minor/intermediate ports of Gujarat, particularly for mechanical unloading arrangements for coal and also for the loading of return cargo viz., cement, salt etc. At Tuticorin, one separate berth has already been earmarked for handling coal as part of the first stage of development of the port into a major port.

7.50. The Central Dredging Organisation which was set up during the Fourth Plan period will be strengthened and provision has been included in the Fifth Plan for the acquisition of new dredgers. Necessary provision has also been made for the development of ship repairing facilities at the ports of Calcutta, Bombay, Cochin, Madras and Mormugao and for acquisition of floating crafts and on-shore equipment for different ports. The spill-over river training works at Bhagirathi-Hooghly will be completed in the Fifth Plan.

MINOR PORTS

7.51. The traffic handled by minor ports was of the order of about 8 million tonnes in 1968-69. With the gradual diversion of traffic to the major ports, the traffic at minor ports has been declining in recent years. With the considerable decline in the import of foodgrains, the diversion of iron-ore-traffic to major ports and the setting up of coastal refineries leading to reduction in the coastal movement of POL, the traffic in these three commodities at minor ports may further decline in the coming years. However, as regards coal, a considerable step-up in the coastal movement is expected during the Fifth Plan period, which will increase the coal traffic at selected minor ports.

7.52. In the Fourth Plan, a provision of Rs. 35 crores was made for minor ports including Rs. 20 crores in the Central Plan and Rs. 15 crores in the Plans of States and Union Territories. The provision in the Central Plan included Rs. 7 crores for Centrally executed schemes and Rs. 13 crores for loan assistance to State Governments for certain specified port schemes. Progress in regard to State Plan schemes and the Centrally executed schemes has been satisfactory. However, the progress on the Centrally sponsored schemes had been quite-slow which was due mainly to delays in the finalisation of schemes.

7.53. The Fifth Plan provides Rs. 45 crores for minor ports including Rs. 23 crores in the Plans of States and Union Territories, Rs. 12 crores for centrally executed schemes and Rs. 10 crores for centrally sponsored schemes. Provision for the Central schemes is on account of a minor ports survey and

dredging organisation and the development of port facilities in the Andaman and Nicobar Islands and in Lakshdweep. As regards Centrally sponsored schemes, the provision made is mainly for spill-over works from the Fourth Plan because the more important new schemes relating to the development of minor ports are included in the State Plans.

SHIPPING

7.54. In the Fourth Plan, it was envisaged that the Indian shipping tonnage would increase from 2.14 million GRT in 1968-69 to 3.50 million GRT in 1973-74 with another 0.5 million GRT on order. This was expected to increase the share of Indian shipping tonnage in country's overseas trade from about 15 per cent in 1968-69 to about 40 per cent by the end of the Fourth Plan. The overall target in terms of total tonnage including ships on order would be achieved though there is likely to be a shortfall in the Fourth Plan operative tonnage target. By the end of 1973-74, the net operative shipping tonnage is expected to reach about 3.00 million GRT. An additional tonnage of about 1.8 million GRT is expected to be on order which will enable the country to have the operative tonnage of more than 4 million GRT in the early years of the Fifth Plan, after allowing for the scrapping of overaged vessels. The main reason for the shortfall in the target of operative tonnage in the Fourth Plan was that all the major international shipyards have been heavily booked in recent years and deliveries have taken a longer time than was originally expected. In recent years the Indian shipping tonnage handled about 20 per cent of the country's overseas trade. In addition to this, a part of the Indian shipping tonnage was engaged in cross trading operations. The available data regarding the foreign exchange contribution of Indian shipping indicates that in 1971-72, four major shipping companies which own about 75 per cent of the total Indian shipping tonnage had a net foreign exchange earning of about Rs. 53 crores after repayment of instalments on foreign loans and interest thereon.

7.55. Having regard to the likely growth of the country's overseas trade in the Fifth Plan and the need to ensure that India has a due share in the fast growing world sea borne trade and the world shipping tonnage, the Fifth Plan provides for a target of Indian shipping tonnage of 8.6 million GRT by 1978-79. Category-wise, the targets for 1978-79 are as follows:

Table 6 : Shipping Tonnage Target for 1978-79
(million GRT)

item	tonnage as on 1-4-1973	targets for 1978-79
(0)	(1)	(2)
1. tankers	0.259	1.37
2. tramps	0.322	1.05
3. liner vessels	1.033	2.06
4. bulk carriers	0.839	3.56
5. coastal vessels	0.201	0.60
6. total	2.654	8.64

7.56. With the attainment of the shipping tonnage targets envisaged for the Fifth Plan, the Indian shipping tonnage would be adequate to carry 100 per cent of country's overseas trade in crude oil and petroleum products; 50 per cent of iron-ore export to Japan, 100 per cent iron ore export to Europe and about 50 per cent of the liner trade in other commodities. Three VLCCs (very large crude carriers) each of 2.69 lakh DWT, orders for which were placed in the Fourth Plan, would be delivered during the Fifth Plan. These very large tankers would be mainly utilised for catering to the traffic in crude oil imports. Another eight large-sized vessels of a capacity ranging between 85,000 and 1,15,000 DWT which are on order will also be delivered in the Fifth Plan or earlier. Further, a number of small sized ships would also be acquired to meet the country's requirements of liner trade, coastal trade and the carriage of oil products so that the country will have an appropriate mix of large sized and small sized vessels.

7.57. The Fifth Plan includes a provision of Rs. 243 crores to be advanced to the Shipping Development Fund Committee for giving loan assistance to shipping companies for acquisition of ships. This includes a spill over provision of Rs. 37.57 crores on account of loans sanctioned by the Shipping Development Fund Committee to the shipping companies during the Fourth Plan period. Besides, a provision of Rs. 10 crores has been made for the grant of a subsidy to the SDFC for meeting the cost involved in charging concessional rate of interest on loans given to the shipping companies for purchase of ships. In addition, a provision of Rs. 5 crores has been made in the Plan for the expansion of training facilities and programmes for the welfare of seamen and for loan assistance to the sailing vessels industry.

7.58. Coastal shipping is expected to receive a great fillip during the Fifth Plan period. A significant development which is expected to offer new opportunities for coastal shipping is the development of Haldia Docks as an ancillary to Calcutta port. On account of heavy traffic expected on trunk routes of the railways, it would be useful if coastal shipping is able to provide relief to the railways by taking over the long lead movement of coal from West Bengal/Bihar coal-fields along the coast of India to southern and western India since it involves haulage over very long distances on the railway system. The coal requirements of a number of new and existing thermal power stations in the Southern and Western Coasts are likely to increase significantly in the coming years which cannot be met fully through coal supplies from the outlying fields. Consequently it may be necessary to move about 5 to 6 million tonnes of coal per annum from Bengal/Bihar area to southern and western India and this movement may take place by sea. Necessary provision has been included in the Plan for acquisition of appropriate ships to cater to this coastal traffic.

7.59. Acquisition of ships is a continuous process and all the major international shipyards remain

heavily booked. It may, therefore, be necessary to place advance orders for about 1 million GRT in the Fifth Plan which would be delivered in the Sixth Plan. A view on the specific provision to be made in the Fifth Plan would be taken in the third or early fourth year of the Fifth Plan which it will also be possible to review the targets for different categories of shipping tonnage in the Fifth Plan period having regard to the trend in the growth of the country's overseas trade.

INLAND WATER TRANSPORT

7.60 The Fourth Plan included a provision of Rs. 12 crores for the development of inland water transport including Rs. 3 crores in the State Plans, Rs. 5 crores for Central schemes and Rs. 4 crores for Centrally sponsored schemes. Against this, the total expenditure is expected to be about Rs. 11 crores.

7.61. The provision made for inland water transport in the Fifth Plan is Rs. 47 crores including Rs. 7 crores in the Plans of the States and Union Territories, Rs. 26 crores for Central schemes and Rs. 14 crores for Centrally sponsored schemes. In addition a provision of Rs. 22 crores has been made for the Farakka Project in the Fifth Plan. The Central schemes include the acquisition of pusher tugs and dumb barges for the augmentation and replacement of the over aged fleet of the Central Inland Water Transport Corporation. In formulating the development programmes of the Corporation, account has been taken of the changed configuration of the north-eastern part of the country as a result of the emergence of Bangladesh which has increased the river transport requirements in the eastern region between Calcutta and Assam/ other north eastern States of India and also between India and Bangladesh. The programme included in the Fifth Plan will enable the Corporation to develop the capacity for river traffic of about 6 lakh tonnes per annum in the region. Provision has also been made for the extension of existing river transport services on the Ganga between Chunar and Patna up to Farakka on an experimental basis and for giving loans to the State Governments on easy terms so that the State Governments may provide assistance to entrepreneurs for the modernisation of crafts, construction of new tugs, barges, launches and for acquiring power vessels. Other Central schemes included in the Fifth Plan are the strengthening of Central Technical Organisation and training establishment, development of facilities at Pandu port and Jogigopa port, pilot services in shallow waterways, traffic surveys and engineering studies and conservancy in important waterways like the Ganga. As regards Centrally sponsored schemes, the Fifth Plan provides for the spill over of works from the Fourth Plan and also selected new schemes recommended by the Inland Water Transport Committee 1970 (Bhagwati Committee) and certain other important schemes proposed by the State Governments. The overall consideration is that the size of the Centrally sponsored programme may be kept to the minimum. Only specified schemes particularly those which are of an experimental nature or of inter-State or national importance will be taken up under

the Centrally sponsored programmes, the other important schemes which are economically justified have been included in the Plans of the States.

LIGHTHOUSES AND LIGHTSHIPS

7.62. The Fourth Plan provided Rs. 7 crores for the schemes of lighthouses and lightships estimated to cost Rs. 9.4 crores. By comparison the anticipated expenditure for the Fourth Plan period is reckoned to be about Rs. 5 crores. This will leave a spill-over of about Rs. 4.4 crores to the Fifth Plan. The short-fall in expenditure in the Fourth Plan has been due to delays in the completion of schemes on account of delays in the acquisition of land, the poor response to contracts for tenders, shortage of steel etc.

7.63. In the Fifth Plan, a provision of Rs. 12 crores has been made for lightships and lighthouses including Rs. 4.4 crores for spill-over works and Rs. 7.6 crores for new schemes. The spill-over schemes would be completed as early as possible in the Fifth Plan period so as to derive the maximum benefit from the investments made. The spill-over schemes include *inter alia* (a) Lushington Shoal Lighthouse, (b) Gurur Shoal Lightbuoy (c) Ranwara Shoal lightbuoy (d) Bobby Shoal Lightbuoy (e) Perigee Rock Lightbuoy (f) Decca Chain Updating (g) Lighted Beacon at Chanka Western Tip. These schemes are very important for the Salaya off-shore terminal project envisaged for the Fifth Plan. Highest priority would be given to the completion of these schemes in the Fifth Plan in order to ensure that there is no slippage in this programme. The new schemes included in the Fifth Plan are also mostly safety oriented schemes requiring high priority.

CIVIL AIR TRANSPORT

7.64. As in other countries, civil aviation in India has been making rapid progress because of its superiority over other modes of transport in certain respects, mainly speed. The passenger traffic by Indian Airlines in the past 10 years has been growing at the rate of 10-11 per cent per annum as compared to the growth rate of 4-5 per cent in the case of railways and 7-8 per cent in the case of bus transport. In the Fifth Plan, a programme for the development of civil aviation has been formulated, keeping in view the traffic likely to be developed. An integrated view will be taken of the services being provided by Air India and Indian Airlines. On certain internal trunk routes Indian Airlines are at present using 4000 hours per annum of Boeing 707 services provided by Air India. This is proposed to be raised to 8000 hours per annum in the Fifth Plan. A Real Time Computer Reservation System is to be installed in the Fifth Plan jointly by Air India and Indian Airlines. The programme for Civil Air Transport in the Fifth Plan provides for the expansion of Indian Airlines and Air India and also the facilities on the ground. The table below gives the broad break down of the provision included in the Fifth Plan.

Table 7 : Fourth Plan Provision, Progress of Expenditure and the Outlay Proposed in the Fifth Plan

programme	(Rs. crores)		
	fourth plan		fifth plan
	outlay	likely exp.	outlay
(0)	(1)	(2)	(3)
1. Civil Aviation Department	32.32	22.38	77.00
2. International Airports Authority of India	37.68	30.59	58.00
3. Subsidy to Hindustan Aircrafts Limited for aircrafts sold to Indian Airlines	2.00	3.40	..
4. Air India	60.00	65.58	116.50
5. Indian Airlines	55.00	53.85	110.00
6. India Meteorological Dept.	13.68	9.70	23.00
7. Autonomous Institutes	1.32		7.00
<i>total</i>	202.00	185.50	391.50

Civil Aviation Department

7.65. In the Fifth Plan, a provision of Rs. 77 crores has been made for the Civil Aviation Department. This includes Rs. 40 crores for Aeronautical Communication Services, Rs. 11 crores for Air Routes and Aerodromes equipment, Rs. 24 crores for works at aerodromes and Rs. 2 crores for other schemes. During the Fifth Plan, the main emphasis will be on the improvement of safety oriented Aeronautical Communication Services and the installation of modern equipment at aerodromes for improving the standard of service provided by them. As regards works at aerodromes, the main programme will be the development of the existing aerodromes rather than the construction of new ones. In building new aerodromes, the existing aerodromes in the vicinity and the availability of surface transport facilities will be fully taken into account. The programme at existing aerodromes includes the strengthening, widening and extension of runways, taxi tracks and terminal building etc. Two important new aerodromes proposed in the Fifth Plan are at Port Blair and Cochin at a cost of Rs. 3.5 crores and Rs. 2.4 crores respectively. These have become essential as the existing aerodromes at these places could not be developed further because of the non-availability of land in the vicinity of these aerodromes.

International Airports Authority of India

7.66. The International Airports Authority of India was set up in February 1972 for the management and development of the four international airports at Bombay, Calcutta, Delhi and Madras. The Authority has taken up work at these aerodromes relating to land acquisition, construction/extension of runways and taxi tracks, construction of new aprons and preliminary works relating to new terminal complexes. In the Fifth Plan, it is proposed to take up the construction of an international module at Delhi and

a new international terminal building (Phase I) at Bombay. At Calcutta and Madras airports expansion and modifications of the existing terminal buildings are to be taken up. Runways, taxiways, aprons, roads and external services are to be improved at all the aerodromes.

Indian Airlines

7.67. The present fleet of Indian Airlines consists of 6 Boeing 737, 9 Fokker Friendship, 7 Caravelle, 22 Avros HS 748 (including 7 on order), 5 Viscounts and 6 Dakotas. The total capacity of these aircraft in terms of Boeing 737 is 19 aircraft. This fleet is not considered adequate to meet the existing traffic needs and there is a considerable amount of unfulfilled demand. Moreover, too many types of aircraft in the fleet create difficulties in maintenance, training, operation and inventory control. In the Fifth Plan, a provision of Rs. 110 crores has been made for the programme of Indian Airlines. The table below gives the broad details of the programme:

Table 8 : Outlay on Expansion of Indian Airlines in the Fifth Plan

programme	(Rs. crores)
	outlay
	(0)
1. purchase of aircraft	70.10
2. booking office and other passenger facilities	10.40
3. communication system	2.00
4. city air terminal complex	2.00
5. hangars and workshop	6.00
6. staff housing	7.50
7. simulator project	2.00
8. computerised reservations	10.00
9. <i>total</i>	110.00

The programme provides for the acquisition of new aircraft with a capacity equivalent of 29 Boeing 737 aircraft. It is proposed to modernise and standardise the fleet of the Airlines by keeping only two or three types of aircraft. The type of aircraft to be acquired is at present under examination. Out of 29 aircraft, 8 will be for replacement of the existing Caravelle, Fokker Friendship, Viscounts and Dakotas and 21 will be for meeting increases in traffic. The new fleet to be acquired in the Fifth Plan will meet the additional traffic to be generated during the Plan period. It will also cover the backlog. The capacity in terms of available tonne-kms. is expected to increase from about 350 million in 1973-74 to about 860 million in 1978-79, or an increase of about 150 per cent during the Fifth Plan period.

The entire programme of the Indian Airlines is expected to be financed out of internal resources to be generated by the Airlines in the Fifth Plan period.

Air India

7.68. The existing fleet of Air India comprise 4 Boeing 747 (Jumbo) and 9 Boeing 707. In the Fifth Plan, it is proposed to acquire three additional wide bodied aircraft. In addition to the strengthening of Jumbo services to London, new Jumbo services are proposed on the Far East/Japan/Australia route. A provision of Rs. 116.50 crores has been made for Air India in the Fifth Plan which includes Rs. 56 crores for loan repayments for the 4 Boeing 747 already acquired in the Fourth Plan, Rs. 33 crores for instalment payments for 3 additional aircraft to be acquired during the Fifth Plan period, Rs. 6 crores for expansion of workshop, hangars etc., Rs. 6 crores for installation of Real Time Computer Reservation System and the balance amount of Rs. 15.5 crores for other miscellaneous schemes such as engineering sub-base at New Delhi, administrative and booking office, staff quarters, flight kitchen and other buildings. With the acquisition of 3 additional aircraft, the capacity of Air India in terms of available tonne-kms. would increase from about 860 million at the end of 1973-74 to about 1290 million at the end of 1978-79. It is estimated that Air India will be able to find about Rs. 65 crores from internal resources for financing their expansion programme.

India Meteorological Department

7.69. In the Fifth Plan, a provision of Rs. 23 crores has been made for the strengthening and modernisation of meteorological services in India. The programme, *inter alia*, includes the development of hydro-meteorology, agricultural meteorology, cyclone warning and research organisation, forecasting organisation, climatology, seismology, satellite meteorology and meteorological telecommunication systems. Observational organisation is proposed to be considerably strengthened.

Autonomous Institutes

7.70. The Government set up three autonomous institutes, viz., Indian Institute of Tropical Meteorology, Indian Institute of Astrophysics and Indian Institute of Geomagnetism, in April 1971 on the recommendation of the Committee on Organisation of Scientific Research in order to give a fillip to scientific research in the field of tropical meteorology, astrophysics and geomagnetism. A total provision of Rs. 7 crores has been made for the development of these institutes in the Fifth Plan which includes Rs. 2.75 crores for the Indian Institute of Tropical Meteorology, Rs. 2.75 crores for the Indian Institute of Astrophysics and Rs. 1.50 crores for the Indian Institute of Geomagnetism.

II

TOURISM

7.71. Tourism is the world's largest and most rapidly expanding industry. The importance of tourism has been increasing mainly because of increased affluence and leisure in the developed countries and rapid developments in transport facilities and

the declining trend in international air fares. During the last five years the number of foreign tourists visiting India has increased from about 200,000 in 1968 to about 400,000 in 1973.

7.72. In the Fourth Plan, a provision of Rs. 36 crores had been made for the development of tourism in the Plans of the Centre as well as States and Union Territories. In the Central Plan the provision related mainly to loans to the hotel industry and integrated development of Kovalam beach resort and Gulmarg hill resort and the provision of accommodation by the India Tourism Development Corporation. The progress on the schemes has been generally satisfactory. The Kovalam beach project has made a good progress. However, progress on the Gulmarg project has been somewhat behind schedule because of several technical problems.

7.73. The tourist traffic is expected to increase from about 400,000 in 1973 to about 800,000 in 1978. The main emphasis in the Fifth Plan will be on the provision of additional accommodation for tourists. New accommodation to be built in the Fifth Plan will be largely in the 1 to 3 Star categories of hotels rather than 4 or 5 Star hotels. A part of the accommodation will be built by the India Tourism Development Corporation and the rest by the private sector. Integrated development of selected hill and beach resorts will also be taken up.

7.74. A provision of Rs. 113 crores has been made for the development of tourism in the Fifth Plan. This includes Rs. 78 crores in the Central Plan, Rs. 32 crores in the State Plan and Rs. 3 crores in the Plan of the Union Territories. In the Central Plan the programme is divided into two parts, viz. the programme of the Central Department of Tourism and the programme of the India Tourism Development Corporation. For the Central Department of Tourism the provision is Rs. 44 crores which includes Rs. 17 crores for providing supplementary finance to the Industrial Finance Corporation for advancing loans for the construction of hotels in the private sector. In the Fourth Plan, the Department of Tourism was providing loans for construction of hotels. It has been decided to transfer this work to the Industrial Finance Corporation. The other important schemes included in the Plan of the Department of Tourism are the development of selected beach and mountain resorts such as Kovalam, Goa, Gulmarg, Kulu and the U.P. Hill Areas, at a cost of about Rs. 8 crores, the development of places of cultural importance at a cost of Rs. 3 crores, the development of wild life at a cost of Rs. 2 crores, publicity and promotion at a cost of Rs. 5 crores and training at a cost of about Rs. 2 crores.

7.75. For the India Tourism Development Corporation, a provision of Rs. 34 crores has been made. Of this, a sum of Rs. 31 crores is on account of schemes relating to the provision of additional accommodation. It is proposed to take up the construction of new hotels, the renovation and expansion of existing hotels and construction of motels and expansion of traveller lodges etc. The transport services provided by the India Tourism Development

Corporation will be augmented. The existing duty free shops at the International Airports will also be expanded. A training and management organisation will be set up by the Corporation for the training and management of its personnel. The private sector has played an important role in the development of tourism in the country by providing hotel accommodation facilities and will continue to do so in the Fifth Plan.

7.76. In the State Sector the emphasis will be on development of places of local or regional importance. Hill areas will receive greater attention in the State Plans. A selective approach is being followed so that the investments made bring worthwhile results. The main programmes will be the provision of accommodation for middle income group people, transport, beautification of places of tourist importance, provision of basic facilities like water supply, toilet facilities and electricity at important places. Facilities at places of pilgrimage and on yatra-routes are to be given special attention. The development of domestic tourism will be increasingly encouraged to promote economic development and national integration.

III

COMMUNICATIONS

7.77. Development of commerce and industry and also efficient administration depends to a very large extent on the availability of a proper communication system. The increase in economic and other activities since the commencement of the five-year Plans has been placing heavy demands on the communication system of the country; particularly on the telecommunications system. In the past it has not been possible to meet the demands for communication facilities in full. Telecommunication is a highly resource generating sector and the pay back period for the investment is relatively short. The programme for the development of communications is related to a very large extent to the timely supplies of indigenous equipment, the production of which is mainly in the public sector. In the Fifth Plan the main emphasis will be on stepping up indigenous production of equipment in order to reduce dependence on imports. Farming out of the production of appropriate components on an increasing scale to relieve pressure on the factories is visualised in the Fifth Plan period.

7.78. The number of telephones (direct exchange lines) in the country has been constantly increasing. It increased from about 8.1 lakhs at the end of 1968-69 to about 13 lakhs at the end of the year 1973-74, i.e. more than 50 per cent. In spite of this, there is still a long waiting list. It is estimated that the number of persons on the waiting list at the end of the Fourth Plan will be about 3.6 lakhs. The average waiting period for the country as a whole is 2.5 years. However, the waiting period is considerably long in major towns like Bombay, Calcutta, Delhi and Madras.

7.79. In the Fourth Plan, a provision of Rs. 520 crores had been made for the development of com-

munications. The table below indicates the provision made and the likely expenditure :

Table 9 : Outlay and Expenditure on Communications in the Fourth Plan

programme	(Rs. crores)	
	outlay	expenditure
(0)	(1)	(2)
1. tele-communications	466.25	447.51
2. postal services	26.00	26.00
3. Overseas Communications Service	12.00	25.05
4. Monitoring Organisation	1.00	
5. Hindustan Teleprinters	1.75	498.56
6. Indian Telephone Industries	13.00	
7. total	520.00	

7.80. The programme provided for 5.4 lakhs new telephones (direct exchange lines) against which the achievement is likely to be 4.94 lakhs. The programme also provided for 7500 route kilometres of cable system for long distance transmission against which the achievement is likely to be 4746 route kilometres. As regards the microwave system, the achievement was only 5535 route kilometers against the target of 12050 route kilometres. In other programmes too, there were generally shortfalls. The main reason for the shortfalls was non-availability of requisite equipments from producing factories which necessitated imports from foreign countries.

7.81. In the Fifth Plan, the main objectives are to meet the growing requirements of telecommunications and to reduce the waiting list for telephones, improve the facilities for long distance transmission and to step up the production capacity of the indigenous factories to meet the requirements of Posts and Telegraphs to a very substantial extent and to reduce the direct import to the minimum.

7.82. A provision of Rs. 1176 crores has been made for the development of Communications in the Fifth Plan as indicated below :

Table 10 : Outlay on Communications in the Fifth Plan

programme	(Rs. crores)	
	(0)	(1)
1. posts and telegraphs department		
(i) postal services		57.50
(ii) telecommunications		1030.00
(iii) total—posts & telegraphs		1087.50
2. other communications		
(i) Indian Telephone Industries		57.50
(ii) Overseas Communications Service		26.50
(iii) Hindustan Teleprinters		3.00
(iv) Monitoring Organisation		1.50
(v) total—other communications		88.50
3. grand total		1176.0

Postal Services

7.83. The programme in the Fifth Plan provides for the opening of 31,000 new post offices. According to a survey made by Postal Authorities, at present there are about 29,000 Gram Panchayat villages in the country situated at a distance of over 3.2 kms. from the nearest post office. All these villages will be covered by new post offices in the Fifth Plan. Besides this category of villages, it is proposed to cover 2000 more villages in backward areas with post offices which are not Gram Panchayat Headquarters. Postal delivery services are also to be strengthened. The ultimate objective is to provide a daily delivery service to all the villages. It is proposed to mechanise and modernise the postal services. This has become essential because the quantum of mails handled is fast approaching the stage where it is neither economical nor practical to handle the immense work manually. However, only a beginning will be made in this regard in the Fifth Plan. Provision has also been made for construction of buildings for post offices where existing buildings are too small or it is not possible to get suitable rented buildings.

Telecommunication Services

7.84. The development of telecommunication is the most important programme under communications. The table below gives the broad break down of the proposed provision of Rs. 1030 crores in the Fifth Plan.

Table 11 : Outlay on Telecommunications in the Fifth Plan

(Rs. crores)

programme	outlay
(0)	(1)
1. local telephone system	487.00
2. long distance system	344.00
3. open wire and telegraphs	53.00
4. land and buildings etc.	146.00
5. total	1030.00

7.85. Telecommunication services are divided into two main programmes, namely the local telephone system and long distance system. The main objectives of the local telephone system in the Fifth Plan are (i) to wipe out the waiting list for local telephones by 1982-83 and (ii) to progressively reduce manual exchanges and eliminate them completely by 1986. The table below indicates the demand and supply position

on the basis of the programmes included in the Fifth Plan.

Table 12 : Demand and Supply of Telephones in the Fifth Plan

(direct exchange lines in lakhs)

period	actual/ projected	demand	gap	average waiting period (in years)
(0)	(1)	(2)	(3)	(4)
1-4-1969	8.14	12.42	4.28	3.5
1-4-1974	13.06	16.70	3.64	2.5
1-4-1979	20.85	23.50	2.65	1.3

7.86. As regards the long distance system keeping in view the large increase in traffic and the need to improve the system, it is proposed to introduce a hierarchical discipline in switching and routing of long distance traffic so that for a call from any station to any other station, not more than a maximum number of trunk lines (9 in number) is involved and pre-assigned transmission limits are imposed. The switching centres in the country will be divided into 5 categories in the hierarchical chain namely, Main, Primary, Secondary, Tertiary and Terminal Centres. Keeping the need for the next 10 to 15 years in view, 4 Main centres at Bombay, Calcutta, Madras and New Delhi, 40 Primary centres and 305 Secondary centres have been nominated and a national dialling code has been laid down. National Subscriber Dialling is proposed to be introduced to about 300 stations generally conforming to the Revenue District Headquarters by installation of Trunk Automatic Exchanges.

7.87. It is also proposed to expand the telegraph system in the country. About 7000 new telegraph offices are proposed to be opened in the Fifth Plan, against 2450 in the Fourth Plan. The number of additional Public Call Offices to be opened in the Fifth Plan is 5000 against 1757 in the Fourth Plan. About 32 new Telex exchanges with 10,000 lines capacity and 4 circuit Switching Transit Telegraph Exchanges at Bombay, Calcutta, New Delhi and Madras are proposed in the Fifth Plan.

7.88. A large part of the programme of the Posts and Telegraphs will be financed from internal resources of the Department. It is estimated that against the overall requirements of Rs. 1087.5 crores for the development programme of the Posts and Telegraphs as much as about Rs. 900 crores will be found from the internal resources to be generated during the Plan period.

7.89. During the Fifth Plan considerable emphasis is being placed on the indigenous production of equipment and direct imports would be reduced to the minimum. In spite of a large development programme for the Fifth Plan, the direct foreign exchange requirements are estimated to be Rs. 55 crores against Rs. 58 crores in the Fourth Plan. With a view to

step up the production, apart from increasing the capacity of the factories, it is proposed to resort to farming out of components to ancillaries so that the main factories concentrate on the production of major items. The Posts and Telegraphs Department propose to strengthen their organisation so that the programmes of the factories for the production of equipment are monitored and delays avoided. In this connection particular attention has to be given to the new Switching Equipment Factory at Rae Bareli because this is going to be the most critical item for the development programme of telecommunications.

Indian Telephone Industries

7.90. Indian Telephone Industries are the major supplier of various equipment required by the Posts and Telegraphs Department. The Company's factory at Bangalore has three divisions namely, Strowger, Crossbar and Transmission. A small ancillary unit to manufacture spare parts of telephone instruments has been started in Jammu & Kashmir. In addition, 2 projects at Naini (Allahabad), one for the manufacture of transmission equipment and the other for the telephone instruments and allied items have come into production and are under various stages of completion. It has also been decided to set up a new factory for the manufacture of switching equipment at Rae Bareli. The products of the Company include switching equipment, telephone instruments, transmission equipment, electronic measuring and testing instrument and specialised equipment for the use of Defence, Railways etc. In the past the Company was not able to meet the requirements of the Posts and Telegraphs in full with the result that there was a considerable shortfall in the Telecommunications programme in the Fourth Plan.

7.91. In the Fifth Plan the main objective is to achieve self-sufficiency in meeting the needs of the telecommunication equipment for the Posts and Telegraphs Department and other users as early as possible. It is also proposed to develop new types of equipment that could help to integrate the far-flung villages and communities by economic and reliable links.

7.92. The broad break down of the provision included in the Fifth Plan for various programmes is given in the table below :

Table 13 : Outlay on Expansion of Indian Telephone Industries in the Fifth Plan

(Rs. crores)	
schemes	outlay
(0)	(1)
1. switching equipment	
(i) Bangalore	2.6
(ii) Rae Bareli	16.0
(iii) third switching factory	} 7.0
(iv) electro mechanical rural and private exchanges	
(v) sub-total	25.6

(0)	(1)
2. telephone instruments	
(i) Naini	3.7
(ii) third telephone instruments factory	1.0
(iii) sub-total	4.7
3. transmission equipment	
(i) Bangalore	1.8
(ii) Naini	1.2
(iii) two new factories	7.0
(iv) sub-total	10.0
4. electronic measuring and testing instruments factory	2.0
5. special requirements of other departments	1.6
6. research & development	4.1
7. replacement of obsolete equipment	9.5
8. total	57.5

7.93. *Switching Equipment* : The existing capacity in the Bangalore factory is 1.5 lakh lines of strowger type and 1 lakh of crossbar type. The capacity of the factory for the production of strowger and crossbar types of equipment is proposed to be stepped up to about 2 lakh lines each. The new factory being set up at Rae Bareli for switching equipment will have annual capacity of about 3 lakh lines. A new factory for manufacture of private automatic branch exchanges and rural exchanges is proposed to be set up with a capacity of 60,000 lines. It is felt that with these expansion programmes the entire requirements of the Posts and Telegraphs Department and other users for switching equipment in the Fifth Plan would be met in full.

7.94. *Telephone Instruments* : In regard to telephone instruments the programme included in the Fifth Plan provides for the completion of the factory at Naini. Preliminary steps are to be taken for setting up a third telephone instruments factory for meeting the additional needs in the Sixth Plan. It is estimated that in the Fifth Plan the Bangalore Factory will produce about 13.75 lakh instruments and the Naini factory about 15 lakh instruments, making a total of about 28.75 lakh instruments. This will, by and large, meet the requirements of Posts & Telegraphs and other users.

7.95. *Transmission Equipment* : The total demand for transmission equipment in the Fifth Plan period is estimated to be worth about Rs. 210 crores. The present annual capacity at the Bangalore factory is worth about Rs. 9 crores and at Naini factory about Rs. 6 crores or a total of Rs. 15 crores per annum. Provision has been made in the Fifth Plan for expanding the Bangalore and Naini factories to achieve an optimum output of about Rs. 15 crores to Rs. 20 crores per annum for each of these factories. Two new factories are proposed to be set up at a cost of Rs. 3.5 crores each for producing material worth about Rs. 10 crores per annum from each of the units.

7.96. *Other Instruments* : It is proposed to set up new units for the manufacture of electronic measuring and testing equipment and the special equipment required by other departments such as Defence, Railways, etc.

7.97. *Research and Development* : In the Fifth Plan considerable emphasis is proposed to be placed on research and development. It is proposed to take up the development of new types of facilities and devices employing the latest techniques. Emphasis will be laid in particular on development of transmission equipment.

7.98. *Cables* : Another important item required by the P & T Department for the development of telecommunications is cables for local telephones and coaxial cables. The capacity of Roopnarayan factory of the Hindustan Cables Ltd. for the manufacture of coaxial cables and also underground cables will be expanded. A new factory is being set up at Hyderabad for the manufacture of underground and coaxial cables. Another factory is being set up in Kerala by a State Government Undertaking for the manufacture of underground cables. It is felt that with these expansion programmes, the requirements of underground cables as well as coaxial cables will be fully met in the Fifth Plan. Necessary provision for these programmes is being made in the Plan for Industrial Development.

Overseas Communications Service

7.99. In the Fifth Plan, a provision of Rs. 26.5 crores has been made for the development of Overseas Communications Service. This includes Rs. 2.40 crores for capital contribution to INTELSAT for the use of Satellite on which commitments had been made in the Fourth Plan. Construction of a third earth station in Calcutta will be taken up for which a provision of Rs. 2 crores has been made. Provision has also been made for setting up a small capacity earth station in Andamans at a cost of Rs. 2.16 crores. Two new major schemes for expanding the overseas communication services are at present under detailed consideration. These relate to a sub-marine telephone cable system in the Indian Ocean linking Madras with Penang (Malaysia). The other scheme relates to setting up a Tropo system with the U.S.S.R. and Afghanistan. This project will be of basic importance to provide a high quality reliable communication link of sufficient capacity. Token provisions of Rs. 50 lakhs each for these schemes have been made in the Fifth Plan. The programme also provides for the expansion of the organisation and also housing for staff.

Hindustan Teleprinters Limited

7.100. Hindustan Teleprinters Limited have developed a production capacity of 6000 units of teleprinters. During the Fifth Plan it is proposed to diversify production at the factory. The main scheme relates to developing capacity for the production of about 4000 electronic typewriters per annum. Manufacture of peripherals required for commuters has also been planned. Capacity for electronic PABX exchanges is proposed to be set up. Design and performance of the teleprinters will also be improved.

Monitoring Organisation

7.101. The Monitoring Organisation is responsible for frequency management, which means orderly allocation of frequencies to various wireless services in India conforming to national requirements and international standards regulated by the Radio Regulations. It is also responsible for the enforcement of the Radio Regulations. Keeping in view the expansion in radio and television envisaged in the Fifth Plan, a provision of Rs. 1.5 crores has been made in the Fifth Plan, for the purchase of additional equipment and expansion of the organisation.

Television and Broadcasting

7.102. Television and radio are the most important mass communication media. Hitherto in India the main emphasis has been on expansion of radio. As regards television, some beginning has been made in the Fourth Plan. A provision for setting up six new television centres in addition to the expansion of the Television Centre at Delhi was made in the Fourth Plan. The centres at Bombay and Srinagar have started functioning and the work on the remaining centres at Madras, Calcutta, Lucknow and Jullundur are in progress and these will be completed during the early part of the Fifth Plan period. With the completion of these schemes, television coverage will be about 17 per cent of the population of the country. In the Fourth Plan, a provision of Rs. 40 crores was made for the development of television and radio. Because of various delays including difficulties in land acquisition and the availability of equipment, the programme lagged behind schedule. The actual expenditure in the Fourth Plan is likely to be about Rs. 30 crores. The total cost of the programme included in the Fifth Plan is Rs. 130 crores, including Rs. 80 crores for television, and Rs. 50 crores for broadcasting. Taking into account the spill over of Rs. 35 crores from the Fourth Plan, the total cost of the programme works out to Rs. 165 crores. A provision of Rs. 120 crores has been made in the Fifth Plan and schemes costing about Rs. 45 crores would spill over to the Sixth Plan.

7.103. In the Fifth Five Year Plan, besides completing the schemes already in progress, the television network is to be further expanded. The development of television is expected to provide much needed support to spread education and to promote social and economic development. In order to project these objectives effectively, television programmes have to be developed, technically and professionally. It is proposed to undertake a satellite experiment which is expected to provide a system test of broadcast satellite television for national development and enhance our capability in the design, development, manufacture, installation, operation and maintenance of a ground system. The experiment is likely to begin in the middle of 1975 and is likely to continue for about a year. For this purpose, six clusters of villages in Bihar, Orissa, Madhya Pradesh, Rajasthan, Andhra Pradesh and Karnataka have been selected. In each cluster about 400 direct reception augmented television sets will be provided. After the experiment is over, the television facilities already provided in the areas covered by the experiment will be continued. For this purpose, provision has been made in

the Fifth Plan for setting up three mother stations at Patna, Cuttack and Hyderabad, besides the strengthening of Delhi television centre. It is also proposed to instal 17 or 18 relay transmitters in the areas covered by the satellite experiment. Corresponding microwave links are also to be provided so that continuous television services are provided in the selected clusters even if there is no on-going satellite television programme after 1976. The time profile of these projects will also be such as to ensure continuity. The Fifth Plan also provides for the installation of community viewing sets in the villages covered by the television. A television training institute is proposed to be set up at Delhi.

7.104. As regards radio, the present coverage is about 90 per cent of the population by medium wave. In terms of areas, the coverage is about 85 per cent. The ultimate objective is to reach 100 per cent of the population by Medium Wave. This is proposed to be achieved in stages and in the Fifth Plan the coverage is proposed to be increased to about 93 per cent. For this purpose, it is proposed to increase the transmitter power of certain stations and set up some new Broadcasting Centres at a cost of about Rs. 10 crores. External Services are to be augmented to a considerable extent in the Fifth Plan period. It is proposed to provide F. M. services at all the places where television centres are to be set up. This has become essential because of limitation of available spectrum space in the Medium Wave Band. The F. M. services would be used for providing high grade urban service to university towns and important cities.

7.105. In the Fifth Plan considerable emphasis is to be placed on the software aspect of Television and Broadcasting. This aspect has not been given due attention in the earlier Plans. Studio facilities and

programme production facilities are proposed to be considerably strengthened.

Science and Technology

7.106. The principal objective of Research and Development in the Transport & Communications sector is improvement in the performance of different parts of the system and development of indigenous competence in various fields. Indian Railways make use of modern technologies in various ways. The principal thrust of R & D in this sector is towards optimum equipment performance, improvement of system operations and lowering of costs. In the field of roads, emphasis will be laid on studies relating highway design standards, vehicle operation costs, time cost of delays, speed-surface condition relationship etc. A systematic R & D programme is proposed to be undertaken in the field of port development, such as development of instrumentation and capability for collection of marine data for off-shore structures, submarine pipelines etc., collection of systematic hydrological data, design and evolution of inexpensive shore protection works, dredging equipment etc. In the field of Civil Aviation, provision has been made for research and development to keep pace with modern developments in aeronautical science and engineering and to undertake technical evaluation and analysis of performance of aircraft. Considerable emphasis will be placed on weather forecasting and other related matters. In the field of Communications it is proposed to strengthen the Telecommunications Research Centre. The R&D programme for Indian Telephone Industries envisages development of new types of facilities and devices employing the latest developments in pure sciences and technology applicable to Communications. It is also proposed to take up development of modern version of teleprinters and other miscellaneous products in the Fifth Plan.

ANNEXURE I

Physical Progress from 1955-56 to 1973-74

item	unit	1955-56	1960-61	1965-66	1968-69	1973-74 (anticipa- ted)
(0)	(1)	(2)	(3)	(4)	(5)	(6)
<i>railways</i>						
1. route length	kms.	55011	56247	58399	59553	61000
2. tonnes originating	million	116	156	203	204	215
3. tonne-kilometres	billion	60	88	117	125	147
4. passengers originating	million	1275	1594	2082	2213	2700
5. passenger kms	billion	62	78	96	107	135
<i>roads and road transport</i>						
6. surfaced roads	thou. kms.	209	263	343	389	450
7. commercial vehicles on the road	thous nos.	165	225	333	386	520
8. trucks	thou. nos.	119	168	260	301	410
9. buses	thou. nos.	46	57	73	85	110
<i>traffic carried by road transport</i>						
10. goods	billion tonne kms.	9	17	34	40	65
11. passenger	billion pass. kms.	31	57	82	98	130
<i>shipping and ports</i>						
12. shipping (total)	thou. grt. ¹	480	857	1540	2140	3000
13. coastal	thou. grt.	240	313	323	330	200
14. overseas	thou. grt.	240	544	1217	1810	2800
15. traffic handled at major ports	million tonnes	23	40	50	55	65
<i>civil air transport :</i>						
16. Indian airlines	‡ATKms (million)	84	113	155	208	350
17. Indian airlines	³RTKms (million)	60	83	108	153	220
18. Air India	ATKms (million)	56	162	324	462	860
19. Air India	RTKms (million)	31	76	149	225	435
<i>communications</i>						
20. telephones (direct exchange lines)	thou. nos.	173	332	651	814	1306
21. post offices	thou. nos.	55	77	97	102	115
<i>broadcasting :</i>						
22. transmitters	numbers	46	59	110	127	150

¹gross registered tonnage.

‡available tonne kilometres.

³revenue tonne kilometres.

ANNEXURE II

Fifth Five Year Plan Outlay—Transport, Tourism and Communications—Central and State Sector

(Rs. crores)

item	centre	centrally sponsored	states	union territories	total
(0)	(1)	(2)	(3)	(4)	(5)
1. railways	2550.00	..	..	..	2550.00 ¹
2. roads	620.00	94.00	980.95	78.95	1773.90
3. road transport	26.00	..	256.93	2.42	285.35
4. ports	320.00	10.00	18.75	4.44	353.19
5. shipping	258.00	..	..	2.10	260.10
6. inland water transport	26.00	14.00	6.20	0.50	46.70
7. lighthouses	12.00	..	..	..	12.00
8. Farakka barrage	22.00	..	..	..	22.00
9. civil air transport	391.50	..	2.00	0.40	393.90
10. tourism	78.00	..	32.49	2.60	113.09
11. communications	1176.00	..	..	..	1176.00
12. broadcasting	120.00	..	..	..	120.00
13. total	5599.50	118.00	1297.32	91.41	7106.23

¹including metropolitan rail transport.

Chapter 8

Education

E DUCATION plays a crucial role in economic development and social modernization. As a key factor in production, it supplies the requisite number and quality of persons needed for various tasks and, by inculcating among the mass of the people appropriate attitudes, skills and personality traits, it creates the proper climate for development. By creating a well-informed and educated citizenry, it ensures the effective working of the basic institutions on which the economic and social well-being of the country depends. Education also provides the individual with the major means for personal enrichment and social and economic advancement.

I GENERAL EDUCATION

Review of the Fourth Plan

8.2. *Expansion of Facilities* : Although substantial progress was recorded in the expansion of educational facilities, the targets laid down for elementary education were not realized in full. The anticipated enrolments in secondary education also showed a shortfall but those in higher education were exceeded. The shortfalls have been particularly large in the case of elementary education, more so in the case of girls. The table below illustrates:

Table 1 : Enrolment Targets and Achievements in the Fourth Plan

(figures in lakhs)

age-group/classes	1968-69	1973-74 (target)	1973-74 (likely position)
(0)	(1)	(2)	(3)
6-11/I-V			
boys	342.10 (93)	412.50 (105)	393.53 (100)
girls	201.79 (57)	273.30 (73)	244.01 (66)
<i>total</i>	543.89 (76)	685.80 (90)	637.54 (84)
11-14/VI-VIII			
boys	87.11 (45)	121.90 (56)	104.92 (48)
girls	33.40 (18)	59.10 (29)	45.37 (22)
<i>total</i>	120.51 (32)	181.00 (45)	150.29 (36)
14-17-18/IX-XI/XII			
boys	50.90 (29)	70.00 (35)	61.60 (31)
girls	17.40 (10)	26.90 (14)	23.40 (12)
<i>total</i>	68.30 (20)	96.90 (25)	85.00 (22)
17-23/university stage			
<i>total</i>	16.90 (2.9)	26.60 (3.9)	30.00 (4.4)

In the case of secondary and university education these are estimates.

Note : Figures in parenthesis indicate enrolment as percentage of the population of the relevant age-group.

8.3. It is possible that the shortfalls in enrolment at the school stage would ultimately be less than what are apparent from the above figures, since these indicate an assessment of the likely position rather than the actual enrolment in classes which takes time to be reported. This seems particularly so in respect

of elementary education where, in addition to the outlays under Education, a provision of about Rs. 62 crores was made during 1971—74 for the appointment of nearly 75,000 elementary school teachers under the special employment programmes. Nonetheless, the position varies in different States. The

State-wise position in regard to elementary education is given in Annexures I and II. The shortfalls have been particularly large in the States of Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh, Maharashtra and Orissa.

8.4. *Other Significant Programmes.*—At the elementary stage, a number of improvement schemes were initiated: three printing presses were established for the publication of nationalised text books; with the assistance of the UNICEF, science education was improved at the school stage by providing science equipment to all training institutions and a number of selected schools, training of science teachers in the improved curriculum, preparation of teachers, manuals etc. The State Governments implemented pilot projects in selected areas to reduce wastage and stagnation at the elementary stage. At the secondary stage, special programmes for encouraging girls' education were launched. Facilities for the teaching of science were improved with the assistance of the NCERT. Curriculum and examination reform was undertaken by a number of State Boards of Secondary Education.

8.5. At the university stage, the University Grants Commission provided assistance for the development and expansion of post-graduate education and research, centres of advanced study, etc. Special

assistance was given to colleges for the improvement of their academic and physical facilities, especially those related to science education. Faculty improvement and campus development programmes as well as those for the provision of student amenities were also continued.

8.6. Mention may also be made of some other important programmes. Programmes of farmers' education and functional literacy were extended to 100 districts. Financial assistance was given to the non-Hindi speaking States for the appointment of Hindi teachers in the upper primary, high and higher secondary schools. States were also assisted to provide university level books in regional languages. In order to bring education closer to the life of the community and to provide constructive channels for the fulfilment of individual needs and aspirations more effectively and to give opportunities to youth to participate in programmes of national development, about 100 Nehru Yuvak Kendras have been set up.

8.7. *Outlays.*—Against a Plan outlay of Rs. 712 crores for General Education, the likely expenditure in the Fourth Plan would be of the order of Rs. 680 crores, indicating an overall shortfall of about Rs. 32 crores. The shortfalls have been in the Central Plan. The table below sums up the position:

Table 2 : Shortfall in Fourth Plan Expenditure

(0)	fourth plan outlay	fourth plan expenditure	excess (+) shortfall (—)
	(1)	(2)	(3)
centre	215 ¹	176	—39
states	497	504	+7
<i>total</i>	712	680	—32

¹Includes Rs. 11 crores for technical education under the U.G.C.

The shortfalls at the Centre are largely due to the transfer of funds to technical education (Rs. 9 crores) and, more recently, lower allocations due to the constraint of budgetary resources (Rs. 27 crores). Although there has been a slight over-spending on the part of the States, taken together, these figures conceal considerable variation in the situation in the different States. For example, substantial shortfalls occurred under the programmes of elementary education in States like Andhra Pradesh, Bihar, Gujarat, Haryana, Tamil Nadu, Uttar Pradesh and West Bengal.

FIFTH FIVE YEAR PLAN

Directions of Development

8.8. In the course of the last two decades of planned development, the educational system has ex-

panded considerably. In some respects its orientation has also undergone a change for the better. Nonetheless, the existing system still suffers from several inadequacies, some of them legacy from the past. The Fifth Plan attempts to draw upon the lessons of the past and seeks to introduce certain essential changes in the educational structure within the constraints of human and financial resources.

8.9. The thrust of the Plan is in four main directions: (i) ensuring equality of educational opportunities as part of the overall plan of ensuring social justice; (ii) establishing closer links between the pattern of education on the one hand and the needs of development and the employment market on the other; (iii) improvement of the quality of education imparted; and (iv) involvement of the academic community, including students, in the tasks of social and economic development.

8.10. *Equality of Opportunity.*—To promote social justice, the emphasis is being considerably increased on primary and adult education; incentives to help the enrolment and retention of the weaker sections in schools; scholarships, freeships and remedial coaching for the disadvantaged groups; residential (Ashram) schools for the Scheduled Tribes; the improvement of schools in the rural areas and urban slums; and provision of informal education to enable those who are forced to enter life early to improve their prospects.

8.11. *Linkage with Employment and Development.*—To establish a closer link between education and employment, the curriculum will be reformed and appropriate methodologies adopted to ensure the inculcation in the students of attitudes, skills and personality traits which increase the general employability of the educated; higher secondary education will be vocationalised; vocational courses will also be introduced as a part of general education at the university stage; and professional education will be closely linked to the estimated manpower needs, both quantitatively and qualitatively, of various development programmes. The other major linkages of education with development will be the integration of adult education with development programmes involving people in large numbers as producers or beneficiaries, the re-orientation of the curriculum at different stages to bring it into closer relationship with development needs and finally, the utilisation of the resources of educational institutions for development tasks.

8.12. *Quality Improvement.*—The major quality improvement programmes will be curriculum and examination reform, improvement in teaching and learning methodologies, teacher training (including in-service training), improvement

of textbooks, the increasing use of mass media as a support to the educational process and the improvement of physical facilities. These various reforms and improvements will be effected through the further development of research and training institutions, especially the National Council of Educational Research and Training, the State Institutes of Education and allied institutions and teacher training schools and colleges. These key research and training institutions will be linked with the institutions at the base level and appropriate stimulation and feed-back established. To promote experimentation and innovation at the university stage, certain institutions will be selected and given the status of autonomous colleges. Institutions/departments having high potential for developing excellence will receive special assistance. The existing centres of advanced study will be strengthened and other well-developed institutions will be helped to grow into such centres. These institutions of excellence will not only be carrying on advanced post-graduate and research work but will also be expected to stimulate, guide and help other institutions to improve their standards. Encouragement of talent through scholarships will be another important lever that will be used for improving the standards of our educational institutions.

8.13. *Linkage with Social Environment.*—Social service will be an essential part of the curriculum at all stages. The major objectives will be character building, widening the horizon of the student community and increasing their awareness of their social responsibility. The curriculum at various stages will be brought down to the level of practical application and social utilisation.

Main Targets

8.14. The major quantitative targets of educational expansion which have emerged from discussions with the States are summed up in Table 3.

Table : 3 Growth of Enrolment in Schools and Colleges : 1968-69 to 1978-79

stage/age-group	(enrolment in thousands)		
	position 1968-69	anticipated achievement 1973-74	likely position 1978-79
(0)	(1)	(2)	(3)
primary classes I-V (6-11)	54389 (76)	63754 (83.9)	78207 (97.1)
middle classes VI-VIII (11-14)	12051 (32)	15029 (35.6)	21580 (47.1)
informal education	..	..	7831
secondary classes IX-XI/XII (14-17/18)	6827 (20)	8504 (22.0)	11208 (26.1)
university education (17-23)	1690	3000	4650
arts, science & commerce	(2.9)	(4.4)	(6.0)

Note : Figures in parenthesis indicate the percentage of the population of the corresponding age-group enrolled in educational institutions.

Pre-School Education

8.15. The importance of pre-school education is universally recognised as catering to the most impressionable, plastic and educationally potent period of a child's life. The facilities available at present are, however, limited to a number of privately run schools in urban areas and few thousand *Balwadis* and *Anganwadis* run under government auspices in the social welfare sector. While it may be difficult to provide pre-school education facilities of any sophistication, the situation demands that some effort of an elementary kind be made immediately. It is, therefore, envisaged in the Fifth Plan that children's Play Centres for the age-group 3—6 may be attached to selected primary schools. In addition to these centres, private agencies will be encouraged to run pre-primary schools and the state will further assist in the strategic areas of teacher training, preparation of teacher guides and promotion of research for evolving methods of pre-school education suited to our conditions. In some of the integrated child welfare centres, pre-school education will also be introduced on an experimental basis.

Elementary Education

8.16. Apart from being a Constitutional obligation, the provision of universal elementary education is crucial for spreading mass literacy, which is a basic requirement for economic development, modernisation of the social structure and the effective functioning of democratic institutions. It also represents an indispensable first step towards the provision of equality of opportunity to all its citizens. Elementary education has, therefore, been given a very high

priority in the Fifth Plan, and the outlays for it are being stepped up from Rs. 239 crores in the Fourth Plan to Rs. 743 crores in the Fifth Plan. To this may be added Rs. 112 crores provided for school feeding programmes under Nutrition. The total outlay of Rs. 855 crores, thus arrived at for elementary education, will constitute 47 per cent of the total outlays on education in the Fifth Plan as against 30 per cent in the Fourth Plan.

8.17. *Expansion of Facilities.*—As regards expansion, full time facilities will be provided for 97 per cent of the children in the age-group 6—11 and 47 per cent in the age-group 11—14 by the end of the Fifth Plan. This will mean the creation of additional facilities for 145 lakh children in classes I—V and 66 lakhs in classes VI—VIII. In addition, about 78 lakh children of the age-group 11—14 will be provided part-time education. If these enrolment targets are realised in full, it should be possible to fulfil the Constitutional obligation largely by the end of the Sixth Five Year Plan. The outlays for the Minimum Needs Programme have taken note of the requirements of the educationally backward States and districts. While some regional disparities may continue, particularly in respect of the enrolment of girls and children of the Scheduled Castes and Scheduled Tribes, most of the States will reach the proposed level of all-India achievement. While Annexures I—IV indicate the State-wise position that is likely to be reached at the end of the Fourth Plan and that is proposed for the Fifth Plan, the table below summarises the position for the country as a whole :

Table 4: Enrolment of Children of the Age-Group 6-14 in Classes I-VIII

(0)	enrolment as percentage of population in the age-group					
	classes I—V/age-group 6—11			classes VI—VIII/age-group 11—14		
	boys	girls	total	boys	girls	total
(1)	(2)	(3)	(4)	(5)	(6)	
1950-51	59.8	24.6	42.6	20.7	4.5	12.7
1955-56	70.3	32.4	52.9	25.5	6.9	16.5
1960-61	82.6	41.4	62.4	33.2	11.3	22.5
1965-66	96.3	56.5	76.7	44.2	17.0	30.9
1968-69	93.0	57.0	75.8	45.0	18.0	31.9
1973-74 (anticipated)	100.2	66.4	83.9	48.3	22.2	35.6
1978-79 (target)	111.3	81.9	97.1	60.4	32.8	47.1

8.18. Although the enrolment targets provide a rough and ready indication of the task that has been accomplished and the distance that has yet to be travelled in reaching the goal of universalisation, they do not convey all the necessary information for judging the effectiveness of the educational system. From this point of view much more emphasis would have to be laid on reducing the incidence of wastage and stagna-

tion, the retention in school of the child for the full period of schooling and the improvement of the quality of instruction imparted. The dropping out of the educational stream of more than 60 per cent of the children before completing 4—5 years of schooling, which would give them permanent literacy, represents a colossal wastage of scarce resources.

8.19. Most of the children, who drop out or are withdrawn from schools prematurely, do so for economic reasons. Given the present level of *per capita* income and the nature and pattern of utilisation of the labour force, specially in agriculture, it is unrealistic to expect that the problem of drop-outs can be completely solved in the near future. In the meantime, certain essential steps need to be taken on an urgent basis. The provision of part-time classes, by enabling the children to get education at the time most convenient to them and their parents, will constitute a right step in this direction. These part-time classes will broadly be of two types: continuation classes for children who have completed five years of the primary school and who intend to continue education but cannot do so on a full-time basis; and literacy classes for those who have never been at school or have dropped out after finishing class I or II. The duration and timings of these classes will be determined in the light of local conditions. Other steps calculated to reduce wastage and stagnation will be a better organisation of admissions in class I to avoid children joining school in the middle and towards the end of the year and consequently failing to make the grade, securing a more homogenous age composition of the cohort, abolition of detention in the first two or three classes, changing of vacations to suit local needs, improving parent-teacher contacts, and the improvement of the instruction provided in schools.

8.20. The main thrust in the expansion of education has to be planned with reference to the most backward areas and the most underprivileged sections of the population. To promote enrolments in these areas and among these sections and, what is more important, to ensure the retention in school of the children for the full period of compulsory education, a variety of incentives would be needed. In the Plan, therefore, provisions have been made for free distribution of text-books and stationery, mid-day meals and, for girls, uniforms and attendance scholarships. For promoting education in the tribal areas, many more Ashram schools are proposed to be established, where both education and maintenance will be fully subsidised by the state.

8.21. *Improvement of Quality.*—Although the expansion of facilities will continue to receive emphasis, and a major share of the resources allocated for elementary education, the Fifth Plan proposes to lay much greater emphasis on improving the quality of instruction, particularly with a view to enhancing the efficiency and productivity of the schools. The constraint of resources will, however, require selection of programmes which do not require large resources but nevertheless are important for laying the basic foundation for the general improvement of elementary education in the future. Curricular re-orientation, adoption of appropriate methodologies of teaching, upgrading of the teachers' competence through pre-service and in-service training programmes, intensive development of key institutions like the State Institutes of Education, improvement of basic physical facilities and strengthening of educational administration at the district level are some

of the programmes which will be taken up for the purpose.

8.22. *Curricular Reorientation and Work Experience.*—As regards curricular reform and improvement of methodology, the main aim would be to maximise returns from education in terms of individual and social gain through effective linkages with development needs and employment opportunities. This requires that schools should inculcate in the students, through the adoption of suitable curricula and appropriate teaching methodologies, such qualities as are relevant to the entire spectrum of occupations and would ultimately improve their adjustability and employability and make them more capable of settling down in self-employment. The students would also need to be introduced to our basic institutions—the cooperative and the Panchayat—and to improved practices in agriculture and other rural occupations as a part of the work experience, which must form an integral part of the curriculum. The resources available in the community in the form of land, skilled craftsmen and their workshops, local raw materials etc. should be drawn upon for providing work experience in actual work conditions. Additional opportunities of work experience can also be provided by projects calculated to improve the campus and the locality surrounding the school; these would also help in creating institutional assets in the form of building, furniture, equipment, etc. with the help and cooperation of the local community.

8.23. *Other Quality Improvement Programmes.*—Each State Government will draw up a phased programme of improving the building and equipment position of the elementary schools, which is highly unsatisfactory at the moment, and implement it largely with the assistance of the local community. Schools will also be provided with science kits and radio sets. Community television sets, to be provided under the programme of the Ministry of Information and Broadcasting, would be taken advantage of; the location of these sets in schools will considerably facilitate this process. A close liaison will be established between the Education Departments of the States and the All India Radio to work out an effective programme of educational broadcasting and telecasting.

8.24. *Experimental Schools.*—The Plan visualises many changes in the content and methodology of elementary education. These will involve a considerable amount of work by the National Council of Educational Research and Training, the State Institutes of Education and the training schools. These institutions are being strengthened. The results of their work will be made available to improve the practices in the large majority of the training schools who will work intensively with one school attached to or adopted by each of them. In order that its experience becomes relevant to the large majority of the schools, the school chosen for innovative purposes must be representative. The effort will be to try out such new ideas as depend largely on the imaginative utilisation of local resour-

ces, both material and human. The practices found feasible in this school will be demonstrated to 10—15 schools in the surrounding area and through them to a larger belt of elementary schools. They will also be provided such additional financial inputs as are found to be essential. Through appropriate linkages with the State Institutes of Education and through them with the NCERT, on the one hand and, on the other, with the district administration and the subject teachers' associations, which exist or can be promoted, the chain of stimulation from above and feedback from below will be completed.

Secondary Education

8.25. The secondary stage of education is of great significance in preparing personnel for various middle level positions in a country's economic and social life. While the demand for expansion will continue to be met, particularly from those sections of the population who have for various reasons

lagged behind, the emphasis in the Fifth Plan would be on relating secondary education more intimately to the economic and social needs of the country. Efforts will be made to restructure the educational pattern so that secondary education does not, as hitherto, prepare students only for entering a university but also fits them for diverse occupations. Stress will also be laid on the qualitative improvement of schooling by upgrading teacher competence, provision of better physical facilities, libraries and laboratory equipment, and strengthening educational research and extension.

8.26. *Expansion.*—Educational facilities will be created for 2.7 million additional children during the Fifth Plan; with the realization of this target, enrolment in classes IX-XI will form 26.1 per cent of the population in the age group 14—17 in 1978-79 as compared to 22.0 per cent in 1973-74. Table 5 sums up the position:

Table 5 : Expansion of Secondary Education

year	enrolment (in million)			percentage of age-group (14-17)		
	boys	girls	total	boys	girls	total
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1950-51	1.02	0.19	1.21	8.8	1.7	5.4
1955-56	1.65	0.33	1.98	13.0	2.8	8.0
1960-61	2.47	0.56	3.03	17.5	4.3	11.1
1965-66	4.08	1.20	5.28	25.6	7.9	17.0
1968-69	5.09	1.74	6.83	29.0	10.0	20.0
1973-74 (anticipated)	6.16	2.34	8.50	31.0	12.0	22.0
1978-79 (target)	8.04	3.17	11.21	36.0	15.0	26.1

8.27. The trend towards general abolition of fees at the secondary stage would need to be halted. Otherwise, it places an unnecessary burden on the public exchequer and limits the scope of the public authorities to undertake the much needed programmes of qualitative improvement and the spread of the education among the under-privileged sections of population. Stipends, scholarships, free tuition and hostel facilities etc. will be provided to promote education among girls and the weaker sections. For those who have had to enter life early, correspondence courses will be organised.

8.28. *Work Experience and Vocationalisation.*—The introduction of work experience will be an important curricular reform at the secondary stage. Career information and vocational guidance will be made available in a much larger number of schools than at present. This will pave the way for specific vocational training at the post-matric stage. This training has, however, to be provided strictly in relation to local needs, as the mobility at this level is limited. On-the-job training supplemented by evening classes for general education would be chea-

per, more effective and more closely related to actual needs.

8.29. The existing training facilities in the Industrial Training Institutes, Polytechnics, Agricultural Polytechnics etc. would be fully used. Provision of vocational education to other than the regular students should be a part of their extension activities and a means of linking them to the actual problems of their respective localities. In areas, where the nature of demand has crystallised over a period of time, vocational courses already exist and are being provided in institutions for training middle-level technicians in the sectors of industry, health etc. These facilities are being expanded according to the assessed demand for their products.

8.30. The general education system, however, has a stake in, and responsibility for, diverting large numbers to vocational training and employment. It should, therefore, take initiative in organising a co-ordinating group of the various agencies involved, for identifying categories of personnel in short supply and arranging for their training, with the educational institutions supplying the input of general education. To make up for the deficiencies of data, especially those

providing information about education-industry-occupation relationships and the institutional and non-institutional resources available in the different localities for the development of various occupational skills, some studies have already been launched and more will be undertaken. An Inter-Departmental Committee is being set up to examine all the relevant aspects and suggest the organisational arrangements for formulating and implementing an integrated plan of action.

8.31. *Experimental Schools.*—To promote innovative practices, one school will be attached to every training college as an experimental school which will work under the guidance and stimulation of the extension services department of the training institution. As in the case of elementary schools, the selected school will be linked with a belt of surrounding schools, on the one hand, and with the training institution, the district administration and the State Institute of Education and through it to the NCERT, on the other.

8.32. *Uniform Pattern.*—The National Policy Resolution on Education emphasised the necessity of adopting a uniform pattern: 10 years of elementary and secondary education and 2 years of higher secondary education, leading to the first degree of 3 years. The adoption of this pattern by all the States and Union Territories would bring

about a much desired uniformity in educational standards and also facilitate the movement of students from one part of the country to another. The idea of having a Pass Degree Course of 2 years for a majority of the students and an Honours Course of 3 years for a highly select group has a definite advantage for ensuring a more purposeful investment of limited resources. The Education Commission was of the view that the eleventh and twelfth classes should be attached to schools. Whether located in schools or in colleges, depending on the conditions prevailing in each State, eleventh and twelfth classes should be under the Boards of Secondary Education and definitely form a part of the secondary education system.

8.33. Some States have either switched over to, or have already decided to adopt, the new pattern; others have set up expert groups to work out the details and financial implications of the change-over. The adoption of the pattern will, however, not by itself improve the quality of instruction. Intensive utilisation of additional time made available should be the highest priority. For maximising the benefits of the new pattern, it is necessary to step up efforts for vocationalisation of secondary education.

Girls' Education

8.34. As indicated in Table 6, there has been a large scale expansion of facilities for girls' education since 1951:

Table 6 : Expansion of Girls' Education

year	(enrolment in million)								
	I-V			VI-VIII			IX-XI XII		
	enrolment		col. 2 as % age of col. 1	enrolment		as col. 5 % age of col. 4	enrolment		col. 8 as % age of col. 7
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1950-51	19.15	5.38	28.1	3.12	0.53	17.0	1.21	0.19	14.0
1955-56	25.17	7.64	30.4	4.29	0.87	20.3	1.98	0.33	16.7
1960-61	34.99	11.40	32.6	6.70	1.63	24.3	3.03	0.56	18.5
1965-66	50.47	18.29	36.2	10.53	2.85	27.1	5.28	1.20	22.7
1968-69	54.39	20.18	37.1	12.05	3.34	27.7	6.83	1.74	25.5
1973-74 (anticipated)	63.75	24.40	38.3	15.03	4.54	30.2	8.50	2.34	27.5
1978-79 (target)	78.21	31.89	40.8	21.58*	7.25	33.6	11.21	3.17	28.3

*Does not include additional enrolment under informal education which has been estimated at 7.83 million.

8.35. Disparities, however, still exist in the relative utilisation of available facilities by boys and girls at various stages of education. The problem of the inadequate supply of women teachers, which is a major reason for the low enrolment of girls, would be tackled by giving scholarships to the local girls to complete their education and training leading to a

teaching career, organisation of condensed and correspondence courses for the less educated women and girls, etc. The outlays for special programmes for education of girls will be stepped up. The expansion of education for girls also requires the orientation of the curriculum to meet their special needs as housewives and career seekers.

Teacher Preparation

8.36. At the end of the Fourth Plan, 23.8 lakh teachers—20.2 lakhs in elementary schools and 3.6 lakhs in secondary schools—will be in position in schools. This number would increase to about 30.4 lakhs at the end of the Fifth Plan. The percentage of trained teachers in elementary and secondary schools would be about 85 and 83 respectively at the end of the Fourth Plan. There are, however, regional variations. Except in the States in the eastern region, the expansion of training facilities in the previous plans has, by and large, ensured the supply of trained teachers in adequate numbers.

8.37. In the Fifth Plan, except for the States in the eastern region, where a crash programme is contemplated to clear the back-log of untrained teachers the emphasis will be on consolidation and improvement. The curricula of the training schools and colleges will be reoriented so as to ensure the deepening of the prospective teachers' academic and professional preparation; physical facilities of these institutions will be improved; their teacher educators will be provided refresher training; and they will be assisted to establish extension service departments for providing regular help and guidance to schools. State Boards of Teacher Education will be set up in the remaining States for coordinating teacher education programmes ensuring adequate standards of teacher education and, preventing the growth of imbalances between the supply and demand of teachers etc. A few colleges of education will be developed as comprehensive colleges where training will be provided for all types of teachers in elementary and secondary schools. This will help to break down the isolation that exists between the various types of teacher education institutions and upgrade the quality of training imparted to elementary teachers. A comprehensive programme of in-service training of existing teachers will be implemented. Special emphasis will be laid on increasing the supply of teachers for science and mathematics, vocational guidance etc.

University Education

8.38. The main problems confronting university education are: its rapid expansion without a corresponding increase in physical facilities, lack of coordination with the social life of the community, widespread lowering of standards consequent on rapid expansion of the student body unaccompanied by concomitant expansion in the size and quality of the teaching community and increasing incidence of unemployment among the university graduates. The main strategy for the development of university education will, therefore, have to be such as to ensure that,

while the social demand for higher education, particularly for satisfying the rising expectations of the newly emerging socio-economic groups, continues to be met, indiscriminate expansion of facilities is not allowed to further dilute the standards of university education. University courses will also need to be restructured so that the students completing their education are enabled to become productive members of society.

8.39. *Admission Policy.*—The Indian economy at its present level of development has neither the resources to expand higher education at the present rate nor the capacity to absorb all the resulting increase in output into employment at wages corresponding to the expectations of those who receive higher education. A direct strategy involving a ceiling on admissions may not, however, be practicable since estimates of private and social benefits do not coincide. An alternative may be to raise fees appreciably to ration the limited number of seats. In view of the widespread inequality currently prevailing, such a possibility cannot be recommended. The strategy under the present circumstances has, therefore, to be conceived of as a package which will reduce the rush to universities while effectively enlarging the scope of receiving higher education if the need is keenly felt. The following components of the package need explicit mention: vocationalising of higher secondary education; enabling large numbers to enter employment at the end of the secondary stage; limiting admissions to regular institutions, which should conform to certain well-defined standards, on the basis of merit, while making suitable reservations, supported by coaching classes and adjustment courses for the backward classes; and providing the rest of the social demand for higher education through evening colleges, correspondence courses and private study. This strategy would have to be supported by a suitable recruitment policy which will not, as at present, give an edge to the university educated in competing for jobs for which something less than a university degree should be adequate. Such a policy is likely to reduce the motivation of the secondary school leavers to seek higher education in the hope of gaining an advantage in securing jobs. The adoption of such a policy is essential for preventing the present distortions in public investments in education where we are forced to spend resources on higher education without receiving adequate social return.

8.40. The portion in respect of university enrolment is summed up in Table 7:

Table 7 : Expansion of University Education

enrolment/percentage	1950-51	1955-56	1960-61	1965-66	1968-69	1973-74 (anticipated)	1978-79 (target)
total enrolment* (million)	0.33	0.54	0.74	1.24	1.69	3.00	4.65
percentage of age-group 17-23	n.a.	n.a.	1.5	2.3	2.9	4.4	6.0

*Arts, Science and Commerce subjects excluding intermediate students of the U.P. Board but including the pre-university classes run by the universities.

The effort should be to meet 50 per cent of the demand for additional facilities in regular institutions, 20 per cent through evening colleges, 20 per cent through correspondence courses and 10 per cent through private study. Special attention will be given to the expansion of facilities for higher education in backward areas.

8.41. Post-graduate Education and Research.—Admissions at the post-graduate level will have to be selective. As far as possible, facilities for post-graduate education and research should mainly be available in the universities or in the post-graduate centres located in places with a cluster of colleges. The various universities in a State would need to collaborate to provide, without unnecessary duplication, post-graduate facilities in various subjects at a fairly high level of excellence. Scientific and technological research in the universities and other institutions of higher learning has to be supported on an adequate scale so as to develop first rate research capabilities within the educational system. This is crucial from the point of view of training high quality manpower in a climate of self-confidence and self-reliance, on which depends much of the success of the science and technology plan. This sector which has received meagre support in the past will, therefore, be strengthened on a selective basis by identifying active departments, productive researchers and significant areas of research. The requirements of the national economy, the necessary growth of the scientific disciplines and the interests of individual researchers, in that order, would be the criteria which will be applied both in choosing institutions and areas and in determining the level of financing research in the universities. Consequently, while undertaking fundamental research, the institutions of higher learning should utilise their capacity to the full for programmes of applied research. The present programme of the centres of advanced study in the universities will need to be reviewed and evaluated from this point of view and new directions of their development determined. Collaboration between the universities themselves and between them and the National Laboratories will be encouraged in the field of scientific and industrial research. Resources have been provided for R & D projects identified by the National Committee on Science and Technology and assigned to the universities. The various user-agencies may also assign other R & D projects to the universities, but these specific projects will need to be funded by the agencies concerned. In this way, the research work in the universities and the institutions of higher learning will get tied up more closely with the science and technology plan.

8.42. In addition to strengthening the existing departments for scientific research, science service centres, including common computer facilities, will be set up on a regional basis, where expensive research equipment will be provided to serve a group of institutions. An adequate number of centres will also be organised for the development, maintenance and servicing of scientific instruments and equipment in the university departments and the science service centres. Suitable training programmes will be formu-

lated and implemented for the training of technicians required for the purpose.

8.43. Research in the social sciences will be encouraged. The activities of the Indian Council of Social Sciences Research and of the Indian Council of Historical Research will be stepped up, besides strengthening the research in humanities in the universities. The coverage of research scholarships and fellowships will be expanded.

8.44. Qualitative Improvement.—The existing programmes of improvement of physical facilities, curriculum and examination reform, production of improved textbooks, especially in the regional languages, promotion of innovations and improving teacher competency will be continued. Curricular reform will aim at making the courses more flexible by allowing considerable freedom in the combination of subjects which will also promote interdisciplinary studies and research; introduction of vocational courses to increase the employability of the graduates; and linking up of every course in, however, small a way, with practical problems and social utilisation. The programme of examination reform, already started by the University Grants Commission, will be speeded up during the Fifth Plan. Selected institutions will be recognised as autonomous colleges for promoting innovations in curriculum, methods of teaching, evaluation of students, etc.

8.45. *Student Services.*—A number of schemes have been included to provide basic amenities to the students at the university stage. These include increased provision of hostels, day student homes, health centres, canteens, book banks, etc. Creative channels for utilising the energy of the youth are being provided through the stepping up of programmes of games and sports, cultural activities and the involvement of students in the tasks of social and economic development. Employment oriented courses will also be introduced and guidance services expanded.

New Universities

8.46. The improvement of university education is not possible if most of our resources are spent on establishing new universities without adequate academic justification. The establishment of universities in their existing form is extremely expensive. In the first instance, the need for post-graduate education and research facilities may be met by post graduate centres which could, in the course of time, develop into universities, if necessary. Secondly, experiments like the open university must be tried which will reduce the need for the establishment of conventional universities.

Scholarships

8.47. To encourage talent and to overcome the environmental handicap of the weaker sections, considerably increased emphasis is being laid on scholarships in diverse fields. The schemes of scholarships, administered at present by the Central and the State Governments will be continued. The coverage of the junior and senior fellowships of the University Grants

Commission will be increased. Besides these, a large number of scholarships are provided under Agriculture and Health and by agencies like the Council of Scientific and Industrial Research, the Department of Atomic Energy, etc. In addition, the Department of Social Welfare runs a very large and rapidly increasing programme of post-matric scholarships for the Scheduled Castes and the Scheduled Tribes. The programmes of various organisations need to be coordinated so that there is some relationship between the amounts provided by the different organisations for broadly similar purposes. Although some improvement has already been effected, particularly with the decentralisation of the scholarship schemes, the procedures need to be further streamlined so as to avoid the delays that now occur between the sanctioning of the scholarships and their receipt by the scholarship-holders. The machinery for administering scholarships at the various levels will need to be carefully reviewed and, where necessary, suitably strengthened. The scope of the administering agencies also needs to be widened so as to provide for adequate educational and vocational guidance, adjustment courses for environmentally handicapped students, suitable placement, etc; this will ensure that each scholarship-holder receives individual attention.

Language Development

8.48. In order to develop our various languages as vehicles of educational development and preservation and propagation of culture, a very large effort needs to be mounted in the next 10-15 years for the development of various languages and for increasing their interaction. The modernisation of language teaching would require re-examination of language curricula, teaching methods, modes of examination etc. The language departments of the universities will need to be strengthened and enabled to meet the increasing needs of interpreters, translators, etc. The programme of training teachers in modern methods of language teaching is included in the Plan. In addition, the scheme for the appointment of Hindi teachers in non-Hindi speaking States will be expanded and a new counterpart scheme, entailing the appointment of teachers of other Modern Indian Languages in the Hindi speaking States, will be launched. The production of university level books in the regional languages is being increased. The key institutions for training and research in languages are being further developed. An institute for the translation of selected books from foreign and Indian languages into Hindi will be set up. Assistance will continue to be provided for the strengthening of the Sanskrit institutions and the production of literature in Sanskrit.

Social Education

8.49. Providing basic education to the primary producers is a highly desirable aim for a democratically functioning society. Past experience in the field of social education needs to be combined into an effective strategy which should optimise the use of available resources, mobilise community support and develop and exploit fully the potentialities of adult education for economic and social development. For this purpose adult education should be linked effectively with key national tasks like elementary education, health

and family planning, agricultural extension, cooperation, etc. To strengthen the motivation of the adults, their education should be effectively linked with their activities. The modern mass media should also be pressed into service and educational institutions brought into the programme of adult education, especially through the National Service Scheme.

8.50. It is proposed to integrate adult education with all development programmes where large masses are involved as producers or beneficiaries. The agencies concerned should be responsible for organising adult education programmes for their clientele. They will be assisted by the Education Departments which will produce literature suitable for neo-literates. A beginning in this direction has already been made in 100 districts in conjunction with the Intensive Agricultural Development Programme. This will be extended in the Fifth Plan. In addition, other occupational/interest groups, which are large and cohesive enough to allow for the organisation of a well focussed programme of literature production, will be identified, and their needs catered to. The coverage of the programmes found useful as a result of the work done so far—the Vidya-peeths of Mysore, Polyvalent Centres of Bombay, condensed courses organised for adult women by the Central Social Welfare Board, adult schools linked to the regular education ladder organised by the Jamia Milia Islamia, Delhi, the Gram Shikshan Mohim of Maharashtra, with its element of maximum self-help and self-direction, etc—will be expanded. The programme of adult education and functional literacy will be supported by a network of village and block libraries. Extension education for occupational adjustment and personal development will be promoted by the universities. Youth centres/clubs, set up in the urban and rural areas, and the Nehru Yuva Kendras should also become the foci for informal education.

8.51. Expansion in education has not been accompanied by an equally major effort at book production. In the Fifth Plan, the expansion of the book production programmes, accompanied by an equal emphasis on ensuring sales of the materials produced, will receive emphasis. A quick survey will be carried out to ascertain the present position and to help produce books at low prices on subjects of interest to the first level readers. High priority will be given to the publication of original works in the Indian languages by top level subject specialists. To coordinate the work of the production of university level books in the non-Hindi speaking States, machinery needs to be set up, at the Central level, on the pattern of the one for the coordination of work in the Hindi speaking States.

8.52. Most of the States have nationalised school text-books. To support the vast expansion of the book production programme, national and regional training institutes will be set up for training personnel in editing, translation, illustration, production and sales. These institutes will also carry out research and surveys in the various fields of publishing. The hardware side of the printing industry will need to be strengthened. The supply of paper for books and stationery will also be increased. The working of the

National Book Trust will be streamlined so that it concentrates on production, promotion and distribution of books and the training of personnel involved in publishing. Steps will be taken to promote the export of Indian books. To formulate and implement an effective national policy of book development, surveys and studies will be conducted to provide basic data and information. The National Book Development Board will be strengthened suitably for implementation of the Fifth Plan schemes.

8.53. The library programmes are being stepped up. The Central and State libraries will be strengthened in respect of buildings, acquisition of books, staff, etc. The deficiencies of the district, block and village level libraries are being removed. The attempt will be to develop a library system at the district level so that the district library is properly linked to the smaller units and feeds them. The States will also be assisted by the Raja Ram Mohan Roy Library Foundation to strengthen the district, block and village level libraries.

Physical Education, Games and Sports and Programmes of Youth

8.54. *Student Youth.* The main objectives of the youth programmes are to increase the coverage of facilities for physical activity and healthy recreation and inculcate in youth habits of discipline, team work and a spirit of adventure. Games and sports will be provided in all schools. In addition, scouting and guiding will be encouraged. The introduction of the National Service Scheme, on a universal basis at the college stage, had been under consideration ever since the formulation of the First Plan. The general approach was to take students from their institutions to places of work where their boarding and lodging would be a charge on the State. The programme never got off the ground mainly due to organisational and financial difficulties involved in moving, feeding and finding work for a large number of students over long periods and the inadequate motivation of students who had to be away from their studies. The Fifth Plan intends to orient the whole scheme and make national service an essential part of the curriculum; effort will be made to link every subject with practical problems and socially useful work, generally in the vicinity of each institution. The University Grants Commission has already set up different subject panels to effect the desired orientation of the curricula. Voluntary organisations will be assisted to conduct experiments, like Youth Against Famine, and the involvement of youth in developmental work.

8.55. *Non-Student Youth :* The Nehru Yuvak Kendras will provide the focus for youth activities especially among non-students; these centres, suitably assisted by the academic institutions in the neighbourhood, the State Government concerned and the voluntary organisations, will meet the various needs of physical activity recreation and education of the youth.

8.56. *Games and Sports :* The emphasis on games and sports is being considerably stepped up. The

special group considering these programmes made detailed recommendations in this regard. The strategy proposed to be adopted in the Fifth Plan will be two-fold. First, an attempt will be made to enable the largest possible numbers to participate in these activities through the provision of play-fields and related facilities. Mountaineering and adventure facilities will be expanded. The other aspect will be to identify talent and encourage it through competitions at various levels and to pick up those who have the potentiality of reaching international standards. Sports schools will be set up in different regions for the latter purpose and all possible help will be given to build up this talent. For the specially talented ones, a programme of scholarship is being envisaged. Indian games which have been comparatively neglected so far will receive special attention.

Cultural Programmes

8.57. In the field of culture, the thrust in the Fifth Plan will be to strengthen the cultural content of the curriculum at various stages. Cultural aspects will be taken into account while drawing up the programmes catering to tribal and social welfare, and to other areas of human resource development, including programmes of health and family planning sectors. Institutions catering to the cultural needs of the community, especially in the village and small towns, will receive support. Training institutions will be set up and the methods of training will be reoriented to suit modern conditions where the old teacher-disciple relationship has virtually collapsed, the number of students has considerably increased and the modern media have become available. The facilities of studios, theatres etc., where aspiring artists can display or perform at reasonable rates, will be increased. To encourage talent in every field of art, the scholarship and the fellowship schemes are being expanded. Scholars and artists in indigent circumstances will also be assisted.

8.58. The work relating to the revision of the Indian Gazetteers, including their translation into Hindi and the revision of District Gazetteers, will be continued. The new schemes relate to the preparation of the National Gazetteer of India, giving the latest information about all noteworthy places in the country, including their natural and mineral resources; the revision of the State Gazetteers, and the preparation of supplement to the District Gazetteers. Under Archaeology, schemes are included for the preservation and development of monuments, including security arrangements and improvement of their environments; new excavation projects inside and outside India; setting up of archaeological museums and promotion of archaeological studies in the universities; and for publications, research and training. The important programmes under Archives will be the setting up of record centres; preparation of the National Register and the acquisition of private records; expansion of repair and reprography units; acquisition of micro-film copies of records from abroad; publication of records, relating to the transfer of power in 1947; and the setting up of a full-fledged school for archival training.

8.59. The development schemes of the National, State and private museums will be continued. New programmes, which will be taken up are, among others, the establishment of a Central Research Laboratory for the conservation of cultural property, of regional museums in Bombay and Madras and of a National Trust for the Acquisition and Preservation of Cultural Property. A Museum of Man is also proposed to be set up. The existing schemes under the Akademies will be expanded in the Fifth Five Year Plan. In each State, a folk dance troupe will be trained to represent all the dance forms prevalent in a State so that their rich variety can be demonstrated outside the State more easily. The working of the Sangeet Natak, Lalit Kala and Sahitya Akademies will be reorganised on the basis of **the recommendations of the Khosla Committee**. The Committee has emphasised, among others, the need to make the general councils, controlling the Akademies, fully representative and their executive **organs more compact; co-ordination and mutual sharing of their services; establishment of a liaison between them and their State counter-parts; and the preparation of programmes within a long-term perspective.**

Planning and Implementation Machinery

8.60. To cope up with the widening scope of the continuing activities and the emergence of new tasks, the strengthening of the planning and implementation machinery in the Central and the State Departments of Education becomes crucial. The pre-service and in-service training of the cadres needs to be strengthened. The National Staff College has a very important role in this. The streamlining of procedures, with a view to giving greater initiative to institutions and teachers, is equally important.

8.61. The functions of the Planning and Statistical cells at the Centre and in the States need to be broadened to include the undertaking of studies for improving the data base for policy decisions and the evaluation of plan implementation. It should be capable of drawing together the programmes of the various departments and institutions into an integrated and coherent plan so that proper inter-sectoral priorities and linkages can be established; the cell will in this way develop as an effective research and study support to the Educational Directorate. This will require considerable strengthening and reorganisation of the existing cells in the States with the induction of requisite expertise. The State Institutes of Education, of Science Education, of Languages, etc., whose effective functioning is at the heart of educational development, should find their appropriate place in the administrative complex. Proper linkages have also to be established between these institutions and the planning and implementation machinery so that their expertise can be effectively used for the purpose of the Plan. The district administration, where detailed planning and implementation has to be done, needs considerable strengthening as regards statistics and the induction of consultants for science education, vocational guidance, work experience and social education.

8.62. The outlook and approach to inspection and supervision of schools should undergo a major change. The emphasis should shift to consultancy and guidance. The general inspection of schools would need to be separated from its academic "supervision", with suitable professionalisation built in both. The existing Bureaux of Educational and Vocational Guidance, of Text Books, etc. should be strengthened and their functioning streamlined. The induction of subject-teacher specialists in the inspectorate would also encourage the growth of subject-teacher associations and provide a channel and a forum for encouraging the growth of constructive leadership among the teaching profession.

8.63. The idea of forming institutional complexes needs to be further developed to ensure guidance and help to our large number of institutions. To mobilise institutional resources, which are considerable, in terms of teachers and students, due emphasis must be put on institutional planning which will ensure better utilisation of institutional resources and their planned growth, with the active assistance of the local community, with which its linkage must be firmly established.

Educational Research and Development

8.64. An adequate support of the R&D effort is essential to ensure optimal utilisation of resources in men, money and materials in a major and significant sector of development like education. The instruments and the provisions required, therefore, have been built in the various programmes to enable ordered change in the curricula, teaching methods, text-book production, institutional structures, administrative practice, etc. The effort is broadly three-fold: to strengthen key training and research institutions like the NCERT, the State Institutes of Education, Institutes for Development of Languages, etc; to select certain typical institutions for purposes of experimentation and feed back; and to spread the results of these experiments through appropriate linkages with the administration and the training institutions. Apart from this, research will be promoted wherever an individual institution or organisation is found capable of doing it, either on its own initiative or through sponsorship. Certain efficient schools, polytechnics and colleges would be freed from departmental/university control to experiment on a comprehensive front within certain broad limits laid down by the authority concerned.

8.65. The adoption and adaptation of modern means of mass communication, particularly the radio and television, as supports to the teaching-learning process, would require considerable research and development effort. Provision has been made to give radio sets to schools. Educational institutions will also use community television sets. For the development of the software component of the programme, the Educational Technology Cell at the Centre would be strengthened. At the State levels, the existing Educational Technology Cells are being strengthened and new ones will be established with the assistance of the Government of India. These cells will also prepare educational films and other audio-visual materials.

II

TECHNICAL EDUCATION

Review of the Fourth Plan

8.66. The Fourth Plan began with an admission capacity of 25,000 for the Degree and 50,000 for the Diploma courses. The actual admissions had, however, gone down to about 27,000 for diploma courses and 18,000 for degree courses due to the unemployment among the engineers. The employment position has improved since then and the admissions have increased to 37,000 at the diploma level and 20,000 at the degree level in 1973-74.

8.67. The stress in the Fourth Plan was on the consolidation of the existing institutions and programmes of qualitative improvement, like faculty development, curriculum research and re-orientation of courses in relation to the needs of industry. The progress of implementation of different programmes has varied. Due to insufficient priority accorded by some States to qualitative improvement programmes, procedural difficulties, reluctance of teachers to work in industry, newness of some of the programmes, etc. only about 95 per cent of the total outlay on technical education is likely to be spent as indicated below :

Table 8: Shortfalls in Fourth Plan Expenditure

	fourth plan outlay	fourth plan expenditure	excess (+) shortfall (—)
centre*	56	65	(+) 9
states	56	41	(—)15
total	112	106	(—) 6

(Rs. crores)

*Excludes Rs. 11 crores for programmes included in the Plan of the UGC.

Polytechnic and post-graduate education have been reviewed and the lines of further development have become clearer. Degree courses, however, are still being reviewed.

Fifth Five Year Plan

8.68. The main stress in the Fifth Plan will continue to be on the consolidation and improvement of the quality of the technical education system. The facilities available in technical institutions for experimentation, development, design and testing in the field of science and technology as well as in terms of qualified engineers and scientists on their faculty will be effectively utilised not merely to carry on the traditional functions of teaching and research but also to deal with new tasks in continuing education, extension of engineering services and regional development.

8.69. There are at present 138 engineering colleges, with an annual admission capacity of 27,000 and 307 polytechnics, with a capacity to admit about 50,000 students annually. The cut-back in the level of student admission, introduced in 1968, will be restored in stages depending upon the provision of physical facilities in individual institutions and the estimates of future demand for engineering manpower. Provision will also be made for staff quarters and campus facilities in these institutions.

8.70. *Promoting Occupational Mobility* : The technical education system, as organised at present, is overwhelmingly oriented towards full-time, pre-employment education following the conventional institutional pattern with emphasis laid on academic qualifications rather than on skills and practical experience of the entry cohorts. As a result, and since the annual out-turn from the system accounts only for about 10 per cent of the total manpower stock,

qualitative improvement in technical education has but a marginal impact on the total labour performance and productivity in the economy. From the point of view of social justice, the system is not adjusted to the urgent need for promoting occupational mobility; it is hardly possible now for shopfloor personnel to overcome their initial educational handicaps and to build careers on the strength of their skill and experience in order to reach the highest levels of responsibility in any organisation. The twin objectives of productive efficiency and individual career development are interlinked and interdependent. The Fifth Plan proposes to utilise significantly the resources of the technical education system for upgrading the skills and performance levels of those who are already engaged in the production sectors. Part-time and informal education programmes will be expanded — not always or necessarily in relation to the highly structured academic courses leading to a degree or a diploma — and specific training programmes will be organised to meet established manpower needs of industry. In order to facilitate easy adjustability to technological changes, short-term and refresher courses will be organised on a big scale. All these will require much closer linkages between the technical education system and the employment sectors as well as a definite commitment to, and clearly articulated procedure for, manpower development in the economic sectors. More importantly, the industry would need to recognise their responsibility to help its employees acquire higher technical competence for their career development and, on the one hand, modify their recruitment and promotion practices and, on the other, interact with the technical education system more effectively to bring about the necessary changes and reforms in the latter. The public sector enterprises have a special responsibility to give a lead in this direction.

8.71. Quality Improvement : The quality improvement programmes comprising faculty development, curriculum reforms and preparation of instructional materials will be extended. The workshops and laboratories will be modernised and obsolete equipment in the older institutions replaced to keep pace with the changing technological requirements.

8.72. Polytechnics : The courses of study in polytechnics will be reorganised on the basis of the plan of action approved by the All India Council for Technical Education. This will include diversification of programmes into several technological specialities needed for industrial growth; organisation of specific technician education courses in association with industry; reorientation of courses in relation to fields of activity in rural areas, non-industrial urban areas and industrial areas; introduction of courses related to technician level occupations in commerce, business, etc.; and provision of suitable programmes for craftsmen and technicians working in industry to equip them better for their present as well as future work. The curricula will be modernised and modified to include the study of industrial organisation, human relations and man management, materials planning and industrial safety; aspects of cost control, quality control and standardisation will also be incorporated as part of the diploma courses. The organisational inputs for establishing institution-industry liaison for manpower assessment at the area level and for undertaking innovative experiments will have to be ensured.

8.73. Degree Courses : The goals, objectives and programmes of the degree courses in engineering and technology are being reviewed by a special committee set up jointly by the University Grants Commission and the Central Government; these courses will be suitably modified in the light of the recommendations of the committee. The scheme of sandwich courses will be extended to as many engineering colleges and polytechnics as possible.

8.74. Post-Graduate Education and Research : Facilities for post-graduate education will be consolidated according to the approved programme. The Institutes of Technology will develop advanced centres in selected technological areas. Industry-oriented courses and practice laboratories will be organised at the Regional Engineering Colleges and other selected institutions in consultation with the industry in their neighbourhood. Research and development activities will be provided in suitable institutes within the framework of the National Plan of Science and Technology. Keeping in view the long term needs of the country, it is proposed to set up a few centres of advanced study and research in special fields in engineering colleges.

8.75. Management Education : Modernisation of production enterprises and development of supporting infrastructure like transport, communication and power require, apart from capital and labour, managerial competence and organisational improvements. To meet the challenges of a highly technological age, modern managers have to be professionally developed and trained for the several func-

tional areas and in general management. This relates not merely to the pre-service education in the disciplines of management but also to facilities for those who enter business and industry for operational functions but are likely to rise to managerial positions. Further, management techniques assume importance at all organisational levels in the economy. The Fifth Plan, therefore, provides for a number of programmes of management education. Apart from the development of existing Institutes of Management, at Ahmedabad and Calcutta, those at Bangalore and Lucknow will be established; provision will also be made to expand and develop management studies in the universities. Centres for training in supervision and foremanship will also be increased and developed.

8.76. Scholarships : A scheme for merit-cum means scholarships for polytechnic students will be introduced. Apprenticeship training of engineering graduates and diploma holders will be arranged under the amended Apprentices Act. The administrative set-up in the States and at the Centre will be reorganised and strengthened for effective planning and management of the development programme.

III

LINKAGE WITH SCIENCE AND TECHNOLOGY PLAN

8.77. The several programmes envisaged in the Fifth Plan for development of science and technical education have been described under the appropriate sectors of this chapter. Augmentation of facilities for science education, modernising the curricula and provision of kits for scientific experimentation are some of the important measures proposed to be taken at the school level. As regards higher education, apart from expansion and modernisation of facilities for science education, the Fifth Plan provides for the development of infrastructural support through documentation and library services, science service centres and instrumentation, testing and analytical services on a regional basis. Provision for research fellowships as well as for research by the university departments, faculty and selected institutions will be increased and the qualitative improvement programmes expanded. In regard to post-graduate technical education, industry-oriented courses and research will be promoted in selected engineering colleges. The Institutes of Technology and the Institute of Science, Bangalore will develop advanced centres in selected areas of technology of importance and relevance such as in material science, system engineering, automation and control system. It is expected that an amount of about Rs. 67 crores will be provided in the Education Plan for research activities of which a substantial amount is expected to go in for research support to the science departments of various universities and to higher technological institutions.

8.78. In addition, the academic institutions will be enabled to undertake specific research projects to be assigned by the several user-agencies. A new research support programme, designed by the Council of Scientific & Industrial Research, will also provide research fellowships and project grants to the universities. In addition, mission-oriented scientific agencies,

such as the Department of Space, will sponsor research in the universities and other institutions in regard to subject areas which are directly related to the objectives of the agencies. For promoting basic research in the universities and other institutions of higher learning, additional financial support will be made available from the Science and Technology Plan which is being drawn up as a part of the Fifth Plan.

8.79. While all these programmes will help develop the national scientific and technological potential, it is also necessary to inculcate the scientific attitude in the society at large and to promote scientific creativity and technical inventiveness among the children. For this purpose it is proposed to set up science museums, including science fairs, in the Fifth Plan with a view, *inter alia*, to develop scientific attitude and temper among the people, to supplement science education in schools and colleges and to identify, encourage and nurture creative science talent specially among the children. These museums will not merely provide a visual medium for the propagation of science but also encourage the preparation of popular literature on science and technology.

IV

EDUCATION OF THE SCHEDULED CASTES, SCHEDULED TRIBES AND OTHER BACKWARD CLASSES

8.80. According to the 1971 Census, the total population of Scheduled Castes and Scheduled Tribes was about 12 crores or 22 per cent of the population, comprising about 8 crores of the former and about 4 crores of the latter; the percentage of each of these to the total population was 15 and 7 respectively. While the Scheduled Castes are generally more uniformly distributed, 90 per cent of the population of the Scheduled Tribes are concentrated in the nine States of Andhra Pradesh, Assam, Bihar, Gujarat, Madhya Pradesh, Maharashtra, Orissa, Rajasthan and West Bengal. As compared to the total population, a larger proportion of the population of these communities is illiterate. According to the 1961 Census 24 per cent of the total population was literate; for the Scheduled Castes and the Scheduled Tribes, the literacy percentage was 10.3 and 8.5 respectively.

Fourth Plan Review

8.81. A major difficulty in assessing the progress of education among these sections of the population arises from the lack of firm data about their enrolment at the various stages of education beyond 1965-66 and the absence of a sufficient number of in-depth studies about their educational status. The past trends, however, indicate that the progress in their case has been somewhat more rapid than for the other communities, partly because of the lower base from which a beginning was made; as a consequence, the gap between them and the other communities is narrowing down, although at a much slower rate than is socially desirable. Educationally, these communities are still lagging behind. This is partly revealed by the fact that the proportion of children belonging to these communities enrolled in

educational institutions is less than their proportion in the total population; and this proportion worsens as we go up the educational ladder. The situation, however, varies in different States. A number of factors account for their slow progress in education. These include, among others, economic poverty; apathy to education resulting partly from the nature of the curriculum offered to them; difficulty of recruiting suitable teachers, particularly women teachers, for tribal areas; the presence of a large number of tribal dialects, which creates the problem of finding a suitable medium of instruction and preparing text-books in it; the dispersal of the tribal population, making establishment of schools expensive etc.

8.82. As a measure to promote education among the Scheduled Castes and the Scheduled Tribes, pre-matric scholarships, stipends and other concessions are widely given. The post-matric scholarships are given to all Scheduled Tribes students. They are also awarded, on the basis of a graded means test, without consideration of merit to Scheduled Castes students, whose parental earnings from all sources do not exceed Rs. 500/- per month. By the end of the Fourth Plan 1.31 million Scheduled Tribes children and 3.08 million Scheduled Castes children would be receiving pre-matric scholarships. As for post-matric scholarships, the number of students, belonging to these sections, receiving them has increased from 2,180 in 1952 to 211,570 in 1971 and is likely to increase further to 321,800 in 1974. The more advanced sections of these communities, however, take greater advantage of these facilities.

8.83. The Ashram schools and hostels facilities have been found to be very useful in spreading education among these communities, particularly in the tribal areas, where the dispersed nature of the population does not make the establishment of a large number of institutions economically viable. In these schools both education and maintenance of the student is fully subsidized by the Government. So far 486 Ashram schools have been set up. Of these 362 are for Scheduled Tribes, 29 for Scheduled Castes, 57 for Denotified Tribes and 38 for nomadic and semi-nomadic tribes.

8.84. The Fourth Plan outlays for various educational programmes under the Social Welfare sector are likely to be substantially exceeded. Against the Fourth Plan outlay of Rs. 11 crores for post-matric scholarships, provided in the Central Plan, the likely expenditure will be of the order of Rs. 23.13 crores. At the State level also the expenditure on educational schemes in this sector is likely to be considerably more than the outlay in the Fourth Plan. Against an outlay of Rs. 81 crores for education, economic development, housing and other programmes, the expenditure is expected to be of the order of Rs. 100 crores, which includes Rs. 60 crores for education programmes. These figures provide a rough measure of the emphasis that has been laid on the educational programmes for the backward communities.

Fifth Five Year Plan

8.85. Since the comparatively advanced sections of the population have mostly been covered, the edu-

ational facilities, proposed to be created during the Fifth Plan, will primarily benefit the backward communities and weaker sections of the population. Incentives, in the form of free mid-day meals, books and stationery, stipends and uniforms and attendance scholarships for girls, are proposed to be provided for promoting enrolments and, what is more important, to ensure the retention of the children in school for the full period of compulsory schooling. The outlays provided for these incentives will be utilised mostly for the benefit of the weakest sections. Provision has also been made for the establishment of Ashram schools in tribal areas.

8.86. The poverty of the household is the major reason for premature withdrawal of the child from the school. Studies have revealed that the incidence of wastage and stagnation is much higher in the case of the Scheduled Castes and the Scheduled Tribes children. The organisation of part-time classes can, by enabling the children to receive instruction at a suitable time, substantially reduce the withdrawal from school of the children of the weaker sections for domestic chores, thereby improving their chances for further education.

8.87. A major difficulty in expanding educational facilities in the tribal areas is the non-availability of an adequate number of qualified teachers for work in these areas. Special efforts are, therefore, needed to augment the supply of teachers. Two remedies would need to be adopted. As an immediate measure, better pay scales, special allowance and housing facilities must be provided for teachers willing to work in tribal schools. As a long-term measure, tribal boys and girls should be picked up and their education and training subsidised, on the condition that they take up teaching in tribal areas. The reorientation of the school curriculum and of other co-curricular programmes, with a view to incorporating elements of tribal culture and tradition and the preparation of textbooks in tribal dialects would also help in enthusing tribal children for education. Suitable programmes are being included in the Plan for this purpose.

8.88. The coverage of the programmes of pre-matric and post-matric scholarships, hostels and boarding charges will be expanded. An outlay of Rs. 53 crores has been provided for post-matric scholarships; in addition, Rs. 4 crores have been provided for girls' hostels and Rs. 3 crores for coaching and allied schemes—all in the Central Plan—under Social Welfare. Arrangements will also be made to provide for educational and vocational guidance of the scholarship holders. Out of Rs. 170

crores proposed to be provided for the supplementary welfare schemes in the State Plans, the major portion—about 50-60 per cent—will be utilised for educational purposes.

8.89. Tribal Research Institutes have been set up in most of the States with large tribal population. These institutions undertake studies on various problems of the tribals including educational aspects like wastage and stagnation, utilisation of scholarships, effectiveness of Ashram schools, etc. These and other studies which will be taken up, will help in improving the quality of the educational programmes for the tribal areas. The Department of Tribal Education of the NCERT has been organising training courses for educational administrators in order to increase their awareness of, and competence to deal with, the educational problems of the Scheduled Tribes; it has also been conducting studies and surveys. These activities will be further strengthened.

8.90. In regard to technical education, provision already exists for the reservation, up to 20 per cent, of seats for students belonging to the Scheduled Castes and the Scheduled Tribes. In view, however, of the admission being made on the basis of merit and academic record, it was not possible in the Fourth Plan to enrol a sufficiently large number of these students. Several measures have since been taken to improve the situation, especially in the higher technological institutes, such as relaxation in admission requirements, special adjustment courses before admission and supplementary coaching classes thereafter.

8.91. The State Governments have agreed to prepare plans, indicating the level of enrolment to be reached by the end of the Fifth Plan in case of the Scheduled Castes, Scheduled Tribes and other Backward Classes, the outlays that will be utilised for providing educational facilities and incentives to these communities etc. The district-based educational planning, which is being undertaken, will further help in indicating the existing deficiencies and in concentrating effort and outlays on the education of the weaker sections. The drawing up of specific plans would also keep the progress of these sections open to public scrutiny.

V

OUTLAYS

8.92. To complete the above tasks an outlay of Rs. 1726 crores has been provided for Education in the Fifth Plan. The sub-head wise break-up of this outlay is indicated in Table 9.

Table 9 : Sub-head-wise (Anticipated) Expenditure on Education for the Fourth Five Year Plan and Outlay for the Fifth Five Year Plan by Centre, States and Union Territories

(Rs. crores)

sub-head	fourth plan (anticipated) expenditure			fifth plan (proposed) outlays		
	centre	states and union territories	total	centre	states and union territories	total
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. elementary education	5(2)	234(43)	239(30)	12(3)	731(59)	743(43)
2. secondary education	7(3)	133(24)	140(18)	15(3)	226(18)	241(14)
3. university education	113(47)	82(15)	195(25)	220(45)	117(10)	337(20)
4. social education	1.5(1)	3(1)	4.5(1)	20(4)	15(1)	35(2)
5. cultural programmes	6(2)	6(1)	12(2)	21(4)	14(1)	35(2)
6. other educational programmes	43.5(18)	46(8)	89.5(11)	119(24)	52(4)	171(10)
<i>total : general education</i>	176(73)	504(92)	680(87)	407(83)	1155(94)	1562(91)
7. technical education	65(27)	41(8)	106(13)	85(17)	79(6)	164(9)
<i>total : education</i>	241(100)	545(100)	786(100)	492(100)	1234(100)	1726(100)

(Figures in brackets indicate percentage to the total)

Note : Totals may not tally due to rounding of figures into crores.

To this may be added another Rs. 112 crores provided for mid-day meals under Nutrition and

about Rs. 150-160 crores for supplemental education programmes under Social Welfare

ANNEXURE I

Sex-wise Enrolment (Anticipated) in Primary Classes I--V (6--11) during Fourth Five Year Plan by States/Union Territories

(figures in thousands)

states	total enrolment 1973-74			additional enrolment fourth plan		
	total	boys	girls	total	boys	girls
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Andhra Pradesh	4300 (76)	2583 (89)	1717 (62)	457	297	160
2. Assam	1866 (78)	1088 (97)	778 (62)	478	210	268
3. Bihar	4856 (62)	3556 (86)	1300 (34)	852	546	306
4. Gujarat	3520 (88)	2187 (105)	1333 (69)	590	343	247
5. Haryana	1050 (69)	750 (94)	300 (41)	198	138	60
6. Himachal Pradesh	410 (86)	252 (105)	158 (67)	46	19	27
7. Jammu and Kashmir	493 (78)	316 (97)	177 (57)	132	60	72
8. Karnataka ¹	3191 (97)	1815 (107)	1378 (86)	275	136	139
9. Kerala	3565 (124)	1927 (128)	1738 (120)	447	228	219
10. Madhya Pradesh	3832 (65)	2671 (88)	1161 (41)	842	513	329
11. Maharashtra	6232 (89)	3736 (104)	2496 (74)	622	371	251
12. Manipur	188 (115)	114 (129)	74 (97)	20	13	7
13. Meghalaya	146 (80)	87 (116)	59 (77)	10*	6*	4*
14. Nagaland	71 (100)	45 (115)	26 (81)	8	4	4
15. Orissa	2038 (67)	1323 (86)	715 (48)	198	119	79
16. Punjab	1840 (90)	1034 (97)	806 (82)	478	219	259
17. Rajasthan	2490 (66)	1795 (91)	695 (38)	477	326	151
18. Tamil Nadu	5426 (110)	3059 (121)	2367 (98)	508	237	271
19. Tripura	187 (77)	110 (88)	77 (66)	34	17	17
20. Uttar Pradesh	11912 (100)	7305 (117)	4607 (81)	1742	862	880
21. West Bengal	5141 (80)	3093 (94)	2048 (60)	722	358	364
<i>total : states</i>	62854 (84)	38844 (101)	24010 (66)	9136	5022	4114

union territories	total enrolment 1973-74			additional enrolment fourth plan		
	total	boys	girls	total	boys	girls
(0)	(1)	(2)	(3)	(4)	(5)	(6)
22. A. and N. Islands	18.28 (125)	9.78 (125)	8.50 (125)	6.92	3.23	3.69
23. Arunachal Pradesh	31.60 (50)	22.60 (70)	9.00 (31)	14.80	7.80	7.00
24. Chandigarh	32.10 (83)	17.70 (80)	14.40 (85)	9.80	5.60	4.20
25. Dadra and Nagar Haveli	8.50 (78)	6.00 (111)	2.50 (45)	1.24	0.84	0.40
26. Delhi	574.00 (94)	322.00 (100)	252.00 (88)	127.00	68.00	59.00
27. Goa, Daman and Diu	130.00 (113)	74.00 (122)	56.00 (104)	21.00	11.00	10.00
28. Lakshadweep	5.35 (119)	2.74 (124)	2.61 (114)	1.81	0.79	1.02
29. Mizoram	32.00 (73)	16.50 (75)	15.50 (71)	n.a.	n.a.	n.a.
30. Pondicherry	68.40 (121)	37.80 (128)	30.60 (111)	14.30	6.80	7.50
<i>Total : union territories</i>	900.23 (68)	509.12 (73)	391.11 (63)	196.87	104.06	92.81
<i>Total—India</i>	63754.23 (84)	39353.12 (100)	24401.11 (66)	9332.87	5126.06	4206.81

¹Classes I-IV age-group (6-10).

*Relate to period 1971-74.

Note : Figures in parenthesis indicate percentage coverage of the population in the corresponding age-group.

ANNEXURE II

Sex-wise Enrolment (Anticipated) in Middle Classes VI-VIII (11-14) during the Fourth Five Year Plan by States/Union Territories

(figures in thousands)

states	total enrolment 1973-74			additional enrolment fourth plan		
	total	boys	girls	total	boys	girls
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Andhra Pradesh ¹	670 (30)	465 (42)	205 (19)	151	97	54
2. Assam	503 (40)	312 (75)	191 (36)	207	124	83
3. Bihar	1091 (24)	921 (41)	170 (8)	300	251	49
4. Gujarat	897 (42)	590 (52)	307 (30)	219	132	87
5. Haryana	400 (50)	303 (72)	97 (25)	92	60	32
6. Himachal Pradesh	137 (54)	103 (81)	34 (27)	28	19	9
7. Jammu and Kashmir	131 (38)	89 (50)	42 (26)	26	14	12
8. Karnataka ²	940 (41)	605 (51)	335 (30)	164	80	84
9. Kerala ¹	863 (78)	470 (84)	393 (73)	170	92	78
10. Madhya Pradesh	764 (23)	579 (34)	185 (11)	66	38	28
11. Maharashtra	1664 (43)	1141 (57)	523 (28)	201	120	81
12. Manipur	38 (44)	25 (57)	13 (31)	11	7	4
13. Meghalaya ³	24 (30)	18 (44)	6 (15)	6	4	2
14. Nagaland	21 (52)	14 (66)	7 (36)	4	2	2
15. Orissa ¹	380 (23)	271 (33)	109 (13)	52	10	42
16. Punjab	549 (51)	343 (58)	206 (42)	122	46	76
17. Rajasthan	640 (31)	500 (47)	140 (14)	208	141	67
18. Tamil Nadu	1433 (50)	918 (62)	515 (37)	218	128	90
19. Tripura	48 (40)	29 (47)	19 (33)	12	6	6
20. Uttar Pradesh	2237 (33)	1804 (52)	433 (14)	329	227	102
21. West Bengal	1240 (35)	781 (43)	459 (27)	300	130	170
<i>total : states</i>	14670 (35)	10281 (48)	4389 (22)	2886	1728	1158

<i>union territories</i>	total enrolment 1973-74			additional enrolment fourth plan		
	total	boys	girls	total	boys	girls
(0)	(1)	(2)	(3)	(4)	(5)	(6)
22. A. and N. Islands	5.49 (74)	3.25 (81)	2.24 (66)	3.30	1.86	1.44
23. Arunachal Pradesh	4.80 (14)	3.20 (18)	1.60 (9)	1.75	1.15	0.60
24. Chandigarh	13.60 (67)	7.50 (65)	6.10 (69)	3.40	1.90	1.50
25. Dadra and Nagar Haveli	1.15 (22)	0.80 (32)	0.35 (13)	0.27	0.17	0.10
26. Delhi	263.00 (80)	154.00 (88)	109.00 (71)	58.00	34.00	24.00
27. Goa, Daman and Diu	39.50 (62)	23.50 (71)	16.00 (52)	9.20	4.30	4.90
28. Lakshadweep	1.40 (61)	1.04 (87)	0.36 (33)	0.44	0.27	0.17
29. Mizoram	10.00 (39)	5.50 (41)	4.50 (36)	n.a.	n.a.	n.a.
30. Pondicherry	20.60 (67)	12.60 (80)	8.00 (53)	6.30	0.30	6.00
<i>total : union territories</i>	359.54 (51)	211.39 (57)	148.15 (45)	82.66	46.95	35.71
<i>total—India</i>	15029.54 (36)	10492.39 (48)	4537.15 (22)	2968.66	1774.95	1193.71

¹Classes VI-VII/age group 11-13.

²Classes V-VII/age group 10-13.

³Estimated

Note : Figures in parenthesis indicate percentage coverage of the population in the corresponding age-group.

ANNEXURE III

Sex wise Enrolment (Target) in Primary Classes I-V and 6-11 during the Fifth Five Year Plan
by States/Union Territories

(figures in thousands)

states	total enrolment 1978-79			additional fifth plan		
	total	boys	girls	total	boys	girls
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Andhra Pradesh	5505 (93)	3188 (105)	2317 (80)	1205	605	600
2. Assam	2506 (93)	1456 (105)	1050 (80)	640	368	272
3. Bihar	6644 (81)	4444 (105)	2200 (56)	1788	888	900
4. Gujarat	4387 (102)	2599 (115)	1788 (85)	867	412	455
5. Haryana	1275 (78)	858 (100)	417 (54)	225	108	117
6. Himachal Pradesh	502 (102)	290 (118)	212 (85)	92	38	54
7. Jammu and Kashmir	643 (95)	382 (110)	261 (79)	150	66	84
8. Karnataka ¹	3948 (113)	2153 (120)	1795 (106)	757	340	417
9. Kerala	3991 (137)	2093 (140)	1898 (133)	326	166	160
10. Madhya Pradesh	5385 (85)	3524 (108)	1861 (61)	1553	853	700
11. Maharashtra	7032 (95)	4086 (107)	2946 (82)	800	350	450
12. Manipur	214 (120)	130 (131)	84 (102)	26	16	10
13. Meghalaya	190 (114)	107 (127)	83 (100)	44	20	24
14. Nagaland	87 (113)	51 (125)	36 (87)	16	6	10
15. Orissa	2688 (84)	1738 (105)	950 (65)	650	415	235
16. Punjab	2400 (110)	1284 (112)	1116 (108)	560	250	310
17. Rajasthan	3515 (86)	2295 (108)	1220 (62)	1025	500	525
18. Tamil Nadu	6426 (125)	3459 (131)	2967 (119)	1000	400	600
19. Tripura	233 (90)	135 (100)	98 (80)	46	25	21
20. Uttar Pradesh	13312 (108)	7745 (120)	5567 (95)	1400	440	960
21. West Bengal	6153 (88)	3657 (102)	2496 (74)	1012	564	448
<i>total : states</i>	77036 (97)	45674 (112)	31362 (82)	14182	6830	7352

(0)	total enrolment 1978-79			additional enrolment fifth plan		
	total	boys	girls	total	boys	girls
	(1)	(2)	(3)	(4)	(5)	(6)
22. A and N Islands	20.54	10.92	9.62	2.26	1.14	1.12
23. Arunachal Pradesh	53.28	36.00	17.28	21.68	13.40	8.28
24. Chandigarh	46.00	25.20	20.80	13.90	7.50	6.40
25. Dadra and Nagar Haveli	12.00	7.50	4.50	3.50	1.50	2.00
26. Delhi	759.00	417.00	342.00	185.00	95.00	90.00
27. Goa, Daman and Diu	147.80	80.30	67.50	17.80	6.30	11.50
28. Lakshadweep	6.08	3.24	2.84	0.73	0.50	0.23
29. Mizoram	50.00	25.50	24.50	18.00	9.00	9.00
30. Pondicherry	76.60	39.30	37.30	8.20	1.50	6.70
<i>total : union territories</i>	1171.30	644.96	526.34	271.07	135.84	135.23
	(79)	(83)	(75)			
<i>total—India</i>	78207.30	46318.96	31888.34	14453.07	6965.84	7487.23
	(97)	(111)	(82)			

1 classes I-IV/age-group 6-10.

Note : Figures in parenthesis indicate percentage coverage of the population in the corresponding age-group.

ANNEXURE IV

Sex-wise Enrolment (Target) in Middle Classes VI-VIII (11-14) during the Fifth Five Year Plan by States/Union Territories

(figures in thousands)

states	total enrolment 1978-79			additional enrolment fifth plan		
	total	boys	girls	total	boys	girls
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Andhra Pradesh ¹	1200 (50)	735 (60)	465 (40)	530	270	260
2. Assam	729 (50)	447 (80)	282 (40)	226	135	91
3. Bihar	1993 (43)	1547 (65)	446 (20)	902	626	276
4. Gujarat	1284 (53)	814 (65)	470 (40)	387	224	163
5. Haryana	546 (60)	390 (87)	156 (36)	146	87	59
6. Himachal Pradesh	182 (66)	130 (95)	52 (37)	45	27	18
7. Jammu and Kashmir	181 (47)	117 (58)	64 (35)	50	28	22
8. Karnataka ²	1268 (51)	765 (60)	503 (42)	328	160	168
9. Kerala ¹	1093 (91)	595 (97)	498 (85)	230	125	105
10. Madhya Pradesh	1151 (32)	841 (45)	310 (18)	387	262	125
11. Maharashtra	2094 (49)	1395 (63)	699 (34)	430	254	176
12. Manipur	58 (60)	37 (74)	21 (46)	20	12	8
13. Meghalaya	40 (44)	27 (59)	13 (35)	16	9	7
14. Nagaland	29 (69)	18 (80)	11 (55)	8	4	4
15. Orissa	607 (33)	418 (45)	189 (21)	227	147	80
16. Punjab	769 (63)	463 (72)	306 (53)	220	120	100
17. Rajasthan	1140 (50)	800 (67)	340 (31)	500	300	200
18. Tamil Nadu	1933 (64)	1218 (78)	715 (49)	500	300	200
19. Tripura	72 (54)	41 (60)	31 (48)	24	12	12
20. Uttar Pradesh	3037 (43)	2234 (61)	803 (24)	800	430	370
21. West Bengal	1655 (42)	995 (49)	660 (35)	415	214	201
<i>total: states</i>	21061 (47)	14027 (60)	7034 (32)	6391	3746	2645

union territories	total enrolment 1978-79			additional enrolment fifth plan		
	total	boys	girls	total	boys	girls
(0)	(1)	(2)	(3)	(4)	(5)	(6)
22. A. and N. Islands	8.40	4.60	3.80	2.91	1.35	1.56
23. Arunachal Pradesh	18.10	12.00	6.00	13.30	8.80	4.50
24. Chandigarh	20.60	11.50	9.10	7.00	4.00	3.00
25. Dadra and Nagar Haveli	2.86	1.62	1.24	1.71	0.82	0.89
26. Delhi	372.00	215.00	157.00	109.00	61.00	48.00
27. Goa, Daman and Diu	49.50	28.00	21.50	10.00	4.50	5.50
28. Lakshadweep	1.83	1.31	0.52	0.43	0.27	0.16
29. Mizoram	18.00	9.50	8.50	8.00	4.00	4.00
30. Pondicherry	27.60	15.60	12.00	7.00	3.00	4.00
<i>total: union territories</i>	518.89	299.13	219.77	159.35	87.74	71.61
	(64) ¹	(70)	(57)			
<i>total—India</i>	21579.89	14326.13	7253.76	6550.35	3833.74	2716.61
	(47)	(60)	(33)			

Note:- Figures in parenthesis indicate percentage coverage of the population in the corresponding age-group.

¹ Classes VI-VII/age-group 11-13

" Classes V-VII/age group 10-13

Science and Technology

I

A COMPREHENSIVE SCIENCE AND TECHNOLOGY PLAN

Although scientific research has been a part of national planning process since the Second Plan, the extent of the nation's scientific and technological effort which it has covered has been rather limited. Whether in terms of programme formulation or resource allocation, planning has so far been confined to a few major scientific research agencies and departments. More importantly, perhaps, the structuring of the effort has been such that the goals of R&D programmes and projects have, often, not been derived directly from the technological needs of development projects, whether in industry or other areas. At the same time, the scope of "science planning" has not covered the whole of the "innovation chain". As a result, successful research results at the laboratory level have often failed to be linked to such elements as pilot plant work, design engineering, plant erection and commissioning and marketing, which are essential if the nation is to secure real and substantial, social and economic benefits from science and technology. The opportunity provided by a planning exercise to knit together competences relevant to a particular developmental task, which exist in more than one agency, has also not been adequately grasped in the science and technology area.

9.2. It was this realisation which led the Government to decide to prepare, as an integral part of the Fifth Plan, a comprehensive Science and Technology Plan, covering particularly all the sectors of the economy. The National Committee on Science and Technology (NCST) was set up to undertake the task of formulating the programme content of such a Plan as also advising Government on the policy framework, organisational and managerial structure and other measures needed for its implementation. In undertaking this task, the NCST has adopted a combination of a sectoral approach, and an overview of the totality of the nation's scientific and technological effort. The actual planning and programming effort, has been largely undertaken by panels of scientists and technologists, not only from research laboratories and universities but from design engineering and manufacturing units, natural resources survey agencies, and extension organisations, in collaboration with economists, administrators and other skilled groups. Most importantly, these groups have taken as their starting point, the development profile for each sector, as formulated by 'Tasks Forces' of the Planning Commission, so that the scientific and technological projects are derived from committed development programmes.

9.3. The task involved is really "planning the promotion of Science and Technology and their application to the Development and Security of the Nation". This definition makes explicit three characteristics of such a plan. First, its formulation and implementation must be undertaken, conceptually, methodologically and institutionally, as an integral part of the process of socio-economic planning. Moreover, the process must be an interactive one, *i.e.*, while deriving its imperatives from the developmental and security goals which the nation sets for itself, the plan must also ensure that the opportunities which science and technology can provide us, help to shape those very goals. It would follow from this that what we are primarily interested in, is not a plan merely for education and research in various scientific and technological disciplines but a plan to harness science and technology for achieving the goals and programmes of the Fifth Plan. Consequently, even the direction of basic research, and the manpower training effort that is often closely associated with it, will need to be influenced by socio-economic goals. Secondly, the plan will need to deal with 'Science and Technology' rather than with merely 'RDD' (Research, Design and Development). Consequently, scientific and technological education at all levels, extension and technical support services (*e.g.* quality control, standardisation, testing, etc.) and the utilisation of existing knowledge for the solution of socio-economic problems through both regulatory and innovative measures would also be encouraged.

Science and Technology Objectives

9.4. The basic objectives of the Fifth Plan in the area of Science and Technology is to support the drive for self reliance in the core sector of the economy, such as agriculture, energy, mining, metallurgy, heavy engineering and chemicals; to make further progress in areas such as atomic energy, space and electronics and contribute to meeting the basic needs of our people such as housing, health and education. The programmes included in the Plan aim at giving a further technological impetus in selected fields where capability and competence already exist, and in removing weaknesses in crucial areas like design engineering and consultancy, natural resource assessment and development, coal utilisation, and research and advanced manpower training in universities.

Strategic Features of the Science and Technology Plan

9.5. The resources available for investment at any point of time are a function of technological competence and managerial efficiency. Technological compe-

tence, in turn, depends both on diffusion of scientific and technological knowledge and skills among the work force and on innovation through RDD. Therefore, in every sector of the Plan, a balanced scientific and technological programme has been enmeshed with the development programme to provide a balanced thrust. The basic criterion which has been applied in identifying and formulating the S. & T. programmes of the plan, has been the extent to which RDD and science and technology more broadly, can contribute towards making national assets whether already existing or prospective-yield greater returns more rapidly than in the past. This objective is sought to be achieved primarily through the following mechanism:

- (i) Pursuing and completing projects of short duration; followed by redeployment of the research potential to fresh, quick yielding projects;
- (ii) undertaking projects of national importance jointly by different institutions; and
- (iii) translating laboratory know-how already developed into viable production and application.

9.6. The use-oriented Science and Technology Plan emphasises links between the generators and users of technology. Some of the RDD programmes formulated involve execution and implementation by production agencies alone, while in other cases, institutionally distinct RDD laboratories and production agencies have been brought together so that technology transfer can take place smoothly and dependably. Every effort has been made to ensure that whichever route is followed, scientific and technical personnel with the relevant skills will be associated at each stage of the total innovation chain.

9.7. As regards the setting up of new institutions, the general approach has been to first reorient prevailing programmes in existing institutions towards the new priorities and needs of the Fifth Plan. Nevertheless, in quite a few areas new institutions, whether for applying known scientific and technological knowledge and expertise, or bringing about new technological innovations through RDD will need to be set up. The basic approach which will be followed in the case of these institutions, is to grow them organically out of groups set up initially in existing institutions. This approach will enable work to get off the ground faster because of the ready availability of infrastructure in the mother institution. It will also help to ensure that the physical facilities at the new institution are set up in relation to well-defined programmes of work.

9.8. An important feature of the present plan is the provision of investments needed for attaining critical levels of scientific and technological competence in forward looking areas, or in meeting well defined long term goals through sustained effort. Many of these tasks are being undertaken as National Programmes in which the capabilities of several institutions are brought together and knit into an integrated effort. The design and development of 500 MW thermal power plant equipment, solar energy utilisation, cryogenics, human fertility regulation technology, marine resources development, forestry resources development are instances of such programmes.

9.9 There has been a growing recognition that in a number of areas, significant improvements can be achieved by the systematic dissemination of known scientific and technological knowledge and the imparting of well codified skills. The maintenance and operation of electrical power generating plant and distribution systems and increasing blast furnace productivity in steel plants, have been identified as important examples of such needs. Similarly, the fuel efficiency service provided by the National Productivity Council is to be increased substantially in scope. A National information system for Science and Technology which will meet the information needs not only of scientists in research but also planning and decision making groups in Government, has been given high priority in the Plan.

9.10. The dimensions of the RDD effort in different sectors are not necessarily related in a unique way to the size of the development outlays proposed for that sector during the Fifth Plan period. This is because, in some areas, substantial investments have been made during the earlier Plans in setting up productive capacity alone, without the scientific and technological inputs, like RDD, needed to back up that capacity. As a result, the nation has not been securing the fullest return from the investments it has made in these areas. At the same time, in other sectors, significant RDD investments have been made during the last two decades. Consequently, substantial investment in RDD and science and technology more broadly will have to be made during the Fifth Plan in areas of the former kind, while in the case of the latter, what is called for over the next 5 years may well be more in the nature of consolidation. As a result, the critical level of inputs needed for optimum returns may vary from sector to sector.

Implementation

9.11. Extensive organisational and managerial changes are necessary, not only in scientific institutions but also in those utilising the results of new scientific and technological developments, if the S&T effort is to have any significant impact on Plan programmes. During the last few years some important changes with a bearing on the organisational and managerial aspects have been brought about in a few of the major scientific agencies. Further efforts are to be oriented at two levels. First, identifying changes, organisational and managerial, which are relevant to a wide range of a scientific and technological institutions. Secondly, undertaking in-depth examination of the special managerial problems and needs of individual institutions. Expert groups including management specialists have already been formed to deal with both levels. It has to be ensured that scientific institutions, due to procedural rigidities, do not get into a vicious circle resulting in under utilisation of capacity as in the past. A flexible approach is to be adopted in framing requirements for technical skills and recruitment of staff; reforms are over due in formalities for purchasing material, equipment and in undertaking construction work for S&T programmes. Therefore to implement the science and technology plan, managerial reforms have to be brought about by democratisation and decentralisation in the work-

ing style; this work has to be intensified and sustained particularly during the first 2 years of the Plan so that the environment conducive to energetic and purposive work on a timebound basis can be brought about.

9.12. For all new RDD institutes or for institutional type of activities, details of feasibility in physical and financial terms, overall implications, total resources deployment etc. would be spelt out. In order to invest the resources in new projects of this type on a selective basis, the work being carried out by various laboratories in the country the user needs, the nature, type and specific functions of the proposed institution etc. would be critically examined before embarking on new infra-structural additions. Based on the feasibility report detailed project reports for all proposals for setting up new institutes and centres are to be worked out and examined for specific project activities; and objectives to be achieved within a time frame and detailed operational steps are to be defined.

Research in Higher Educational/Training Institutions

9.13. Three complementary mechanisms have been chosen to achieve the end of reorienting research in universities, IITs and other advanced training institutions towards national needs and to support outstanding scientists and technologists on a selected basis. First, universities/IITs are expected to undertake a number of specified RDD projects, included in the Science and Technology Plan. Many of these are of an applied nature and often involve collaboration with RDD laboratories, or industrial units. Secondly, specific allocations have been made under many major scientific departments and agencies for providing project grants and other types of research and training support to higher educational institutions. Most of these grants will be for the execution of applied or oriented basic research, in problem areas directly related to the missions of scientific agencies which provide the funds. However, a part of these grants may also be used for supporting open-ended basic research. Thirdly, an allocation has been made for supporting open ended basic research, in areas chosen in consultation with the NCST, and which have a demonstrable relation to our future scientific manpower needs. A machinery for bringing about the coordination needed to weld these three mechanisms into a coherent national policy of research support in Universities, IITs and other institutions of higher training, is also being evolved.

RDD in Industry

9.14. According to a study made, present expenditure on RDD in the industrial sector-public and private is only about 10 per cent of the total amount spent by the nation on RDD. The industrial firms have also not made adequate use of RDD or of the scientific and technological facilities more broadly, which have been set up by the State. This situation has led to a continuing dependence on foreign sources of technology, repetitive imports of technology for

the same product and increasing out-goings of foreign exchange for technology payments. Considering the limited resources of competent scientists and RDD facilities available in the country, our endeavour must be to make the maximum use of them for achieving the goals of the Science and Technology Plan, particularly in regard to projects of national priority. The Science and Technology Plan conceives of RDD work done in private sector industry as becoming a part of the total national effort to achieve technological and economic self reliance, during the Fifth Plan period.

9.15. Several measures are envisaged for this purpose. Recognising that RDD is very important component of industrial operations, Government has been keen that industry set up its own RDD facilities. Substantial tax concessions have also been permitted to industrial firms. Recently, rules for import of equipment, instruments, raw materials and spares for RDD purposes have been liberalised and a scheme for registration of the RDD departments of companies initiated under the aegis of the Department of Science and Technology. Measures are also envisaged to enable preferential treatment to be given to ventures, based on the commercialisation of products and processes developed by State funded research laboratories resulting from approved RDD programmes undertaken by private sector industry, or public sector companies.

9.16. Application of an 'Industrial R D D Cess' in selected sectors, on a scale adequate to finance the science and technology plan in those sectors, is another measure proposed to be taken up. The resources raised by such a selective cess are to be deposited in a specific Fund. They would be utilised for approved projects of national priority, in the RDD departments of industrial firms and State funded RDD institutions, including higher educational institutions, which have requisite capability for the purpose. Setting up of common technical service facilities for the companies in the concerned sector, could also be financed from the cess fund.

9.17. The RDD work being undertaken in Co-operative Research Associations is proposed to be reoriented in such a way that the emphasis shifts from general development problems having a bearing on productivity, to bringing about significant technological innovation on key problem areas. Provision of greater assistance to the weaker sections of the concerned industry, is also to receive greater importance in the Fifth Plan programmes of these institutions. Measures are proposed to be taken, in the context of the Industrial R&D Cess, to ensure that these Associations are able to benefit from the contributions of their industrial members in full measure and on a regular basis.

Collaboration Between Education, Industry and Research

9.18. The problem of securing greater collaboration between Educational Institutions, Industrial

Establishments and Research Laboratories has been a matter of concern. Towards this end (i) Industrial Consultancy Centres in I. I. Ts./ Regional Engineering Colleges & Selected University Departments, (ii) RDD Centres in important medium and large scale industries and (iii) Industrial Liaison Units in National Laboratories are envisaged. To supplement these efforts it is also proposed to constitute a National Coordination Council involving persons from all three areas, with four Regional Councils to serve the Northern, Western, Eastern & Southern regions of the country.

Monitoring and Evaluation

9.19. The basic intent of the Science and Technology plan is not confined merely to an identification of problems calling for solution and the formulation of projects and programmes of scientific and technological effort aimed at realising those solutions. If the nation is to secure tangible returns from the planning exercise, continuous and dynamic monitoring and evaluation of those projects, must also be undertaken. Such activities are also necessary for deciding cases where the indigenous RDD effort may have to be terminated because it is failing to make technical progress or meet time targets. With this end in view, it is proposed that projects which are executed by single scientific or technological institutions, should be monitored and evaluated through a machinery set up in the Ministry or Department which supports that institution. For this purpose suitable facilities are to be set up or existing facilities strengthened so that in-house monitoring and evaluation in establishments, agencies and Departments can be undertaken. The results of their work will also be fed to the Planning Commission and the NCST. Further, it would be essential that major projects of national importance, to be implemented jointly by several organisation, are evaluated from time to time to achieve coordination and decide the future direction. It is proposed that such programmes, as also selected single-institution programmes of special importance, will be monitored and evaluated by an appropriate organisational structure to be set up in the Department of Science and Technology on behalf of the Planning Commission and the NCST. It is hoped that by combining these two mechanisms, it would be possible to build up, a reasonably complete and dynamic picture of the implementation of the Science and Technology Plan, on a continuing basis.

RDD in the States

9.20. Facilities in the States are to be strengthened for undertaking industrial testing and evaluation, industrial consultancy services to small scale industries and formulation of regional development schemes utilising the know-how available, research and development schemes on survey and exploration of natural resources, preparation of feasibility reports for industries having potential in the area. It is desirable that at the State level, Committees on Science and Technology (on the pattern of NCST) are constituted to ensure an S & T approach for various sectors of the

economy. Tamil Nadu, Maharashtra, Uttar Pradesh, Andhra Pradesh and Bihar have already set up Committees of this type for their Fifth Plan programmes. Such Committees could draw upon the expertise available with the national scientific agencies like CSIR, GSI, SI, Forest Research Institute, ICAR, ICMR, etc. They could avail of the services of experts of these organisations in planning specific proposals of scientific and technological development.

II

SECTORAL PROGRAMMES

9.21. The programmes in the Science and Technology Plan could be broadly classified under two types of activities—the RDD work in various scientific departments and agencies; the RDD projects to be undertaken by laboratories, design engineering organisations, public sector companies, associated with Ministries of Government. The RDD plan of organisations of the former category *viz.* the Departments of Atomic Energy, Space, Science and Technology together with those of the CSIR, have not been indicated substantively or financially in any other sector of the Fifth Plan because they all deal with activities covering several sectors. Therefore, the programmes of these organisations have been dealt with in detail here. As for programmes of institutions falling in the second category, their salient features, are indicated, so that a complete picture of the Science & Technology Plan can be obtained.

Agriculture

9.22. The main objectives in this area of prime importance are growth and stability of food production, through a significant increase in the yield of crops together with scientific land and water use. As regards crop development, the schemes for the improvement of wheat, rice, maize, ragi, jowar, sugarcane, sugarbeet, tobacco, soyabean, pulses, oilseeds, jute, cotton, lac, wool, etc. are being continued to achieve high yielding, disease resisting and tolerant varieties. In plant protection the forecasting of important diseases of selected crops and strengthening existing co-ordinated crop projects from the pathological angle and on integrated approach of the problem of pest control without disturbing the natural balance is being adopted. Biological control of insects, rodents, termites, etc. is also envisaged. In soil agronomy, water management and engineering, projects include, *inter alia*, water management and soil salinity, new cropping patterns, dryfarming research, RDD on farm machinery and implements and production of prototype and post-harvest technology. In the animal science and fisheries, the main projects would be aimed at developing suitable type of strains of animals of high productivity with a view to increasing animal products like milk, meat, fish, eggs, and commercial production like wool. The composite culture of Indian exotic fishes, ecology and fisheries of fresh water reservoirs, brackish water-fish farming and the utilisation of fishery by-products have also been contemplated.

It is proposed that apart from strengthening the existing Central Institutes of Agricultural Research, a Central Institute for Cotton and a National Institute of Agricultural Engineering and Post-Harvest Technology would be set up. An outlay of Rs. 125 crores is envisaged on science and technology for Food and Agriculture; including animal husbandry, fisheries and forestry. Agricultural research effort of the order of Rs. 15 crores is also envisaged in the States.

Irrigation

9.23. The major emphasis in this area of prime importance is on collection of hydrological data and studies on river basins. Some of the important studies envisaged are Hydrological observations in Krishna|Godavari Basins and Ganga|Mahanadi Basins, Collection of hydrological data through States, investigation, and research connected with River Valley projects, space technology applications for water resources etc. Build up of infrastructure/facilities include national network for collection of basic hydrological data in other basins, setting up of 268 new key hydrological stations in basins (excluding Ganga), Expansion of CWPRS (Poona) and Central Soils and Material Research Station (New Delhi). The Fifth Plan outlay for these programmes under Ministry of Irrigation is Rs. 49 crores (includes Rs. 11 crores on centrally sponsored hydrological data and investigation schemes).

Fuel and Power

9.24. The growth of installed generating capacity together with inter-connection of power systems requires considerable RDD efforts in the power supply sector and the electrical manufacturing industry. As a result of the low level of present RDD activities, there is dependence on foreign collaborations for new design efforts. RDD efforts have to be directed to improve the performance of the presently installed thermal generating capacity. Similarly, transmission and distribution losses in power systems could also be reduced by suitable RDD programmes. EHV, AC and DC transmission lines for transferring bulk power to load centres are to be considered. An important RDD proposal is concerned with the design and development of a 500 MW thermal power plant system, with import of technology in sharply defined areas. Other important projects are the use of jet engines of phased out IAF aircraft for power generation with gasified coal as an alternative fuel, laboratory scale experiments on Magnetohydro-dynamic power generation at the level of 2 to 5 MW, provision of fuel efficiency services for power as well as industrial boilers and setting up training schools for boiler operators. In view of our growing dependence on oil products and increasing pressure on commercial fuels, particularly forest resources, the setting up of low temperature carbonisation plants for producing smokeless solid fuel for domestic consumption, a proto-type coal-to-oil plant capable of producing half to one million tonnes of oil products and the development and proving of coal gasification technology are proposed to be undertaken.

Heavy Engineering

9.25. Lack of design capability has been a major handicap in the maximal use of installed capacity in our heavy engineering industries, and a source of continued foreign dependence. The creation of new design organisations and substantial strengthening of existing groups, particularly in public sector companies, has therefore been accorded the highest priority in this sector. These organisations will not only endeavour to facilitate better absorption of the technology imported so far, and adopt those technologies to our conditions, but also develop new designs. Programmes for designing and developing a wide variety of machines and equipment needed for the machine tool, heavy engineering, mining, printing and paper industries is the other major component of the Science & Technology Plan in this sector. One of the important needs is for a thermal power plant system which is optimised for local raw and partially processed materials, our fabricating plants, and the siting and operating conditions of our power stations; it is for this reason that, as already mentioned, the design development and prototype production of 500 MW thermal power generating equipment has been taken up as a major project—The outlay for heavy engineering is Rs. 70 crores.

Steel, Mines and Metallurgy

9.26. Special importance has been given to scientific and technological inputs into ferrous and non-ferrous metallurgy and all categories of mining in view of their being crucial elements in the core sector of the economy. Programmes relating to improvements of blast furnace productivity, direct reduction of iron ore with solid reductants and development of special steels and ferro alloys, are the primary ones in the area of steel. Development and proving of formed coke technology, which will enable our large reserves of non-coking coal to be used for metallurgical purposes, is another major project. The long felt need of augmenting ore dressing and agglomeration facilities, will be met to a considerable extent. As for non-ferrous metals, schemes for the development of production technology for scarce strategic metals like cobalt and nickel from our ores, import substitution measures, such as chromium oxide coating instead of tin, setting up facilities for hydro and electro-metallurgy, and development of production technology for rare metals, high purity metals and super alloys, of crucial importance to the defence, nuclear and space programmes will be pursued. The RDD plans also envisage projects in the areas of powder metallurgy, refractories, ferro alloys and metallic corrosion. The S & T plan includes the programmes of Geological Survey of India (GSI), and the Indian Bureau of Mines (IBM). The emphasis of these programmes is on expeditious coverage of the entire country by systematic geological mapping (1 : 50,000), maximising tempo of mineral investigations, meeting the requirements of Geotechnical investigations for development programmes in other areas like Irrigation, Power, Agriculture, etc. Development of expertise in the area of marine geology, geochronology, isotope geology, remote sensing are

also included. Work on ore dredging, mineral economics, technical consultancy and mines conservation will be stepped up. An S & T outlay of Rs. 89 crores is envisaged in the Fifth Plan in the Departments of Steel and Mines, apart from specific schemes under some of the scientific agencies.

Electronics

9.27. Specific R & D programmes are in the areas of consumer electronics, mass communication, computers and controls, Control systems and industrial electronics, instrument and instrumentation, components and materials. S & T Plan of Department of Electronics provides a financial allocation of Rs. 20.00 crore for these programmes during the Fifth Plan period excluding plans of Ministry of Communication, Ministry of Defence, Ministry of Industrial Development, Ministry of Civil Aviation, Department of Atomic Energy and Department of Space. Additional provision has been made in the CSIR and other scientific agencies including public sector undertakings for specific R&D schemes to be undertaken by them; purchase of technical know-how, production processes etc. is provided under relevant production schemes.

Chemical Industries

9.28. The S & T Plan for the chemical industry cover a wide spectrum of products—petro-chemicals, polymers and elastomers, synthetic fibres, fertilisers, drugs and pharmaceuticals, dyes and intermediates, inorganic heavy chemicals and marine chemicals, pesticides, oils, fats, soaps, detergents, surface coating etc. The primary thrust of the RDD programmes pertains to fertilizers, petro-chemicals and vegetable oils since these provide the basic inputs for increasing agricultural productivity particularly of food and for industrial progress. The projects in the area of fertilizers include newer technologies for fertilizer application, better catalyst systems, effective utilisation of indigenous raw materials, (coal and low-grade rockphosphate), economy in the use of imported sulphur, high pressure gasification of coal to produce methane rich gas both of which are directly related to fertilizers. Pesticide programmes cover the development of technology for import substitution, fungicides for special crops like cotton, pulses fruits etc. as also substitutes for pesticides which have residual toxicity. The RDD emphasis in petrochemicals is on the utilization of down stream products of naphtha crackers and finding new areas of utilisation of organic wastes. In the field of polymers, elastomers and fibres, development of technology for chlorinated and sulphochlorinated polyethylene, butyl rubber, moulding grade polyesters, etc. are proposed to be undertaken. The programmes on drugs & pharmaceuticals include the development of newer routes of synthesis of important drugs like ephedrine, glutamic acid, vitamins, chloroquin and amodiaquin etc. Other important RDD programmes include the development of technology for chlorination of ores such as bauxite & ilmenite, dimensionally stable electrodes for the production of caustic soda, organometallics and silicones, and ion exchange membrane technology. For an attractive source

of edible oil, research efforts are aimed towards the economic utilisation of rice bran and its products. Several projects which appear critical for chemical plant design have been proposed e.g. fluidised bed driers, pipe line transportation, liquid-liquid extractions, etc. The S & T plan provides a financial allocation of Rs. 15 crores for programmes to be performed by organisations associated with the Department of Chemicals (Ministry of Petroleum & Chemicals). Additional provision has also been made in the CSIR and other agencies, for the projects which they will undertake.

Special Materials

9.29. Development of special materials requires small investment but results in fantastic turnover; they cover a wide range of substitutes for imports, strategic industries, development of technology, conversion of raw materials to intermediates or finished products for exports, futuristic needs in critical areas etc. The programmes identified in this area pertain to photo materials, electronic materials, ceramics, quartz, mica, composites based on glass/carbon fibres, liquid crystals, thick/thin films etc. There would be multiplier effect as it is possible to produce better devices required in different fields. The plan provisions are spread over a number of agencies and Departments.

Natural Resources

9.30. To evolve a proper balance and harmony in the whole S & T Plan, natural resources' survey, exploration and development is to get full attention. The integrated plan for natural resources including water, oil and natural gas, forest, minerals, airborne surveys etc., envisages programmes in the first instance for first order assessment of natural resources of the country in the next ten to fifteen years. In this area several organisations under the Central Government and in the different States are concerned with the development of natural resources, further even in a single organisation there are different branches and sections dealing separately with important areas like water, forests etc. An integrated approach for implementing the selected programmes in this sector has been recognised as crucial for any substantive returns. Existing management and organisational structure, wherever necessary, is to be reorganised to make a deliberate thrust to achieve the desired goals. The plan provisions are spread over a number of agencies/Departments.

Marine Resources

9.31. With the recent emphasis on the development of the technology for exploration and utilisation of marine resources, engineering aspects of utilisation of off-shore oil, gas and minerals have gained importance. These require the strengthening as well as the nurturing of engineering design organisations for the design and fabrication of off-shore and on-shore fixed structures such as production platforms, off-shore moorings for large tankers, pipe-line transportation

facilities along with storage facilities, concurrently with the work on electrical and electronic systems. The design of floating structures like dredgers for mineral exploitation, the testing and development of materials suited to the marine environment, pre-investment surveys of coastal areas, and studies on marine dynamics relevant to the design and construction of fixed structures are also to be undertaken. The RDD programmes for undertaking the survey and exploration of the continental shelf areas and its environment, focus on the strengthening of instrument/equipment design teams along with work-shop facilities in the various field agencies, projects related to the utilisation of coastal resources such as the cultivation and utilisation of sea-weed resources, sea-water irrigation etc. An Ocean Science and Technology Agency (OSTA) for coordination and policy formulation for the study and exploitation of the vast potentialities of the ocean and its resources has been proposed in the DST. The outlay for this area is spread over the programmes under several departments like Department of Science & Technology, Petroleum, Shipping & Transport, Agriculture and CSIR.

Family Welfare and Health

9.32. To sustain the health services and family planning programmes envisaged in the Fifth Plan, scientific and technological effort will be oriented broadly to development of more effective integrated systems of health care delivery, control of communicable diseases, prevention and amelioration of malnutrition and reduction of population growth. The RDD programmes cover (i) operational research aimed at more effective utilisation of existing knowledge in health science through the development of integrated systems of health care delivery on a pilot basis in different parts of the country, (ii) improving facilities for the clinical evaluation of new drugs and for monitoring and surveillance of adverse drug reactions and (iii) related training/organisational programmes of both a basic and operational nature with a bearing on the control and prevention of communicable diseases. Appropriate strategies for dealing with changing trends in the public health scene in the future have been identified and envisage improving vaccine and sera technology, increasing immunisation periods etc : a system of epidemiological surveillance of major communicable diseases is also proposed. As regards Nutrition, the projects formulated relate to developing a methodology for the prevention of iron and vitamin 'A' deficiencies, for the prevention of food adulteration for studying the nutritive value of high yielding varieties of cereals, millets and pulses, for developing simple processing methods at the village level for the use of locally available foods in the prevention and treatment of caloric and protein deficiency disorders, and for the monitoring and evaluation of major field programmes directed at combating mal-nutrition. The strategy for reducing the rate of population growth calls for a better understanding of all the facets of human reproduction ranging from the biomedical to the biosocial. The RDD programmes aim at two goals: viz. improvement in the nature and use of available contraceptive techniques-conventional methods, steriods, intra-uterine devices, abortifacients and

sterilization and the development of newer methods of conception control based on a better understanding of the biology of the reproductive process in general, both in the male and in the female. The outlays for RDD as a part of Family Welfare and Health programmes is Rs. 36 crores (Health Rs. 19.7 crores, Family Planning Rs. 14.3 crores and Nutrition Rs. 2.00 crores).

Housing and Environmental Improvement

9.33. Under housing, urban development and construction technology, apart from outlays for RDD adequate provisions have been made for pilot plant, trials and production of materials, extension programmes, housing statistics, public health engineering, salvage of solid wastes and disposal of garbage waste etc. Primary emphasis would be placed on bringing about the implementation of the existing National Building Code, on extending to the field, known scientific and technological knowledge and techniques and transferring, and demonstrating the results of research, design and development undertaken so far. Specification revision and engineering design aimed at conserving use of source materials like cement and steel, would receive priority. Programmes relating to the development, production and popularisation of new and substitute materials, including those based on wastes of different kinds, and specially suitable for rural areas, will be undertaken. Studies on some of the vital aspects of Urban and Regional development projects for the administrative and technical personnel would be undertaken. The S & T plan outlay would be of the order of Rs. 23.75 crores under the Ministry of Works & Housing.

Railways

9.34. The Railways the largest public sector undertaking is also the biggest customer of advanced technologies of a very wide variety encompassing civil, mechanical, electrical, chemical, metallurgical and telecommunication engineering. The main thrust of the Railways S&T Plan is towards optimum equipment performance, improvement of system operations and the lowering of costs. The programmes/projects identified for RDD reflects increased inputs towards the development of railway equipment for traction, tracks, signalling etc. so as to continuously improve their performance and capacity. The specific programmes cover design and development, production and utilisation and repair and maintenance of rolling stock, signalling telecommunication and cybernetics; track and bridges, electrification; centre buffer coupler and air breaks; corrosion and wear, welding and welded construction design, development of diesel engines, consultancy and export etc. The expenditure on these RDD programmes estimated as Rs. 40 crores during the Plan period would be met from the internal revenues of the Ministry, further supplementary assistance for projects leading to savings would also be provided for as needed.

Transport (Roads and Ports)

9.35. The Ministry of Shipping and Transport has made a provision of Rs. 9.00 crores on RDD for Roads (Rs. 5 crores) and Ports (Rs. 4 crores). S & T Plan envisages strengthening of transportation facilities, consultancy facilities and terminal facilities; operation studies pertaining to trafficability, track studies & highway structures. Standardisation of navigational facilities for inland ports and development needs for fast transportation are some programmes in the area of inland ports. The setting up of a Central Marine Design Organisation for off-shore structures, instrumentation etc. are covered under 'Marine Resources' and a development outlay of Rs. 10.00 crores is envisaged for the purpose.

Telecommunication Research and Training

9.36. The Fifth Plan outlay of Rs. 32.28 crores has been made for establishments under the Department of Communications pertaining to telecommunication research and training aspects as indicated below:

(Rs. crores)

(i) Telecommunication Research Centre	19.70
(ii) Telecommunication training Centre	6.50
(iii) Technical and Development Circle	1.50
(iv) Indian Telephone Industries	
(a) transmission	3.05
(b) switching	1.05
(v) Hindustan Teleprinters Ltd.	0.48
<i>total</i>	32.28

As a part of the Fifth Plan programmes the existing nucleus of Telecommunication Research centre is to be augmented and built up as a main research centre with research facilities for all telecommunication needs and as development, fabrication and design, testing and field trials of prototypes, investigation of field etc. The programmes envisage the setting up of auxiliary research centres located near the telecommunication industries. The telecommunication training facilities are to be augmented through setting up 8 additional circle/district training centres and 8 additional regional training centres; additional training equipments accessories and laboratory facilities are proposed. The technical development circle of the P&T would be considerably strengthened and testing equipment, laboratory facilities would be expanded. The RDD programmes of the ITI envisage the development of new facilities and devices applicable to communications such as bearer channels for TV Relay stations, Data Transmission Facilities for linking computer installations. Call transfer facilities, Facsimile services for Weather Bureau etc., sophis-

ticated system for domestic and international space communications, broad band wave guide systems, PCM systems etc. are part of the development programmes. Hindustan Teleprinters would be augmented with appropriate equipment machinery and precision measuring instruments etc. for the development of modern teleprinters and miscellaneous products.

Meteorology and Allied Sciences

9.37. The Fifth Plan outlay of Rs. 30 crores is proposed under the Ministry of Civil Aviation and Tourism for the Indian Meteorological Department, and the Indian Institute of Tropical Meteorology, Indian Institute of Astro Physics, Indian Institute of Geo-Magnetism which are associated with the IMD. The allocation for the Fifth Plan programmes include the setting up of an Institute for Seismology with appropriate infrastructure and facilities.

The primary thrust of the S&T programmes inclusive of RDD by the Indian Meteorological Department and the Indian Institute of Tropical Meteorology will be on-Agricultural Meteorology, Forecasting and Telecommunications, Hydrometeorology, Cyclone Warning and disaster mitigation, Weather modification, Experimentation, Manufacture of Meteorological and allied Instruments and R & D. Programmes under Agricultural Meteorology envisage an advisory service to provide information to farmers on meteorological parameters and their impact on agriculture. The main project under Hydrometeorology pertains setting up 9 Flood Meteorological Stations through a Flood Meteorological Organisation: forecasts of river discharges following heavy rainfall, and a communication system to link these stations for monitoring and decision making relating to floods will be provided. Under the National Forecasting Organisation, meteorological centres at capital cities of the States will provide advice and data on the weather; participation in the "World Weather Watch" and the collection of weather information from a geo-stationary weather satellite are other major developments envisaged. A network of 9 cyclone warning radars along the East and the West Coast for advance warning against cyclonic storms and natural disasters will be built up. The production of standard meteorological instruments will be augmented. The RDD work envisage the numerical weather predictions to improve our understanding of monsoon and associated rain-fall prediction techniques: studies on meteorological and oceanographical aspects of monsoon as an international project in collaboration with World Meteorological Organisation and International Council of Scientific Unions would be undertaken. RDD and field trials on chemical seeding of clouds and other techniques of artificial rain stimulation will be undertaken and directed to developing a proven technology for the purpose. The programmes of the autonomous institutes include building up of infrastructure and equipments apart from minimal requirements of buildings. The distribution of the allocation of Rs. 30 crores is given below:

	(Rs. crores)
(i) India Meteorological Department including Indian Institute of Tropical Meteorology & Institute of Seismology.	25.75
(ii) Indian Institute of Astrophysics	2.75
(iii) Indian Institute of Geomagnetism	1.50
<i>total</i>	30.00

Universities/IITs and other Institutions of Higher Learning

9.38. RDD programmes have been identified covering a large number of disciplines of science and technology where oriented basic research has to be undertaken by the scientists and technologists in the Universities, IITs, and other higher educational institutions. NCST programmes cover areas like minerals, marine resources, special materials, meteorology, mechanical and chemical engineering etc; the programmes are complementary to the applied research programmes to be undertaken under various scientific agencies and departments of the Government.

The development outlay provided for in the education sector of the fifth plan is expected to cover both general and special support for research, individual programmes for research grants, pre-Ph.D programmes, research fellowships, special research schemes under Centres of Advanced Study, Science Service Centres and Instrumentation Centres, and strengthening of laboratory and computer system etc. of the university departments. The outlay envisaged for the research activities in the Universities is Rs. 58.00 crores. It is anticipated that the major portion of this outlay would be for the science and technology

departments as their expenditure pattern is higher than for humanities, social science etc. Thus approximately Rs. 45 crores is expected to be earmarked for RDD efforts in science and technology in the university sector for administration by the UGC. For the IITs and Technical Education Institutions, an outlay of Rs. 9 crores is envisaged for research and development efforts in the Fifth Plan. Therefore about Rs. 54 crores would be available for scientific/engineering research in the Universities/IITs etc. from the Ministry of Education/UGC in the Fifth Plan period. Of this amount Rs. 20 crores would be earmarked for the projects identified by the NCST. Rs. 3 crores would be available for institutional support for research in technical institutes; Upgrading the National Institute of Foundry and Forge Technology Ranchi into a research institute for tackling research and development problems of machine tool and equipment industry in the Country is one such programme. In addition to what is provided in the Education Plan an allocation of Rs. 14.00 crores has been made for a new agency to be called the Science & Engineering Research Council to be set up in the DST, for providing grants for multi-institutional and multi-disciplinary research in frontier areas of science and engineering, primarily in educational institutes. Further grant-in-aid schemes of CSIR, DOS DAE envisage provision for support of RDD projects oriented to their objectives and performed by higher educational institutions.

Fifth Plan Outlays for DAE, DST, DOS and CSIR

9.39. The outlays proposed in the Fifth Plan for the RDD efforts in the Department of Atomic Energy, Department of Space, Department of Science & Technology, CSIR, National Test House and the Anthropological Survey of India are indicated in table 1 below. The estimates of plan and non-plan expenditure in the Fourth Plan are also shown :

Table 1 : Fifth Five Year Plan Outlays—Plan and Non-Plan and estimated Expenditure during Fourth Plan

(Rs. crores)

name of the agency	fourth plan			fifth plan		
	expenditure (anticipated)			plan	non-plan	total
	plan	non-plan	total			
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Department of Atomic Energy (R&D)	42.00	88.00	130.00	111.13	125.30	236.43
2. Department of Space (R&D)	44.42	18.00	62.42	90.00	82.50	172.50
3. Council of Scientific and Industrial Research (CSIR)	43.98	82.38	126.36	104.50	150.30	254.80
4. Department of Science and Technology	11.36	40.92	52.28	109.98	75.00	184.98
5. Anthropological Survey of India (Deptt. of Culture)	0.51	2.00	2.51	0.85	2.33	3.18
6. National Test House (Ministry of Supply)	..	..	..	2.50	2.50	5.00
<i>7. total</i>	142.27	231.30	373.57	418.96	437.93	856.89

DEPARTMENT OF SCIENCE AND TECHNOLOGY

2.40. The Department (set up in 1971-72) has the nodal responsibility for implementation of overall science and technology policies, promotion of new areas of science and technology coordination of multi-agency programmes, promoting the utilisation of indigenous technology and international cooperation in science and technology apart from supporting some natural resource survey agencies. It also provides grants to some research institutes and to scientific societies and academies. The Fifth Plan programmes of the Department provide a total development outlay of Rs. 109.98 crores on the following schemes:

- (i) *Survey of India*: Augmentation of survey and cartographic facilities for completing the 1:50,000 scale maps, reducing the revision cycle, survey requirements for development projects and RDD projects.
- (ii) *Botanical Survey of India*: Implementing the Flora of India project and joint training programmes with Zoological Survey of India for University Post-Graduates in systematic Botany, Zoology.
- (iii) *Zoological Survey of India*: Implementing faunistic survey project, common training programmes with BSI and joint exploration programmes.
- (iv) *National Atlas Organisation*: Schemes cover Resources Atlas, Tourist Atlas, land use survey and mapping, land reform survey and mapping etc.
- (v) *National Remote Sensing Agency (NRSA)*: New Agency to be set up to coordinate the programmes of inventory of natural resources and act as a focal point for multi-disciplinary and multi-institutional scientific activities with an emphasis on remote sensing techniques.
- (vi) *Ocean Science and Technology Agency*: New Agency for policy formulation and coordination of oceanographic research, exploration and exploitation of ocean resources and providing support facilities for common use on an inter-departmental basis.
- (vii) *National Research Development Corporation (NRDC)*: Licensing of new processes will be increased, investment on development ventures further strengthened and services ensured for prospective investors through promotional activities.
- (viii) *International Technology Transfer Centre (ITTC)*: Will be established as an autonomous organisation to systematise the process of technology transfer, from the highly industrialised countries and to stimulate interchange of technology with other developing countries. The ITTC will complement and function in close collaboration with the work of NRDC (which deals with the transfer of technology from RDD Laboratories to industrial enterprises and horizontal transfer of technology between such enter-

prises). ITTC will also have appropriate linkages with RDD agencies, IITs, Universities and the relevant Departments of the Government.

- (ix) *Instrument Development Corporation*: An autonomous body to promote indigenous design and fabrication of specialised instruments needed by research institutions, university laboratories, colleges and schools.
- (x) *Machinery & Equipment Development Corporation*: Another promotional agency to be operating in the field of machinery and equipment development, for commissioning leading to the design and production of equipment needed in crucial areas of national priority.
- (xi) *Development of New Reinforcing Fibres & Components*: A development project involves inter-disciplinary and inter-institutional effort, the time targetted programme with technical assistance from UNDP, envisages funding and coordination by Department of Science & Technology.
- (xii) *Regional Sophisticated Instrumentation Centres*: It is envisaged that some six centres would be set up to provide the instrumentation needs of scientific workers in academic institutions, research laboratories and technological institutions in the respective zones of the country supplementary infrastructure would be provided for operational, maintenance and repair requirements by way of staff, materials, spares and to a limited extent capital equipment.
- (xiii) *Science and Engineering Research Council (SERC)*: Would be set up as an autonomous organisation sustained by the Department of Science and Technology where leading RDD agencies and UGC would be fully associated. The scheme would provide for multi-institutional and multi-disciplinary research in frontier areas of science and engineering.
- (xiv) *Grants to Research Institutes & Scientific Societies*: The Department would be supporting the plan programmes of the following institutions viz., Indian National Science Academy, Bose Institute, Indian Association for Cultivation of Science, Ramān Research Institute, Birbal Sahni Institute of Palaeobotany, Wadia Institute of Himalayan Geology, Indian Science Congress Association, Maharashtra Association for Cultivation of Science, Himalayan Zoological Park & Natural History Society.
- (xv) *Electronic Component Unit*: A public sector undertaking to be set up in the Fifth Plan and for the productionising technical know-how in the area of electronic components and devices developed by NPL and by other RDD institutions in the components and devices areas.

- (xvi) *Cryogenics Corporation* : Envisages the development and commercialisation of technology in the area of cryogenics to meet the needs of industries like fertilizers, steel production, food preservation, the space programmes, petrochemical complexes etc., The Corporation would initially concentrate on the essential RDD needs.
- (xvii) *National Information System*: A central agency to be called as the 'National Information System' for science and technology would be raised and apart from filling up the gaps in the information net-work, a National Information Grid Link through Regional Centres would be developed.
- (xviii) *Museum of Natural History* : A scheme of the 25th Anniversary of Independence Celebrations, would conceptually develop the themes of origin of life in the planet, evolution through ages, growth of science and technology etc.
- (xix) *Monitoring and Evaluation Organisation* : Considering the approach to plan science and technology to meet the socio-economic needs of the country, monitoring and evaluation of the project programmes that would be attempted is essential and inescapable. A 'Monitoring and Evaluation' facility would be set up in the Department of Science & Technology for the purpose. The whole area of S & T Plan inclusive of agencies plans would be covered for this purpose. Apart from a nucleus of scientists and technocrats of various disciplines located in the Department, who will act primarily as focal points special committees would be constituted of experts for monitoring, assessment of progress and evaluation of project programmes. All science and technology projects would be subjected to a critical scrutiny and examination from the conceptual through formulation and implementation stages, feasibility, practicability, economics, alternative routes and returns would be covered by such a facility.
- (xx) *Technologies Relating to New Energy Sources* : The potentials in non-conventional sources of energy namely, solar, geothermal, chemical, wind and tidal have to be exploited fully; RDD projects for specific areas of application such as rural electrification, water pumping, automotive traction, etc. are envisaged; special emphasis is to be placed on solar energy.
- (xxi) *The National Committee on Environmental Planning and Coordination (NCEPC)*—has been set up in the Department of Science and Technology to look into the various matters related to the environmental quality and suggest measures of improvement. The primary intention is to ensure that scientific knowledge and technological means to control pollution and other kinds of environmental degradation and to effect improvements in the state of the environment are readily available to back up policies and decision taken to deal with environmental problems. Accordingly a number of areas have been identified where research, both basic and applied, is needed to provide the knowledge to underpin national measures to ensure a healthy environment. The research programmes to be taken up during the plan fall under four main areas; environmental aspects of human settlements; environmental aspects of Natural resources management; environmental pollution control and research, training and education in ecology and environmental sciences.
- (xxii) *Plan Outlays—DST* : Scheme-wise breakdown of Fifth Five Year Plan outlays together with Non-Plan outlays for the Department of Science and Technology is given in Table 2 below.

Table 2 : Fifth Plan Outlays—Department of Science and Technology

Name of the scheme (0)	(Rs. crores)		
	plan outlay (1)	Non-plan outlay (2)	total (3)
1. Survey of India	22.60	56.40	79.00
2. Botanical Survey of India	2.50	3.80	6.30
3. Zoological Survey of India	2.50	3.10	5.60
4. National Atlas Organisation	1.25	1.40	2.65
5. National Research Development Corporation	9.75	..	9.75
6. Scientific Societies/Institutes	5.50	7.00	12.50
7. Natural History Museum	0.50	..	0.50
8. Science and Engineering Research Council	14.00	..	14.00
9. National Remote Sensing Agency	7.25	..	7.25
10. Ocean Science & Technology Agency			
11. Electronic Components Unit . . . . .				4.25	..	4.25

(0)	(1)	(2)	(3)
12. National Committee on Environmental Planning & Coordination (NCEPC)	7.00	..	7.00
13. New Fibres and Composites	1.00	..	1.00
14. Monitoring & Evaluation Organisation (in DST Sectt)	0.40	3.30	3.70
15. National S & T Information System	8.00	..	8.00
16. Cryogenics Corporation	5.00	..	5.00
17. Technologies relating to New Energy Sources	4.00	..	4.00
18. Instruments & Machinery Development Corporation	6.50	..	6.50
19. Regional Sophisticated Instrument Centres	4.00	..	4.00
20. International Technology Transfer Centre	2.50	..	2.50
21. New Institutions under consideration	1.48	..	1.48
<i>grand total</i>	109.98	75.00	184.98

Department of Atomic Energy (R&D)

9.41. The RDD efforts of the DAE are organized under six institutions, viz. Bhabha Atomic Research Centre, Bombay; Tata Institute of Fundamental Research, Bombay; Tata Memorial Centre, Bombay; Variable Energy Cyclotron, Calcutta; Saha Institute of Nuclear Physics, Calcutta, and Reactor Research Centre at Kalpakkam, Madras. An outlay of Rs. 111.13 crores is envisaged in the Fifth Plan on such RDD effort. Important features of the schemes are outlined below:

- (i) *B.A.R.C.* : The spill-over schemes from the Fourth Plan pertain to Irradiation Facilities, Radiation Medicine Centre, Low Level Counting Laboratory, New Engineering Halls and 100 MW Thermal Research Reactor. The New Engineering Halls are primarily as support facilities for the Reactor Engineering Division for design and development activities for power projects and allied plants and research reactors: the installation of instruments and equipments would be completed in the Fifth Plan. The 100 MW Thermal Research Reactor for testing fuel elements used in power reactors and also for RDD for production of radioisotopes of higher specific activities would be set up and completed in the Fifth Plan. The RDD schemes at BARC in the plan period would be oriented towards the development of radioisotopes for serving the need of industry, agriculture and medicine.
- (ii) *Reactor Research Centre* : The facilities to be set up at the Centre are oriented to meet the power programme requirements based on thorium in the 1980s; RDD work on advanced thermal reactors and Fast Breeder Reactors would be initiated. The primary facility at the RRC is the Fast Breeder Test Reactor (FBTR) supported by a

Radio Metallurgical Laboratory, Radio Chemical Facility, Materials Development Laboratory and related facilities.

- (iii) *Variable Energy Cyclotron*: The cyclotron which is the primary facility at Calcutta is now expected to be operational in Feb./ March 1975 to enable utilisation of this facility by scientists of various research institutions and scholars from universities and institutions of learning, several support facilities would be provided in the Phase II, viz. Target preparation Facility, Detector Facility, Scattering Chamber, Magnetic Spectrometer etc. Apart from enabling advance RDD in nuclear Sciences, the Cyclotron facility would enable front line research training in fast modular electronics, magnetic technology, cryogenics techniques, producing high charge States, sensitive method of material analysis etc.
- (iv) *T.I.F.R.* : Programmes envisage consolidation of existing advanced research programmes, setting up of facilities like Cosmic Ray Detecting Array at Ooty, enhancement of capabilities of Ooty Radio Telescope, construction of a new Millimeter Wave Radio Telescope and setting up of a Computer net work.
- (v) *Tata Memorial Centre* : Thurst of the programme would be to promote clinical research and training on cancer therapy and the addition of special facilities like an electron microscope, a cold-room at 0°C with inner chamber etc.
- (vi) *Saha Institute of Nuclear Physics* : The RDD programmes envisage utilisation of the Variable Energy Cyclotron facilities in a major way and would cover advanced Nuclear Physics, Solid State Physics, Biological Sciences, Plasma Physics etc.

(vii) *Plan Outlays—DAE (R&D)* : Scheme-wise break-up of Fifth Five Year Plan out-

lays for the Department of Atomic Energy (R&D) is given in Table 3 below:

Table 3 : Fifth Plan Outlays—Department of Atomic Energy (R&D)

Name of the Scheme	(Rs. crores)		
	Plan outlay	Non-Plan outlay	Total
(0)	(1)	(2)	(3)
1. Bhabha Atomic Research Centre (including research facilities at Srinagar & Gulmarg)	47.40	77.25	124.65
2. Variable Energy Cyclotron	2.52	..	2.52
3. Reactor Research Centre	53.10	3.33	56.43
4. Tata Institute of Fundamental Research	3.87	12.49	16.36
5. Tata Memorial Centre	0.90	4.72	5.62
6. Saha Institute of Nuclear Physics	1.00	2.77	3.77
7. Housing	0.84	..	0.84
8. Atomic Minerals Division	1.50	10.82	12.32
9. Miscellaneous	..	13.92	13.92
<i>Total</i>	111.13	125.30	236.43

Department of Space

9.42. The Department of Space was set up towards the closing years of the Fourth Plan with responsibility for space research programmes which were under the Department of Atomic Energy previously. The infrastructure and facilities for RDD in the area of space sciences and technology were considerably strengthened in the Fourth Plan e.g. Rocket Fabrication Facilities, Rocket Propellant Plants, Static Test and Evaluation Complex etc. The various units and facilities have been integrated into three primary establishments, viz. (a) The Vikram Sarabhai Space Centre at Thumba, oriented to development of rocket technology and related facilities for satellites (b) The Space Application Centre at Ahmedabad, satellite based T.V. and telecommunication, remotesensing technology, electronics and instrumentation support facility, and (c) launching complex at Sriharikota with development and application of appropriate tracking facilities etc. The specific Fifth Plan programmes of the Department of Space are.—

- (i) *Development of rocket technology and Satellite launch capability.*—Oriented to executing the Satellite Launch Vehicle 3 (SLV-3) Project as a prelude to the development of synchronous satellite launch vehicles to support the RDD Programmes, the Rocket Fabrication Facility, and the Propellant Plant are to be strengthened and a new reinforced plastic centre to be set up.
- (ii) *Satellite Development.*—Oriented to the design and fabrication of scientific and technological satellites and satellite payloads.
- (iii) *RDD on Space Applications.*—Geared to application of satellite in the areas of television, tele-communication, meteorology, remote sensing geodesy and navigation.
- (iv) *Production, Test and Launch Facilities at Sriharikota Rocket Range.*—Envisages completion of the spill-over programmes

and the initiation of the second phase of launching facilities, test facilities solid propellant booster plant etc.

- (v) *Research Grants to Higher Educational Institutions and Training and Manpower Development.*—Provides for promotional activities in the area of space research and technology and applications, by associating teachers and research personnel from universities, institutes of learning and other RDD institutions in the country.
- (vi) *Physical Research Laboratory.*—To be oriented as a National Centre for Space Sciences eventually.
- (vii) *New Rocket and Satellite Technology Centre.*—Envisaged as a fourth establishment under the Department for meeting the possible over-flow of work and manpower when the tempo of the space programmes increases.
- (viii) *Computational facilities.*—Required in addition to regional facilities available, are included in the Plan to meet special needs of computer requirements for the three centres.
- (ix) *Central Management.*—Schemes provide for a central technological system in the Headquarters of the Department manned by scientific experts for studies, analysis projection, evaluation, assessment of options etc. in space programmes.
- (x) *Plan Outlays—Dos.*—The development outlay on Space Research in the Fifth Plan is Rs. 90.00 crores (non-Plan Rs. 82.50 crores). Scheme-wise break-down of the Fifth Five Year Plan outlays together with estimated non-Plan outlays for the Department of Space (RDD) is given in Table 4 below :

Table 4 : Fifth Plan Outlays—Department of Space (R&D)

(Rs. crores)			
name of the scheme	plan outlay	non-plan outlay	total
(0)	(1)	(2)	(3)
1. Development of Rocket Technology and Satellite Launch Capability	28.75	64.75	93.50
2. Satellite Development	9.50	..	9.50
3. Research & Development work on Space Application	13.75	3.00	16.75
4. Production, Test and Launch facilities at Sriharikota	31.00	7.50	38.50
5. New Rocket and Satellite Technology Centre	0.50	..	0.50
6. Computational facilities	1.00	..	1.00
7. Research Grants to Higher Educational Institutions and Training and Manpower Development	3.50	..	3.50
8. Physical Research Laboratory	1.25	5.25	6.50
9. Central Management	0.75	2.00	2.75
<i>total</i>	90.00	82.50	172.50

Council of Scientific and Industrial Research (CSIR)

9.43. Plan programmes of the C.S.I.R. aim at tackling important problems identified by the NCST in various sectors and giving thrust in areas of interest to industry. Overall emphasis is on promoting RDD to meet basic minimum needs, higher productivity, developing technology for minimising imports and promotion of exports, developing technologies for special materials and setting up special technological facilities and concentrating on industrial problems of different regions. The strategy would be to pursue and complete projects of short duration enabling quick results. High priority will be given for projects identified by user and translating expertise built up into viable production schemes.

(i) Some of the important areas covered by the RDD schemes include techniques for exploration and exploitation of natural resources and utilisation of natural resources in the areas of minerals, metals, forests and marine products, production process development for pesticides, drugs, polymers, fermentation, and electro-metallurgy, petro-chemicals, problems of low cost housing, economy in construction and application of structure engineering techniques in Fifth Plan construction projects. RDD efforts towards achieving self-reliance cover development of know-how for plastics and fibres, ceramics and glasses of industrial importance, food technology to optimise utilisation of our food resources, techniques for sponge iron production, semi conductor devices and special materials for electronics, instrumentation technology,

leather goods and garments, utilisation of slaughter house wastes, developing technology for converting coal to oil etc.

(ii) Institutional projects include those with technical assistance from bilateral or UNDP sources and cover aspects like turbo-machinery, hydro-metallurgical facility and oceanographic research vessel, etc. The setting up of extension centres and schemes like 'adopting a district' aim at full application of the expertise developed for promoting socio-economic development schemes like area development schemes, minimum needs programmes, command area projects etc. The schemes for grant of fellowships, grants to research associations and Research Grants for projects on universities and educational institutions would continue; emphasis will be laid on technical coordination, monitoring and evaluation of RDD efforts at laboratory as well as at the organisation level.

(iii) Plan Outlays—CSIR : The Fifth Plan outlay envisaged for CSIR is Rs. 104.50 crores under the three heads :

- (i) RDD Schemes Rs. 50.00 crores;
- (ii) Institutional type of activities Rs. 42.75 crores;
- (iii) Centrally Administered Heads Rs. 11.75 crores.

Scheme-wise break-up of the Fifth Plan outlays together with estimated non-Plan outlays is given in Table 5 below :

Table 5 : Fifth Plan Outlays — CSIR

head of expenditure	(Rs. in crores)		
	plan outlay	non-Plan outlay	total
(0)	(1)	(2)	(3)
1. National Laboratories—Continuing RDD Projects	44.75	119.50	164.25
2. National Laboratories—New RDD Projects			
3. Computer facilities	5.25	..	5.25
4.1. Establishment of Research Centre/Extension Centres/training and service facilities/field stations in different regions relating to instruments, geophysical, electro-chemical, road research, mechanical engineering, corrosion research, ceramics, drugs, food	10.00	..	10.00
4.2. Field Stations for Radio Science	1.50	..	1.50
4.3. Subsidiary facilities for ground-water survey, air-borne survey and geophysical instrumentation	1.00	..	1.00
4.4. Information/Data Centre for Oceanography, Aeronautics, Food Sciences Technology, and Leather	1.00	..	1.00
4.5. Industrial and Technological Museums National Science Library, press and information system	4.00	..	4.00
4.6. Establishment of facilities for cellular biology, rural building, structural engineering, turbo machinery and combustion, metallurgy, fermentation biophysics, brewing, milling and baking, material science	9.00	..	9.00
4.7. Engineering and Design Research/Consultancy (Chem., structural, civil and mech. Engg'.)	2.40	..	2.40
4.8. Oceanographic research vessel	2.80	..	2.80
5. Proposals for New Institutes and Laboratories			
5.1. Regional Research Laboratories (in Bihar, Kerala, Gujarat, Madhya Pradesh, Punjab, Rajasthan, U.P., West Bengal	2.50	..	2.50
5.2. New Research Institute/laboratory in each of the field of catalysts, solar energy, optical glass	2.00	..	2.00
5.3. Industrial Research Associations in the field of paper and pulp, the electrical industry, fibres	1.25	..	1.25
5.4. Design organisations and consultancy centres in the field of chemical, mechanical and civil engineering	2.15	..	2.15
5.5. Training of laboratory technician	0.40	..	0.40
5.6. Information Bureaux, dissemination	2.38	..	2.38
5.7. Planning, Monitoring and Evaluation	0.25	..	0.25
5.8. Centre for the study of Science, Technology and Development	0.12	..	0.12
Central Head			
6. Research Projects and grants to Higher Educational Institutions	4.50	8.75	13.25
7. Fellowships and scholarships in national laboratories	0.50	0.80	1.30
8. Grants to Research Centres	0.30	0.25	0.55
9. Grants to Industrial Research Associations	5.80	4.90	10.70
10. Central Administration	0.65	16.10	16.75
<i>Total</i>	104.50	150.30	254.80

Dept. of Culture**Anthropological Survey of India**

9.44. The schemes in the Fifth Plan will be oriented to studying the dynamics of various aspects of social and cultural transformation in India, and will include problems of the weaker sections, people of Himalayan border area, impact of industrialisation on the life of tribals, urban anthropology, physical fitness surveys, ageing genetical demography etc. The infrastructure addition includes the School of Anthropology, Western India Station, Zonal Anthropologi-

cal Museum and Planning Cell. The collaborative research fellowship programmes will be stepped up. Fifth Plan programmes envisage a development outlay of Rs. 0.85 crore (in addition to Rs. 2.33 crores under non-Plan).

National Test House (NTH) Calcutta (Deptt. of Supply)

9.45. Scientific work relating to testing, evaluation and standardisation is as important as research and development activities. At present National Test House (NTH) Calcutta with its branch at Bombay

is engaged in testing and evaluation of samples submitted by Trade/Industry against DGS&D contracts and also against the Indian Standards Institution specification. In order to help small scale units who have over-riding need of technical guidance, testing and evaluation services, Fifth Plan programmes of NTH envisage strengthening and setting up additional facilities for testing and quality control in important fields, such as fertilisers, pesticides, mechanical tools and equipment, electrical goods, electronic equipment, oils and petroleum products, general chemicals, paints and polymers and textile and leather goods. The proposals envisage setting up new Test Houses at Delhi and Madras and augmentation of the existing facilities in the Test Houses at Calcutta and Bombay; Fifth Plan outlay is Rs. 2.5 crores (in addition to Rs. 2.5 crores under non-plan).

III

SCIENCE AND TECHNOLOGY PLAN OUTLAYS

9.46. The financial outlays made for scientific research during the past four plans are indicated in Table 6. Consistent with the nature of scientific and technological RDD, these outlays include both "Plan" and "Non-Plan" provisions, as normally understood in other sectors. However, the figures indicated in Table 6 cover the expenditure on scientific and technological activities, including RDD, of only three specific departments—Atomic Energy, Space and the C.S.I.R.—together with the expenditure on such activities of the Survey of India, the Botanical and Zoological Surveys and grants-in-aid to scientific societies. The outlays provided for science and technology in other sectors like Agriculture, Industry, Railways, Health, Communication, etc. were merged in earlier Plan documents in the total outlays for those sectors. As a result, a total picture of the nation's scientific and technological effort was not clearly discernable. However, with the commitment to a total Science and Technology Plan, which has been made during the last two years the investments proposed to be made on scientific and technological programmes, including RDD in the various sectors, have been compiled and presented in Table 7; in addition appropriate outlays would be separately provided for Defence Research and Development.

9.47. This Table also indicates the relevant 'Non-Plan' expenditures wherever they are clearly identifiable. This expenditure would cover continuing projects and the build up of infrastructural facilities, needed to support them. These continuing projects, were largely initiated in the context of Fourth Plan development goals. Consequently, they will have to be gradually reviewed from the point of view of Fifth Plan objectives. The continuation or termination of an on-going programme or project, will, however, be conditioned by several factors such as, the degree of technical progress achieved till now, whether the project is sponsored by a specific user, difficulty in immediately redeploying specialised manpower and facilities beyond a certain extent etc. However, within these constraints, every effort will be made to redeploy "Non-Plan" resources of scientific and technological institutions during the Fifth Plan period, using such important mechanisms as the Annual Plans and the Mid-term Review of the Plan.

Table 6 : Outlays on Science and Technology

plan period	(Rs. crores)		
	plan	non-plan	total
First Plan (1951-56)	14.00	6.00	20.00*
Second Plan (1956-61)	33.00	34.00	67.00*
Third Plan (1961-66)	71.49	73.00	144.49*
1966-69 (estimated)	47.15	83.44	130.59*
Fourth Plan (1969-74)	142.27	231.30	373.57*
Fifth Plan (1974-79)	1033.29	534.93**	1568.22**

*Represents only expenditure of the Department of Atomic Energy (R & D) Sector, Department of Space (RDD Sector), CSIR, Department of Science & Technology, Department of Culture (ASI).

**Represents total Science & Technology Plan covering all the sectors. Does not include non-plan outlays of RDD institutions in the Departments of irrigation, Power, Health and Family Planning Meteorology & Communication.

Table 7 : Fifth Plan outlays on Science and Technology in different Sectors

name of department	(Rs. in crores)		
	plan outlay	non-plan estimated	total
(0)	(1)	(2)	(3)
1. Food & Agriculture	125.00	57.00	182.00
2. Irrigation	38.00	@	38.00
Power	15.00	@	15.00
3. Heavy Industries	70.00	—	70.00
4. Steel	20.00	—	20.00
Mines	69.00	—	69.00
5. Industrial Development	25.00	—	25.00
6. Petroleum	16.00	—	16.00
Chemicals	15.00	—	15.00
7. Electronics	20.00	—	20.00
8. Commerce	5.00	—	5.00
9. Shipping	10.00	—	10.00
Transport	9.00	—	9.00
10. Atomic Energy (R D D)	111.13	125.30	236.43
11. Science & Technology	109.98	75.00	184.98
12. Council of Scientific & Industrial Research	104.50	150.30	254.80
13. Space	90.00	82.50	172.50
14. Supply (National Test House)	2.50	2.50	5.00
15. Health	21.70	@	21.70
Family Planning	14.30	@	14.30
16. Works & Housing	23.75	—	23.75
17. Education & Social Welfare—UGC & IITs	54.00	—	54.00
Anthropological Survey of India	0.85	2.33	3.18
18. Communication	32.28	@	32.28
19. Railways	..	40.00	40.00
20. Meteorology (& Institutes)	30.00	@	30.00
Civil Aviation	0.80	—	0.80
21. Information & Broadcasting	0.50	—	0.50
total	1033.29	534.93@	1568.22

@Does not include non-plan outlays of RDD institutions in the Departments.

Chapter 10

Health, Family Welfare Planning and Nutrition

HEALTH

THE bulk of our population lives in rural areas where health care services are extremely inadequate. Forty per cent of our population live below the poverty level and must be provided an access to minimum social consumption and investment. The endeavour in health planning is to remove this rural-urban imbalance and extend health care facilities to peripheral areas and backward classes.

10.2. The problem is complex and challenging. Meagre financial and technical manpower resources place severe constraints on development plans in general and the health care programmes cannot be considered in isolation. On the principle of harmonious development, health care must, therefore, be balanced against other sectors of the economy, given our limited resources. The intrinsic value of an effective health plan, under such circumstances, would depend upon laying down correct priorities and a judicious use of funds. These factors have been kept in mind whilst formulating the Fifth Five Year Plan.

Review of Past Progress

10.3. The directions and guidance provided by the Health Survey and Development Committee (Bhore Committee 1946) and the Health Survey and Planning Committee (Mudaliar Committee 1961) have provided the chief basis for health planning in India. The broad objectives of the health programme during the first three plans have been to (i) control or eradicate major communicable diseases, (ii) provide curative, preventive and promotional services in rural areas through establishment of primary health centres and sub-centres, and (iii) augment the training programmes of medical and para-medical personnel. During the Fourth Plan efforts were made to strengthen the primary health centre complex in the rural areas for undertaking preventive and curative health services and for ensuring the maintenance phase of the communicable diseases control and eradication programmes.

10.4. The outlays on the health care programme in the previous plans and proposed for the Fifth Five Year Plan are given below :

Table 1 : Outlays on Health Programmes

plan	centre	centrally sponsored	state/union territory	total
(0)	(1)	(2)	(3)	(4)
1. first plan . . . . .	..	..	..	90.30
2. second plan . . . . .	..	..	..	146.00
3. third plan	14.83	5.46	205.57	225.86
4. 1966-69	16.76	11.14	112.21	140.11
5. fourth plan	53.50	176.50	203.53	433.53
6. fifth plan	75.78	177.01	543.21*	796.00

*Inclusive of Rs. 291.47 crores for Minimum Needs Programme for States.

10.5. The physical targets, anticipated achievements and progress of expenditure during the Fourth

Plan are given in the following tables:

***Table 2 : Physical Targets and Achievements : 1969-74**

items	position at the beginning of the fourth plan (1968-69)	fourth plan		likely position at the end of fourth plan (1973-74)
		targets (additions)	likely achievements (additions)	
(0)	(1)	(2)	(3)	(4)
1. primary health centres	4919	508	331	5250
2. sub-centres	22826	10174	10174	33000
3. hospital beds	255700	25900	25900	281600
4. (a) medical colleges	93	10	6	99
(b) annual admissions	11500	1500	1000	12500
5. communicable diseases				
(a) national malaria eradication programme (phasing of units)				
(i) attack phase	112.985	30.00		97.409
(ii) consolidation phase	70.385	93.25		66.310
(iii) maintenance phase	209.880	270.00		229.531
total	393.250	393.25		393.250
(b) national smallpox eradication programme—				
(i) primary vaccinations (in millions)	..	179	121	..
(ii) revaccinations (in millions)	..	502	348	..
(c) tuberculosis				
(i) distt. T.B. centres	170	125	108	278
(ii) T.B. isolation beds	35000	2500	1500	36500

*See also Annexure IV.

Table 3 : Outlays and Expenditure (1969-74)

sector	(Rs. crores)		
	fourth plan outlays	total anticipated expenditure (1969-74)	expenditure as percentage of outlay
(0)	(1)	(2)	(3)
centre	53.50	38.02	71.1
centrally sponsored	176.50	109.23	61.9
states/union territories	203.53	196.66	96.6
total	433.53	343.91	79.3

10.6. The progress of expenditure, under the central and centrally sponsored heads, has not been satisfactory. The reasons for the shortfall in expenditure in the central sector were the late finalisation of plan schemes and the plan budget, delays in implementing the pattern of central assistance and allocations to State Governments, and the reduced budgetary provision due to constraints on resources in 1973-74. The shortfall under central schemes was mainly due to

organisational deficiencies such as lags in the time schedule of capital construction, delays in the supply of material and equipment and inadequate supervision. To accelerate implementation of various programmes during the course of the plan period, adequate corrective measures such as appointment of study teams to identify causes for failures, constituting control and management Boards to overcome administrative delays, formation of task forces to streamline the working of central institutes, more frequent coordination meetings of the implementation officials and preparation of a compendium on centrally sponsored schemes were taken. It is hoped that these remedial measures will also speed up implementation of Health programmes during the Fifth Plan.

10.7. During the past two decades, commendable improvements have taken place in the health indices of the country. The mortality rate has declined from 27.4 per 1000 in the year 1949-50 to 15.1 per 1000 in 1971. Life expectancy at birth has gone up from 32 years (in 1951) to 50 years (in 1971). Infant mortality rate has dropped to 140 from 183, in the last 20 years. The number of hospital beds is expected to increase from 1,13,000 in 1950-51 to 2,81,600 in 1973-74. The bed population ratio has also gone up to 0.49/1000 from 0.32/1000 during this period. Ninety-nine medical colleges with an

annual admission capacity of nearly 12,500 undergraduates are now functioning as compared with 30 with an annual admission of 2,500 students in 1950-51.

10.8. Despite all these achievements, the position is unsatisfactory. For example, the recommended Mudaliar Committee norm of one bed per 1000 population and one doctor per 3,000—3,500 population is still not within reach. There are considerable regional disparities in the country in the availability of medical services. 80 per cent of our population which lives in rural areas has only 30 per cent of the hospital beds and 20 per cent of the doctors in the country. The nurse bed ratio is far below the recommended norms in certain regions of the country.

Fifth Plan—Objectives and Strategy

10.9. The primary objective during the Fifth Plan is to provide minimum public health facilities integrated with family planning and nutrition for vulnerable groups—children, pregnant women and lactating mothers. It will be necessary to consolidate past gains in the various fields of health, such as communicable diseases, medical education and provision of infrastructure in the rural areas. The accent during the Fifth Plan will be on (i) increasing the accessibility of health services to rural areas, (ii) correcting the regional imbalance, (iii) further development of referral services by removing deficiencies in district and sub-divisional hospitals, (iv) intensification of the control and eradication of communicable diseases especially malaria and smallpox, (v) qualitative improvement in the education and training of health personnel, and (vi) development of referral services by providing specialists' attention to common diseases in rural areas.

10.10. The minimum needs programme, along with the training of multipurpose health auxiliary and a more vigorous pursuit of communicable diseases eradication/control is the core of the health care programmes. Backward and tribal areas which have so far been neglected will receive preferential treatment in the implementation of the health programmes.

10.11. Under the national programme for minimum needs, the primary health centre complex will still remain the nucleus around which the rural health care services will be built up. Goals are to be achieved through (i) the integration of health, family planning and nutrition programmes, (ii) the augmentation and reorientation of training programme to train a special functionary—a multipurpose health worker to deliver the integrated health care services, and (iii) making up deficiencies in numbers, buildings, staff, equipment, drugs etc. of the primary health centre complex in a coordinated way.

10.12. Programmes under health, family planning and nutrition are being implemented individually without adequate coordination. It is felt that a proper integration of health, family planning and nutrition programmes is highly desirable for a more effective implementation of all the programmes. The delivery of the integrated health care programmes will

be through multipurpose health auxiliaries—a new category of para-medical personnel to be specially trained for this purpose.

Health Care

Minimum Needs Programme

10.13. The minimum needs programme will receive the highest priority and will be the first charge on the development outlays under the Health Sector. The targets are : (1) one primary health centre for each community development block, (ii) one sub-centre for a population unit of 10,000, (iii) making up the backlog and deficiencies in buildings, staff, equipment etc., (iv) provision of drugs at the enhanced level of Rs. 12,000/- per annum per PHC and Rs. 2000/- per annum per sub-centre, (v) upgradation of one in four PHCs to 30 bedded rural hospitals.

10.14. Existing curative establishments such as dispensaries, cottage hospitals etc. are to be functionally integrated with the PHC complex.

10.15. To ensure their more effective functioning, PHCs which at present do not have adequate road communications, safe drinking water supply and electricity, will be provided these essential amenities under the minimum needs programme on a high priority basis. The same consideration will apply in the location of new PHCs. In effect, to make a better impact, the minimum needs programme will be offered as a package consisting of health care, potable water supply, adequate road communication and rural electrification.

10.16. The rural hospital establishments are expected to provide routine specialised services in medicine, surgery, and obstetrics and gynaecological disciplines. Adequate provisions will be made for care of emergencies and acutely ill cases referred from the neighbouring PHCs. These establishments will provide relief to the currently overcrowded district and other referral hospitals and will thus bring expert medical care within the reach of the people residing in rural areas.

10.17. A sizeable component of the outlays on Minimum Needs programme is for the provision of drugs at sub-centre, primary health centre and rural hospital level. The endeavour during the Fifth Plan will be to make essential drugs available to the rural areas at cheap prices. A Working Group has been appointed to suggest measures to (i) increase the production of essential drugs, (ii) create the machinery for bulk purchase and distribution, and (iii) reduce the prices. It is hoped that by adopting suitable measures the prices of drugs will come down and maximum purchases will be possible within the limited resources available.

10.18. In physical terms about 101 PHCs, 11036 sub-centres and 1293 rural hospitals will be provided in the Fifth Plan, besides making up deficiencies in buildings, staff, equipment and drugs at the existing centres and sub-centres. Outlays adopted under the Minimum Needs Programme for each State are proposed to be earmarked in order to ensure that the

States do not make cuts in expenditure or divert funds.

Communicable Diseases

10.19. The three major programmes viz. National Malaria Eradication Programme, National Smallpox Eradication Programme and the Leprosy Control Programme will remain Centrally sponsored with 100 per cent financial assistance from the Centre. The expenditure for other Central programmes viz. Filariasis, T.B., V.D., Trachoma and cholera which were also wholly financed by the Centre during the Fourth Plan, will now be shared between the Central and the State Sectors. The Centre will meet the expenditure on material and equipment, while the States will meet the expenditure on the operational cost. A regular and continuous monitoring of these programmes will be undertaken for speedy and effective implementation, and for this purpose the necessary machinery at the State and the Central levels will be established. It is expected that by the end of the Fifth Plan, malaria would be eradicated from at least 75 per cent of the total population under cover, and the National Smallpox Eradication Programme would be completed. The National Filariasis Control Programme will cover at least 50 per cent of the population and the Leprosy Control Programme will cover all the hyper and moderately endemic areas. Besides preventive care, domiciliary and institutional treatment facilities will be augmented to cover at least 50 per cent of the total infectious cases under the T.B. Control Programme. Other programmes such as Trachoma, Cholera etc., would effectively cover the entire country.

10.20. The communicable diseases programmes will be properly integrated with all the other health care programmes and extended through the multipurpose medical auxiliaries. The integration would take place not only at the lowest levels, but also at the intermediary and higher supervisory levels. Facilities for the reorientation of the staff of these various programmes will be provided.

10.21. Efforts will be made to augment production of protective sera, vaccines etc., to attain self-sufficiency in the country.

10.22. Outlays, break-up of estimates between material and drugs and operational cost and the extent of Central assistance under the Centrally sponsored programmes is shown in Annexure II.

National Malaria Eradication Programme

10.23. This programme was set up in 1958 and even after 15 years of the operation, only 59 per cent of the country has gone into the maintenance phase. There have been focal outbreaks since 1964 resulting in some reversions. Persistent transmission has come to notice from the contiguous areas comprising Gujarat, Madhya Pradesh, Maharashtra and Rajasthan. This is due partly to vector mosquitoes having developed resistance to DDT and partly to ineffective supervisory services. There have been delays in the supply of insecticides, anti-malaria drugs

and replacement of transport vehicles. In addition, inadequate basic health services in the maintenance phase areas have also contributed towards these reversions. The programme was evaluated in depth in 1970 by an international team, which has observed that eradication is only possible for 91 per cent of the population and the remaining 9 per cent of the population will continue to be in the attack phase. It is proposed to set up a committee to review the present strategy, to evolve better tools, and a technically and administratively sound plan to completely eradicate this menace.

10.24. The urban malaria programme was introduced in the third year of the Fourth Plan to assist local bodies financially and to supply the material and equipment necessary to control the urban malaria problem over and above the level of committed expenditure incurred by the local bodies. This scheme was necessary because anti-larval operations were not carried out by local authorities and the large migration of rural population to urban towns in search of jobs, increased the danger of the dissemination of malaria from urban to rural areas. Only 28 towns were covered under the scheme in the Fourth Plan. In view of the inter-dependence between malaria in the rural and urban areas it is proposed to extend the scheme to cover 104 more towns during the Fifth Plan.

National Smallpox Eradication Programme

10.25. The incidence of smallpox was continuously on the decline from 1968 to 1970. From 1970 onwards, however, there has been a rising trend in incidence. This is attributed, partly to improved reporting system and intensive surveillance programmes. Ninety per cent of the total incidence reported in 1973, has been contributed by the four States of UP, West Bengal, Bihar and Madhya Pradesh. An intensified surveillance-cum-containment campaign has been planned in the affected districts. Against the Fourth Plan target of 179 million primary vaccinations and 502 million revaccinations, 121 million primary vaccinations and 348 million re-vaccinations were carried out. The shortfall in targets has been mainly due to delay in placing the infrastructure in position.

10.26. During the Fifth Plan, emphasis will continue on the primary vaccination, and the aim will be at covering an annual target of 5 per cent of the population (higher than the annual birth rate of about 4 per cent). For revaccination, the targets have been fixed at a coverage of 20% of the population annually. There will be a further augmentation and strengthening of the surveillance component of the programme. The country will be self-sufficient in the production of freeze dried smallpox vaccine. It is expected that by the end of the Fifth Plan, the country will achieve smallpox free status.

National TB Control Programme

10.27. The National TB Sample Survey conducted in the year 1955—58 revealed that nearly 1.8% of the population is suffering from active pulmonary TB and nearly one-fourth of these are sputum positive i.e. infectious. It is estimated that there are nearly 8 million active TB cases in the country, of which nearly

2 million are infectious. The strategy under TB control programme would continue to be to detect active cases in an early stage and to protect healthy persons, especially the age groups under 20 years, by BCG vaccinations. The main emphasis during the Fourth Plan has been on the establishment of fully equipped and staffed District TB Centres in each of the districts of the country to undertake TB case finding, treatment and BCG Vaccine activities in collaboration with the existing medical and health institutions. The bulk of the patients can thus, avail of these facilities nearest to their houses. A total of nearly 547 TB clinics including 278 upgraded district TB Centres and 17 TB Training and Demonstration Centres are now functioning in the country, covering almost all the major States. Nearly 36,500 TB beds have been established by the end of the Fourth Plan.

10.28. In the Fifth Plan, BCG vaccine and the anti TB drugs will be supplied to State and voluntary run TB clinics by the Centre while the operational cost for the existing TB establishments, as well as provision of additional TB clinics, district TB Centres and isolation beds will be in the State Sector. A target of 75 district TB Centres and 3,500 isolation beds to meet the requirements of acutely ill and toxic patients is proposed for the Fifth Plan.

National Cholera Control Programme

10.29. Cholera is endemic in certain areas of the country especially in the States of Bihar, West Bengal, Orissa, Andhra Pradesh, Tamil Nadu, Karnataka and Maharashtra. The success of the programme is closely related to the all round improvement of the environmental sanitation, particularly, safe drinking water supply and the disposal of sewage which are to be provided on a priority basis in the cholera endemic areas of the country. The Cholera control schemes during the Fourth Plan related to the establishment of mobile medical units for demonstration and training at district level in the hyper-endemic States, strengthening of the supervisory structure and the appointment of special cholera workers in a given pattern. During the Fifth Plan 54 cholera combat teams will be established.

National Leprosy Control Programme

10.30. Leprosy is one of the major public health problems in India. The disease is mostly prevalent in rural areas. It is estimated that about 31 lakhs persons suffer from this disease and 25% of them are of the infectious type. Excepting Punjab, Chandigarh, Delhi and the Andamans, the disease is more or less endemic throughout India. It is more prevalent in the Southern and the Eastern States.

10.31. 372 million of our population are exposed to the risk of contracting leprosy and only 96 million have been covered under the control programme so far. The control programme provides medical care to leprosy patients on domiciliary ambulatory pattern through a net work of leprosy control units, survey, examination and treatment centres and training centres for personnel. During the Fourth Plan 57 control units, 342 SET

Centres and 39 upgraded subsidiary centres were established against the target of 69 control units, 423 SET Centres and 50 upgraded subsidiary centres respectively. During the Fifth Plan, it is proposed to cover the entire hyper endemic and moderately endemic areas (population 276 million) by establishment of 140 control units, 116 upgraded subsidiary centres and 7160 SET Centres.

Venereal Diseases and Trachoma

10.32. The provision for the schemes will be under the State Plans. The Central Government will supply drugs, material and equipment only. The operational cost on trachoma programme will be negligible as the distribution of the anti-biotic ointment will be done through the staff and multipurpose workers at the primary health centre and sub-centres and dispensaries etc.

National Filariasis Control Programme

10.33. About 136 million persons in the known endemic areas of the country are estimated to be exposed to the risk of Filariasis. During the Fifth Plan the emphasis will be on reduction and interruption of transmission by anti-larval measures and to reduce reservoir of infection and clinical manifestations by anti-parasitic measures and to delimit the problem of filariasis in the country.

Medical Care (Hospitals & Dispensaries)

10.34. The rural hospitals (upgraded PHCs) will provide general institutional care as well as specialised care in the disciplines of medicine, surgery, obstetrics and gynaecology. Higher referral services will be extended from sub-divisional and district hospitals. Divisions and sub-divisions without a hospital at present will, therefore, be provided with such establishments on a high priority basis. Funds will also be provided for making up the deficiencies in respect of the diagnostic and specialist services in the district hospitals.

10.35. Maintenance of hospital statistics and medical records is inadequate in a majority of hospitals in the country. These deficiencies will need to be made up and record keeping organised on a systematic basis, if necessary, in a phased manner.

Cancer

10.36. Improved diagnostic facilities and increased life expectancy have revealed a higher incidence of cancer in the country than estimated earlier. During the Fifth Plan, treatment facilities would be strengthened by the provision of Radiotherapy Units with Cobalt beam at the medical college hospitals and important district teaching hospitals to ensure a fair distribution among the population. The existing 7 cancer institutions in the country would be upgraded, and financially assisted to undertake more intensive cancer research of a higher order.

Rehabilitation Centres & Psychiatric Clinics

10.37. Rehabilitation programmes for the physically handicapped and establishment of psychiatric

clinics for the mentally ill, will continue to receive emphasis during the Fifth Plan.

Levy of Cess for Augmentation of Resources

10.38. It is recommended that a token charge for each out-patient for the first visit and a daily charge for an in-patient receiving free diet in Government run institutions be levied and the proceeds utilised for improving institutional services. Indigent and extremely poor patients may, however, be exempted from the levy of this charge.

Medical Education, Training and Research

10.39. The annual admissions in the 99 medical colleges in the country have reached the figure of nearly 12,500. The present output would be sufficient to meet doctor manpower requirements of the country during the Fifth Plan. The emphasis will be on consolidation rather than expansion of the medical education programme.

Under-Graduate Education

10.40. Teaching in medical colleges will require a radical change. The under-graduate medical education would have to be reoriented towards the need of the country and emphasis would be placed on community care rather than on hospital care. For this purpose the district hospitals, primary health centres and sub-centres will be functionally integrated with the activities of the medical colleges. In view of the importance of the family planning programme in the country, teaching in various aspects of family planning should form an integral part of education.

10.41. In order to improve the quality of under-graduate medical education, the number of admissions in a medical college need to be restricted to 100 per annum unless the increased admissions are accompanied by additional teaching facilities such as beds, equipment, staff etc. Efforts will need to be made to regularise the admissions in the medical colleges in the country on uniformly competitive basis. Suitable steps also need to be taken to bring uniformity in examination standards in the country.

Post-Graduate Education

10.42. A rationalised pattern of Post-graduate education would be worked out in order to meet the requirements of different disciplines, and to involve the Post-graduate students more actively in the community care of the people.

Dental Education

10.43. Fifteen dental colleges with an annual admission of 680 are functioning in the country. The employment opportunities in the public sector are limited. These could be expanded by extending the dental services to semi-rural and rural areas. Emphasis during the Fifth Plan will continue to be on consolidation rather than expansion of dental education.

Training Para-medical Personnel

10.44. The greatest need in the area of training of para-medical personnel is the improvement in the quality of training, proper delineation of their functions and provision of suitable career structure for them. New patterns of training will have to be tried in certain selected institutions and an assessment made of the feasibility of their introduction on a wider scale.

Research in Medical Science and Technology

10.45. To sustain health care programmes in the Fifth and future Plans, research and development inputs are needed with particular emphasis on control of communicable diseases, prevention and amelioration of mal-nutrition, control of population growth and development of more effective integrated systems of health care delivery to the people. Greater emphasis will be placed on operational and community-oriented research. The programme will be carried out in a coordinated manner by the Ministry of Health & F.P., Indian Council of Medical Research, National Committee on Science and Technology and other research institutions/organisations in the field of health research. Rs. 36.00 crores have been allocated for science and technological research programmes related to health care, family planning and nutrition, during the Fifth Plan.

Indigenous Systems of Medicine and Homoeopathy

10.46. Emphasis will be on programmes relating to Drug Standardisation and allied research to be carried out on a long term basis in the Institutes of the Central Council of Research in Indian Systems of Medicine. In the field of education, emphasis needs to be laid on quality and not quantity. The existing under-graduate colleges will be strengthened. The standard syllabii formulated by the Central Council of Indian Medicine, will be introduced as far as possible in all the colleges functioning in the country. The post-graduate departments sanctioned in the Fourth Plan will be given further Central assistance in the Fifth Plan. To develop patterns of teaching in under-graduate and post-graduate education in all its aspects, an All-India Institute of Indian Medicine is also envisaged in the Fifth Plan. Due emphasis is also to be given to accelerate the production of medicines with a view to make available potent and genuine medicines on a large scale, throughout the country, keeping an eye on stabilisation of prices.

Homoeopathy

10.47. Training and research programmes will be given a higher priority. A National Institute of Homoeopathy is proposed to be established to produce teachers and research workers in order to overcome deficiencies of teaching staff in the under-graduate and post-graduate institutions. The Central Council of Homoeopathy will be established to lay down standards of education, regulation of provision and maintenance of a Central Registry of Practitioners in Homoeopathy. For purpose of standardisation and testing of homoeopathic drugs, a

Homoeopathy Pharmacopial Laboratory will be established. Steps would be taken to set up a public sector pharmacy for the manufacture of homoeopathic drugs. The scheme for financial assistance to privately run homoeopathic colleges for improving standards of teaching will continue during the Fifth Plan.

Other Programmes

Prevention of Food and Drug Adulteration

10.48. The Drugs and Cosmetics Act (1947) and the Central Food Control Act (1955) have been in force in the country for quite some time. Effective implementation of these Acts is still lacking in many States. In order to tackle the problem of drug and food adulteration more effectively during the Fifth Plan, enforcement staff employed by the States would have to be suitably augmented to tighten the enforcement of these Acts. 10 well equipped and well organised combined food and drug testing laboratories and 40 regional food laboratories will be established. Besides, training facilities for drugs and food Inspectors and Analysts will be augmented. It is recommended that the food and drugs administrations both at the Central and State levels be merged.

Child Welfare

10.49. For the welfare of under-privileged children a number of programmes are being administered by various agencies. These efforts need coordination. As such an integrated child care services with emphasis on immunisation, health check-up and supplementary nutrition will be launched to reduce morbidity, mortality and in general, to promote the health of infants and children of the vulnerable segments of population.

School Health

10.50. There are serious deficiencies in the system of medical inspection of school children. Health measures under the school health service programmes which cover detection as well as treatment of defects among school children form part of the general services which will be made available in rural areas through primary health centres and in urban areas through the medical staff appointed at hospitals/dispensaries run by the Municipal Corporations, Municipal Bodies and the State Governments.

Health Education

10.51. Health Education plays a very significant role in promoting the preventive aspects of health, family planning and nutrition programmes. Health education will therefore, be woven into the general educational system of the country and health education material brought out in different languages for distribution among the people. In addition, other mass media will also require to be utilised for spreading the fundamentals of health education among the masses.

Aid to Voluntary Agencies

10.52. Financial assistance has been extended by the Central and State Governments to the voluntary

agencies engaged in providing medical care to the people. This has encouraged people to participate in the governmental efforts to expand the health care facilities in the country as well as to create a sense of partnership with the government among the people. During the Fifth Five Year Plan, more funds will be provided for giving grants to private organisations of all-India nature to expand.

Funding

10.53. The Health outlays of Rs. 796 crores for the Fifth Five Year Plan is distributed as under:

Table 4 : Outlays on Health Programmes

(Rs. crores)	
item	outlays
(0)	(1)
(i) central scheme (annexure I)	75.78
(ii) centrally sponsored (annexure II)	177.01
(iii) states/union territories plans including MNP	543.21
<i>total</i>	796.00

10.54. In view of the integrated approach for health, family planning and nutrition programmes during the Fifth Five Year Plan, funds being provided for family planning and nutrition programmes would also be utilised to meet part of expenditure towards strengthening P.H.Cs. and sub-centres as it is through these establishments that the integrated services would be extended to the community.

10.55. Some element of flexibility within the confines of the objectives of the policies laid down and the situation prevailing in the field would also be adopted in framing the individual schemes under health, family planning and nutrition.

10.56. The distribution of outlays for the Fourth Plan and allocations for the Fifth Plan is shown at Annexure III. Certain selected physical targets for the Fifth Plan are indicated in Annexure IV.

Employment Potential

10.57. It is estimated that additional employment opportunities for 80,000 medical and para-medical personnel are likely to be generated under health and family planning programmes during the Fifth Plan period.

II

FAMILY WELFARE PLANNING

10.58. The Census of India, 1971, shows that the population of the country was 547.59 million as on 1-4-1971. The decadal growth rate of population for 1961—71 was 24.8 per cent as compared with 21.6 per cent during 1951—61. This gives an annual geometric growth rate of 2.2 per cent during 1961—71

as against 2 per cent in 1951—61. At the present rate of growth, India's population will double in about 31 years. In absolute numbers, our population is increasing by about 12 million a year.

10.59. At our present stage of demographic transition, which denotes high birth rate and comparatively low death rate, it is necessary to accelerate the process of reduction of birth rate through massive family planning efforts. The need for such efforts has been recognised since the formulation of the First Five Year Plan in 1952. However, in the First and Second Five Year Plans the Family Planning Programme was implemented on a very limited scale. It was towards the middle of the Third Plan that the emphasis was shifted from the clinical approach to the more vigorous extension education approach for motivating the people for acceptance of the small family norm and for provisioning of services. But it was only during 1965-66 that the reorganised and expanded family planning programme started taking a concrete shape. From 1951 to 1965 only one million sterilisations were performed and the use of conventional contraceptives, particularly that of condoms was modest.

10.60. During the three years, 1966—69, the programme began to take firmer roots. The family planning infrastructure in the form of the Primary Health Centres and Sub-centres, Urban Family Welfare Planning Centres, District and State Bureaux etc. was getting strengthened. The training institutes were expanded and strengthened. A large mass education and motivation programme with the association of various media units of the Ministry of Information and Broadcasting and additional staff and other inputs in the States, started taking the family planning message to the rural and urban population. This programme used both the modern and traditional media. During this period, there was a considerable spurt in the acceptance of various family planning services. The commercial distribution of Nirodh was launched in 1968. Thus, one of eve of the Fourth Five Year Plan, the stage had been set for a vigorous promotion of family planning.

FAMILY PLANNING PROGRAMME DURING THE FOURTH PLAN

10.61. The Fourth Plan recognising the high priority of the programme made a provision of Rs. 330 crores for it. The objective laid down was to reduce the birth rate from 39 per thousand population in 1968 to 32 by the end of the Fourth Plan. To achieve this objective, protection of 28 million couples by 1973-74 was envisaged. It was decided that family planning would remain a Centrally-sponsored programme for the next 10 years and the entire expenditure would be met by the Central Government. Efforts were made to achieve enduring results through appropriate education and motivation together with the full-involvement of the general health services in the programme.

10.62. It was aimed to provide a minimum network of centres and sub-centres all over the country with more intensive attention being paid to hospitals with a large number of maternity cases and to populous

districts. Greater stress was to be laid on training, research, organisation and evaluation. The scheme for immunisation of infants and pre-school age children against diphtheria, whooping cough and tetanus, immunisation of expectant mothers against tetanus, prophylaxis against nutritional anaemia for mothers and children and nutritional programme for control of blindness caused by Vitamin 'A' deficiency were to be implemented through family planning centres to make the family planning programme more effective and acceptable. Family Planning was to be effectively integrated with general health services of primary health centres and sub-centres.

10.63. Annexure V shows the financial allocation, expenditure and some of the physical targets and likely achievements during the Fourth Plan period.

10.64. There have been significant achievements in terms of setting up the infra-structure and making supplies and services available as well as in the mass extension and motivational efforts. There have been shortfalls in other fields, particularly in the level of acceptors. This was chiefly due to the slow placement of infra-structure, lack of trained personnel and lack of staff mobility. There was also a set-back to the Intra Uterine Device programme because of factors like shortage of lady doctors especially in the rural areas and the reluctance of acceptors engendered by possibility of complications. In respect of conventional contraceptives, periodic shortages in supply contributed to shortfalls in performance.

10.65. The salient features of the programme during the Fourth Plan have been as follows :

- (a) At the beginning of the Plan, there was little integration of the programme within the health infra-structure. However, during the course of the Plan, there was increasing integration of health, family planning and maternity and child health (MCH) activities. The two doctors at the Primary Health Centre now have to perform identical duties with assignment of a certain minimum target for family planning work between them. Sub-centres whether opened under the health or family planning programme are now doing identical work. Increasingly urban centres are being located in the hospitals or these work together with MCH centres.
- (b) With the success of the mass vasectomy camps organised with higher compensation money in Ernakulum district, Kerala, such camps were organised on an experimental basis in some districts in the country in 1971-72 and further approved as part of the normal programme, in 1972-73. They attracted over 2 million acceptors of vasectomy during the latter year. The organisation of these camps helped in creating extensive mass awareness and group acceptance for the sterilisation operation. It also trained doctors and other staff in various aspects of the programme. However,

the emphasis placed on the vasectomy camps was often at the expense of the normal family planning programmes.

- (c) In-depth evaluation studies of the Family Planning Programme were undertaken by various organisations viz. Operational Research Group, Baroda; Council of Social Development; Indian Institute of Management, Calcutta, etc.
- (d) A Committee consisting of the Health Ministers of some States was set up to go into the causes of slow progress of the programme in some of the States and to suggest remedial measures. The report of the Committee has been received and the suggestions have been taken into consideration while formulating the Fifth Plan.
- (e) The Medical Termination of Pregnancy Act, 1971, came into force with effect from April 1, 1972. Its administration and implementation is monitored by the Department of Health and it has benefited the family planning programme indirectly.
- (f) With an assistance of Rs. 23 crores from the International Development Association and the Swedish International Development Authority for a period of five years, an experimental population project has been started in six districts of Uttar Pradesh and five districts of Karnataka. This project *inter-alia*, aims to try various new approaches in family planning effort and nutrition programmes and to evolve a management information-cum-evaluation system through population centres set up in these States and assisted by advisory management institutes for the quick collection of information and its analysis and feed back for necessary modification of the all-India programme. The National Institute of Family Planning, New Delhi is being associated with these projects.
- (g) The commercial distribution scheme of Nirodh has been encouraging. The sales were around 30 million pieces in 1969-70 and are expected to increase to 120 million pieces during the last year of the Fourth Plan.
- (h) Of the main new schemes started during the Fourth Plan, the post-partum scheme has produced commendable results. The Intensive District Programme has not functioned satisfactorily and it is being reviewed. The immunisation and nutritional prophylaxis schemes were slow to start with but are now gaining momentum.
- (i) After a review of the existing schemes, those which were not operating satisfactorily or had served their purpose were either scrapped or considerably curtailed. Such schemes were Mobile Service Units, Central Family Planning Corps of Doctors, stipen-

daries scheme, helpers scheme, etc.

- (j) The authority to give grants to voluntary organisations and to local authorities for running of urban centres and Auxiliary Nurse-midwife (ANM) training schools was further decentralised in favour of the States.
- (k) Concerted efforts to involve the labour organisations have been initiated by including their representatives in the Central Family Planning Council and also by the setting up of a special advisory committee on family planning relating to the organised sector.
- (l) Steps for introducing population education in the school and college curricula were initiated through the Ministry of Education and Social Welfare.

FIFTH FIVE YEAR PLAN

10.66. The programme for family welfare planning will continue to be accorded the same high priority in the Fifth Plan as it occupied in the Fourth. It will continue to be a Centrally sponsored programme upto the end of 1983-84. In the Fourth Plan the aim was to reduce the birth rate from 39 per thousand to about 32 by the end of the Fourth Plan and to 25, in another 5 to 7 years. The birth rate at the beginning of the Fifth Plan is now expected to be about 35 per 1000 population—a drop of about 4 points only, during the Fourth Plan period. In the light of this trend, it does not appear feasible to bring the birth rate down to 25 per 1000 population by the end of 1980-81.

10.67. The non-attainment of the stipulated reduction in the birth rate may largely be due to the highly ambitious targets set earlier, coupled with insufficiency of efforts to project the programme, throughout the country, as a mass movement and the rather slow build-up of infra-structure in some of the populous regions for extension efforts and provision of services. In the light of experience of the Fourth Plan and the magnitude of efforts and inputs envisaged for the Fifth Plan, it appears more realistic to aim at reduction of birth rate by 5 points i.e. to a level of 30 per thousand population by the end of the Fifth Plan and by a further 5 points to 25 per thousand population by 1983-84.

10.68. With a view to achieving the objective of reducing the birth rate to 30 per thousand population by the end of the Fifth Plan, concerted efforts will have to be made to ensure that the number of couples in the reproductive age-group (wife's age 15—44 years) protected against conception is raised to 40—42 million. This will call for a much higher level of performance on a continuing basis throughout the Fifth Plan, as compared to the Fourth.

10.69. About 15 million couples have so far been protected under the family planning programme. By

the end of the current Plan, the figure is expected to go up to 19 million. On this basis, the birth rate is likely to be reduced to the level of 35 per thousand population by the end of the Fourth Plan.

10.70. The following targets are expected to be achieved for the different methods during the Fifth Plan.

sterilisation	18.0 million
intra uterine device	5.9 million
CC users	8.8 million (in the last year of the plan)

Changes in strategy may be necessary from time to time. These may include community incentives in some places and mass camps without any extra incentives in others.

10.71. Various studies and surveys have shown that quite a few people, outside those recorded by the programme, are adopting family planning measures either by natural methods or by purchasing various contraceptive devices available in the market outside the programme or by availing of the services of private doctors for clinical and surgical contraception. The extensive Family Planning Programme in the country may contribute in part to such acceptance outside the programme. During the Fifth Plan the increased available facilities for the medical termination of pregnancy may also have some effect on the birth rate. Urbanisation and the socio-economic constraints may also partly contribute to the falling birth rate. However, all these factors are neither easily predictable nor quantifiable.

10.72. During the Fifth Plan, there will be greater accent on the quality of acceptors so as to have better demographic effect. During the later part of the Fourth Plan period, instructions were issued to the States that no male beyond the age of 50 should be covered by vasectomy for which compensation is paid. It is proposed that this upper age limit may be brought down still further and there should be concentration of efforts on couples with higher parity for their acceptance of the terminal contraceptives method. Similarly, for IUD, the focus would be on young married women with one or two children. As regards conventional contraceptives, greater emphasis will be laid on female-oriented methods. Greater stress will be placed also on enlarging the commercial distribution system of Nirodh.

STRATEGY IN THE FIFTH PLAN

10.73. The Fifth Plan approach will be to increasingly integrate family planning services with those for health, MCH, and Nutrition. Efforts will be made to convert more and more vertical programme workers into multipurpose workers who will pay special attention to purveying family planning motivation and services.

10.74. The principle of integration will also be extended to other fields and in particular, to mass motivational efforts by making fuller use of existing channels like functional literacy, workers' education, health education, special welfare and other outlets. For this the approach will be through audio-visual media, individual contacts and group contacts. Population education will also be given greater stress. The expanding TV and radio networks will be utilised to the optimum extent.

10.75. There has been a noticeable differential in the performance of different States. A number of thickly populated, but backward States have not made satisfactory progress under the programme. It may be necessary to provide higher physical and financial inputs in these States to cover the backlog and to make them improve upon their performance. Efforts will also be concentrated in those areas where quicker and more effective results are likely. The strategy will be suitably tailored to meet the special requirements of urban and rural areas.

10.76. The programme will be implemented as a truly family welfare oriented programme, by extending the scope and coverage of the immunisation and nutritional prophylaxis components so as to help reduction of the infant mortality rate and to improve the nutrition status of children in the 0—6 age-group.

10.77. A selective approach will be used to obtain optimum results from the view point of demographic effectiveness and cost effectiveness. For this purpose, the concentration of efforts will be on healthy family life, education before marriage and intensive motivation of high parity couples in the 25—35 age-group and the recently married couples. Terminal methods will be advocated for men and women who have two or more children, with special emphasis on women in the 25—35 age-group. Besides, conventional contraceptives both for males and females and the use of the IUD by females with lower parity will also be promoted.

10.78. Emphasis will be laid on community involvement by offering a package of community incentives and awards. While the practice of providing compensation to individuals for acceptance of family planning through sterilisation and IUD is proposed to be continued during the Fifth Plan, the question of continuing payments to other categories of persons like doctors will be gradually discontinued, converting these into community awards. The accent will be on quality and demographically effective work.

10.79. Efforts initiated during the Fourth Plan to involve the organised Sector, particularly the Labour organisations will be continued and further intensified during the Fifth Plan. The voluntary agencies will continue to be given a place of high importance in the implementation of the programme. They will be involved in the training and service components and also in selective motivational efforts. Action will also be taken to further involve practitioners of modern and indigenous systems of medicine.

10.80. Special stress will be laid on the work to be done in the socially backward regions including city slums and tribal areas. The Disadvantaged Area Scheme will be continued for ensuring provision of integrated health, family planning and nutrition services in difficult and distant areas.

10.81. The success of the family planning programme depends, to a considerable extent, on the development of the well qualified, trained and competent personnel and the managerial qualities of the programme administrators at each level. The training programme will, therefore, be geared to cater to these aspects. Efforts will be made to utilise more fully the Regional Family Planning Training Centres and to give periodic orientation training to the workers so as to keep them abreast of the latest development. Eighty more Auxiliary Nurse Midwife (ANM) training schools and 25 Lady Health Visitors training schools will be opened during the Plan to meet the requirements of these key field personnel.

10.82. Efforts in the field of research and evaluation will be directed towards new, simple and better methods of fertility regulation, better orientation techniques, an improved management information system, socio-economic and psychological studies for identifying individual and group motivations favouring small family, well-designed demographic studies and the feed-back of the results of research into the programme.

PHYSICAL INPUT IN THE FIFTH PLAN UNDER THE FAMILY PLANNING PROGRAMME

(i) Rural Main Centres and Sub-centres

10.83. From the experience gained in the Fourth Plan, it is proposed to strengthen the family planning service offered at primary health centres and sub-centres by progressively making it an integral part of health, M.C.H. and nutrition services. All such services will be regarded as a part of basic minimum needs which will be accorded priority. In addition to the 5250 main centres likely to be established by the end of the Fourth Plan, 101 more main centres will be opened in the Fifth Plan. The main centre building as well as the staff will form an integral part of the PHC complex. The establishment of new sub-centres will be covered by the Minimum Needs Programme for which separate provision has been made. The financial provision made under the Family Planning Programme for sub-centres will only meet the maintenance and staff expenditure of those sub-centres which have already been opened under the Family Planning Budget of the Fourth Plan.

(ii) Urban Family Welfare Planning Centres

10.84. There are at present about 1500 urban family welfare planning centres (excluding those under certain Departments) run by local bodies, voluntary organisations as well as State Governments. A special Group set up by the Department of Family Planning is examining the possibility of suitably reorienting or expanding the scope of their activity. Necessary action will be taken on the recommendations of this Group. Meanwhile an outlay of Rs. 2300 lakhs has tentatively been made for this

scheme in the Fifth Plan.

(iii) Post Partum Programme.

10.85. The All India Hospital Post-Partum Programme is a hospital based maternity centre approach to family planning. By the end of 1972-73, there were 124 institutions providing post-partum services. These consisted of 90 medical colleges, 2 post-graduate institutions and 32 large hospitals each conducting more than 3,000 obstetrics and abortion cases annually. The importance of post-partum services in the family planning programme has now been fully recognised and it is proposed to extend it to 200 more hospitals at the district level so as to cover more of rural population. Out of these, 80 will be Type A hospitals 50 Type B and 120 Type C hospitals. Those primary health centres which will be upgraded to 30 bedded hospitals will also be offering post-partum services. The total expenditure on this programme is expected to be Rs. 1,075.50 lakhs in the Fifth Plan.

(iv) Training

10.86. Given the acknowledged need to implement the family planning programme within an integrated framework of health, maternity and child health and nutrition services, training facilities will have to be considerably increased so that trained personnel become available in adequate numbers. The manpower requirements during the Fifth Plan are expected to be about 1.53 lakhs. As training facilities were not adequate in the Fourth Plan, the question of backlog of training will also have to be tackled. The total provision made for different training programmes in the Fifth Plan is Rs. 13.54 crores as compared with Rs. 6.84 crores in the Fourth Plan.

(v) Research and Evaluation

10.87. Research in the fields of bio-medicine, demography, population studies and communication action having a bearing on family planning, immediate or otherwise, is financed by the Department of Family Planning. Research activities are now undertaken by several institutions in the country. During the Fifth Plan two new demographic research centres are proposed to be set up.

10.88. Bio-medical research in the field of human reproduction is being conducted under the auspices of various agencies, such as the Indian Council of Medical Research, the Central Drug Research Institute, Lucknow, various universities and research institutions etc. In the Fifth Plan, the objective will be to achieve improvements in contraceptive technology involving conventional methods, steroids, intra-uterine devices, abortifacients and sterilisation and the development of newer methods of conception control based on a better understanding of the biology of the reproductive process in general, both in the male and the female. The research is financed by the Central or State Governments and in a few cases by international agencies. The Central Council of Research in Indian Medicine and Homeopathy also has been working on indigenous and homeopathic anti-fertility agents. Two more pharmacological units are being set up under the Council.

10.89. As in the Fourth Plan, contributions are proposed to be made to the two international agencies viz., United Nations Fund for Population Activities (UNFPA) and International Union for Scientific Study of Population (IUSSP) as the country's continued association with such bodies has been found to be of mutual benefit. Accordingly, a provision of Rs. 93.75 lakhs has been made for contribution to the UNFPA and Rs. 75,000 to the IUSSP for the Fifth Plan period. It is expected that the UNFPA assistance will be about \$ 5 million during the first year of the Plan.

10.90. Total provision for Research and Evaluation in the Fifth Plan is about Rs. 14.32 crores as compared to an estimated expenditure of Rs. 5.69 crores in the Fourth Plan.

(vi) Transport

10.91. Inadequacy of transport has been one of the serious bottlenecks in the family planning programme. In the Fourth Plan the requirements of vehicles were estimated at 7811 for the family planning Programme, and 1250 from the UNICEF under the health programme. However, only 3040 vehicles could be procured for the family planning programme and 600 from the UNICEF. Repair and maintenance facilities made available during the Fourth Plan amounted to only 25 per cent of the optimum requirements. In the Fifth Plan it is proposed to expand repair and maintenance facilities in the State by providing capital assistance to cover the cost of workshop and office buildings and a part of the cost of machinery, equipment and tools. This will cost Rs. 2090 per vehicle. A part of such assistance is to be borne by the UNICEF.

10.92. Outlay on transport in the Fifth Plan may be summed up as follows :

	(Rs. lakhs)
item	outlay
1 Vehicles (maintenance & procurement)	2400.00
2 State Health Transport Corpn.	329.30
3 Central Health Transport Corpn.	87.00

(vii) Conventional Contraceptives

10.93. Nirodh and other conventional contraceptives are distributed under three schemes viz.,

- (i) Commercial Distribution Scheme
- (ii) Free Supply Scheme.
- (iii) Depot Holders Scheme.

Commercial Distribution Scheme.

In the Fifth Plan the target has been set at 1250 million pieces, out of which 480 million pieces are expected to be procured indigenously at Rs. 700 lakhs and the rest which will cost Rs. 815 lakhs is expected as free gifts from the Swedish International Development Authority and the U.N. Fund for Population

Activity. The outlay requirements for this programme are as under :

	(Rs. lakhs)
item	outlay
1 Indigenous procurement of Nirodh	700
2 Foreign Exchange for import of Nirodh	815
3 Publicity and miscellaneous	330
4 total	1715

Free supply and Depot. holders scheme.

10.94. In the Fifth Plan it is proposed to withdraw the free supply scheme from urban areas and to restrict the practice to rural areas. It is estimated that Rs. 1750 lakhs will be required for the Plan period as a whole, made up as follows :—

	(Rs. lakhs)
item	outlay
(1) Nirodh 1130 million	1360
(2) Conventional contraceptive	150
(3) Import of Nirodh 190 million	340
4 total	1750

(viii) Maternity and Child Health

10.95. The maternity and child health services in the family planning programme in the Fourth Plan include the immunisation of infants and pre-school children against diphtheria, whooping cough and tetanus, and expectant mothers against tetanus and also prophylaxis against nutritional anaemia among mothers and children and blindness in children caused by Vitamin 'A' deficiency. In the Fourth Plan, as compared with the target for immunising 72.50 lakh children and 12.32 lakh mothers, only about 40 lakh children and 9 lakh mothers will be covered. As regards expenditure, only funds for the purchase of the vaccine had been provided but in the Fifth Plan some additional provision for manpower, maintenance of health cards, refrigeration facilities, etc. of Rs. 15 crores has also been made.

(ix) India Population Project

10.96. In June, 1972, agreement was signed between the Government of India and the State Government of Uttar Pradesh and Karnataka with the International Development Association and the Swedish International Authority to launch experimental projects in six districts of Uttar Pradesh and five districts

of Karnataka. Under the agreement the international Development Association is giving a credit of \$ 21.2 million and the Swedish International Development Agency \$ 10.6 million over a period of 5 years totalling about Rs. 23 crores. The Govt. of India is to finance all regular operating costs. The main purpose of this programme is to implement a maternity based family planning programme both in urban and rural areas, and to integrate family planning with maternity and child health services at various levels.

10.97. During 1972-73, Rs. 22.83 lakhs and Rs. 2.12 lakhs were spent on this project in Uttar Pradesh and Karnataka respectively. For 1973-74 the Uttar Pradesh Government has proposed Rs. 202 lakhs and Karnataka Rs. 80 lakhs. These add up to Rs. 282 lakhs. The balance of about Rs. 1950 lakhs is being provided in the Fifth Plan.

(x) Mass Education

10.98. Mass education is a very effective step for creating a favourable attitude to the small family norm all over the country. The major instruments of mass education are the radio, films and television. Experience has shown that where mass education is intensified, as has been done in several areas, the number of acceptors rises at a much faster pace. In the Fifth Plan period, it is proposed to utilise the TV medium on a substantial scale. For this work an outlay of Rs. 105 lakhs has been indicated. The total outlay proposed is Rs. 22,00 lakhs. Its breakdown is as follows :

item	outlay (Rs. lakhs)
1. states	1100
2. I & B (information & broadcasting)	735
3. m. e. m. (mass education media)	365
4. total	2200

OUTLAY IN THE FIFTH FIVE YEAR PLAN

10.99. An outlay of Rs. 516 crores has been provided in the Fifth Plan for the Family Welfare Planning Programme.

10.100. Annexure VI gives a summary of the Plan outlay for the Programme in the Fifth Five Year Plan and Annexure VII gives a schemewise break-down of Rs. 516 crores.

III

NUTRITION PROGRAMME

10.101. The Fourth Five Year Plan attempted to frame a coordinated nutrition programme. It observed that "where so many are under-nourished, more food is the first step towards better nutrition". The Plan had, therefore, visualised stepping up of agricultural production along with animal husbandry and fisheries as the basis of all effort in nutrition. At the same

time specific programmes of nutrition having impact in the short run were given high priority. In formulating them the following considerations were kept in view :

- (i) since resources were limited, it was necessary to establish priorities with references to needs, classes and areas ;
- (ii) it was important to improve the efficiency, and extend the coverage of the organisations which served the needs of the priority age groups, classes and areas ; and
- (iii) programmes of distribution needed to be supported wherever this was necessary by programmes of production, processing and supply.

The efforts started in the Fourth Plan for framing a coordinated nutrition programme will be further intensified in the Fifth Five Year Plan.

Review of Fourth Plan Schemes

10.102. As many as 40 schemes of nutrition were implemented during the Fourth Five Year Plan. The Nutrition Programmes implemented in the Fourth Plan were under the following broad categories :

- (a) Supplementary Feeding Programmes ;
- (b) Production, Processing and Supply Schemes ;
- (c) Nutrition Education and Extension Programmes ; and
- (d) Health-based Nutrition Programmes.

The total outlay of all Nutrition Programmes in the Fourth Plan is expected to be of the order of Rs. 100 crores.

Feeding Programmes

10.103. The two important Feeding Programmes included in the Fourth Five Year Plan were the mid-day meals feeding programmes for school going children and the special nutrition feeding programmes for pre-school children, lactating mothers and pregnant women in slum, tribal and drought prone rural areas

The mid-day meals feeding programmes of school children which covered about 11 million children in 1968-69 was envisaged to extend to 14 million children by the end of the Fourth Five Year Plan. The coverage so far reached under the mid-day meals programmes is only of the order of 12 million beneficiaries including about 1 million beneficiaries belonging to the pre-school age group. The physical targets envisaged in the Fourth Five Year Plan may not, therefore, be reached for the mid-day meals programmes. The Department of Social Welfare has formulated a Special Feeding Programme for pre-school children in the age group of 0 to 3 years in

tribal areas and slum areas of metropolitan cities. The programme was launched in 1970-71 and was later on extended to children in the age group of 3-6 years and pregnant and lactating mothers. The Nutrition Supplement consists of 300 calories and 10 to 15 grams of protein for children and 500 calories and 20 grams of protein for pregnant women and lactating mothers. Feeding of children is undertaken for 300 days in a year as against 200 days for the school going children under the mid-day meals scheme. So far about 38 lakh beneficiaries have been covered under this scheme through about 28,000 feeding centres operating in various parts of the country.

Production Processing and Supply

10.104. In the list of programmes for supply of foods, specially for supplemental feeding programmes, plan support for expansion of activities of modern Bakeries, a public sector undertaking, may be mentioned. So far, nine units of Modern Bakeries have been set up in the country with an annual production capacity of about 100 million standard loaves. Another important scheme for production of nutritious foods for supplemental feeding programmes is the production of Balahar. The revised Fourth Five Year Plan includes a provision of Rs. 6.45 crores for the production of 1.65 tonnes of Balahar. Till the end of 1972-73, about 38,000 tonnes of Balahar have been produced for various supplemental feeding programmes. Bal Amul, a pre-cooked weaning food, is being produced in collaboration with Kaira District Milk Producers Union, Anand. The production of Miltone, a protein-isolate toned milk from groundnut is in progress at the Government Dairy, Bangalore. The total quantity of Miltone, produced till 1972-73 has been about 7.20 lakh litres. Two more units are expected to go into production at Hyderabad and Earnakulam before the end of the Fourth Five Year Plan.

Fortification of Wheat Atta

10.105. Fortification on a pilot scale in regard to wheat flour in selected urban areas has been taken up in the Fourth Plan. The total production of fortified atta upto December, 1972, has been estimated to be about 53,000 tonnes in Bombay and Calcutta.

Nutrition Education

10.106. Nutrition education involving dissemination of knowledge regarding proper food habits has a significant role in facilitating optimum use of food resources available. In the Fourth Plan, Nutrition education is being promoted through several programmes. The principal scheme is a continuous one, known as the Applied Nutrition Programme. It is expected that 450 new blocks will be covered under the programme as envisaged in the Fourth Five Year Plan.

Health-based Nutrition Programme

10.107. Children in the age group 1-5 years are given a large dose of Vitamin 'A' under the scheme initiated

for control of blindness once in every six months. Vitamin 'A' solution was supplied to about 11 lakh beneficiaries under this scheme till the end of 1971-72. Upto the end of 1971-72, about 10 lakh beneficiaries were covered in the scheme for distribution of iron and folic acid supplementation for nutrition anaemia among mothers and children.

Approach to the Fifth Five Year Plan

10.108. Care of pregnant women, lactating mothers and pre-school children is included as an essential part of Minimum Needs Programme. The Approach Document to the Fifth Five Year Plan has stated: "In order to attack the problem of mal-nutrition at its root, it will be necessary to take care of pregnant women, lactating mothers and pre-school children of the weaker sections. It is a gigantic problem requiring colossal resources". It is proposed to extend the Nutrition Programme substantially during the Fifth Year Plan period so as to create better nutrition facilities for pregnant women, lactating mothers, pre-school children and school children of weaker sections.

10.109. Augmenting food production and economic uplift of the population are the two major steps that will improve the nutritional status of the community. While this object may be considered as a long term one, immediate steps will have to be taken to ameliorate existing mal-nutrition. The three important nutritional deficiencies which need to be immediately combated are (i) calorie-protein deficiency; (ii) iron deficiency; and (iii) Vitamin 'A' deficiency. Calorie-protein deficiency can be combated by providing food supplements so that this deficit in calorie intake is bridged. The case for feeding programmes rests on this main argument. Since the entire population living below the poverty line cannot be covered by such a programme, some selected sections of the population among whom mal-nutrition is most widespread are the obvious choice for such a programme. It is anticipated that during the Fifth Plan, the coverage under the mid-day meals programme will go up from 12 million at the end of the Fourth Plan to 16.5 million by the end of the Fifth Plan and Special Nutrition Programme from 3.8 million at the end of the Fourth Plan to about 10 million at the end of Fifth Plan.

Integrated Approach

10.110. The Committee on Pre-School Feeding Programmes has examined in detail the supplementary feeding programmes in operation in the Fourth Five Year Plan. One of the suggestions made by the Committee is that in organising the feeding programmes for vulnerable sections of the population, a package approach is advisable. Such an approach may provide services such as health care, immunisation etc. It is accordingly proposed that in the Fifth Five Year Plan, feeding programmes will be integrated with health and welfare programmes to form a composite package which will include apart from feeding, minimum health care, immunisation and improvement in environmental sanitation. The

mutually re-enforcing effect of such of the components of these packages will ensure an impressive total effect on the community.

Locally Available Foods

10.111. The main element in the cost of a feeding programme is the cost of food. Whilst in some areas, on account of inaccessibility, or non-availability of local foods, the use of processed and semi-processed local foods is inescapable, in other areas, it may be desirable to use locally available foods as these tend to minimise the cost of transportation and are also generally acceptable to the local community. The National Institute of Nutrition has already developed some nutritional recipes based on locally available foods. The main problem in utilising local foods is generally that of storage and preservation. It is, therefore, necessary to develop preservation and packaging techniques which would enable the maximum utilisation of local foods. Simple preservation techniques could increase the scope for the utilisation of seasonal vegetables and of such popular foods such as "Gur-Chana", "Til Gur" and "Gajak".

Nutrition Development Corporation

10.112. As an important steps towards achieving self-sufficiency in feeding programmes, it is proposed to set up a Nutrition Corporation under the Union Department of Food charged with the responsibility of producing nutritious foods for the Supplementary Feeding Programmes during the Fifth Five Year Plan. It is proposed to make the State Governments active partners in setting up this Corporation so that local capacity for production of nutritious foods, whether under the State or cooperative sector, could be developed and utilised to the fullest extent. It is necessary to refer briefly to some of the items of processed and semi-processed foods proposed to be produced during the Fifth Plan period. Production of Balahar may have to be increased from the present level of about 30,000 tonnes per annum to about 2.5 lakh tonnes per annum during the Fifth Five Year Plan. It is proposed to set up about 50 units for production of Miltone in cooperation with the existing dairies in different parts of the country. It will also be necessary to set up a chain of Modern Bakeries to cater to the different areas and to meet the total requirements of the Nutrition Programme in the Fifth Five Year Plan.

10.113. The progress of the Applied Nutrition Programmes was reviewed in depth in the context of the preparation of the Fifth Five Year Plan. It is expected that some applied nutrition blocks would be covered under the integrated child care services projects to be taken up in the Fifth Five Year Plan. It is proposed to extend the programme to 700 new blocks in the Fifth Five Year Plan.

Research and Surveys

10.114. The Committee on Pre-School Feeding Programmes has drawn attention to the lack of data of non-medical nature in the field of nutrition. It is necessary that adequate emphasis is given to research

efforts in the development of nutrition in the Fifth Five Year Plan, particularly in the field of nutrition education, food habit surveys, commercial production of weaning foods and take home feeding experiments. The operational difficulty of take home distribution is currently being surveyed by the project Poshak in Madhya Pradesh. The programme covers a sample of 16,500 pre-school children and 4,000 pregnant and lactating mothers in 10 tribal and 2 non-tribal districts of that State using the facilities of 88 primary health centres and 210 sub-centres. Similar surveys are also being conducted by the Tamil Nadu Nutrition Project. It will be necessary to undertake more such pilot studies regarding the possibilities of take home feeding programmes in the Fifth Five Year Plan and other aspects of production of food for supplementary feeding programmes.

Evaluation

10.115. The absence of baseline studies has made the evaluation of on-going Nutrition Programmes extremely difficult. It is, therefore, necessary that baseline studies should be undertaken immediately for all major Nutrition Programmes, wherever they are not available. It is proposed to provide for internal as well as external evaluation of all major nutrition programmes in the Fifth Five Year Plan. Evaluation work would be entrusted to a group consisting of representatives of the department implementing the programme, National Institute of Nutrition and outside experts representing the disciplines of nutrition and social sciences.

Coordination

10.116. Several departments of the Union Government and State Governments are involved in implementing nutrition programmes. It is, therefore, necessary that there should be systematic communication, consultation and coordination among them. To ensure adequate overall coordination, evaluation and monitoring of nutrition programme at the Centre, it is proposed to set up a Central Coordination Committee in the Planning Commission in the Fifth Five Year Plan. This Committee will maintain appropriate liaison with the State Governments and provide a forum for systematic communication and consultation among the Central Ministries and with the State Governments. At the State level, Coordination Committees for Nutrition Programmes have already been set up in most States at the instance of the Planning Commission. These Committees would continue to provide for a pooling of financial resources for nutrition at the State level as also coordinated implementation of the nutrition programmes. Certain State Governments plan to set up Nutrition Departments/Directorates, which would create a 'Nutrition Bank' inasmuch as all the financial and physical resources which flow into the Nutrition Programmes will come under the aegis of one agency. This idea would be further pursued in the Fifth Plan.

10.117. An outlay of Rs. 405 crores is provided for Nutrition Programmes in the Fifth Five Year Plan, as given in Annexure VIII to this chapter.

ANNEXURE I

Statement Showing Outlay Proposed for Fifth Five Year Plan for Central Plan Schemes—Health

(Rs. lakhs)

scheme	outlay	scheme	outlay
(o)	(l)		
I. control of communicable diseases		III. medical care	
tuberculosis		26. expansion of Willingdon Hospital	100.00
1. N.T.I. Bangalore	20.00	27. expansion of Safdarjung Hospital, expansion of rehabilitation centre, Safdarjung hospital	100.00
2. expansion of BCG vaccine lab. Guindy	50.00	28. M.M.D. Ranchi	35.00
venereal diseases		29. C.G.H.S.	750.00
3. stipends to trainees	2.00	30. Grants to voluntary organisations	300.00
leprosy		31. setting up of hospital and dispensaries in rural areas on one third basis	200.00
4. expansion fo C.L.T.R.I., Chingleput	25.00	32. A.I.I. speech & hearing, Mysore	50.00
total (I)	97.00	33. A.I.I. phy. medicine & rehabilitation, Bombay	40.00
II. education, training & research		34. cancer research & treatment	300.00
(a) undergraduate medical education		35. improvement of hospital facilities in Delhi	100.00
5. National Medical Library, Delhi	15.00	36. rehabilitation	408.00
6. Lady Hardinge Medical College and Hospital, New Delhi	180.00	37. development of super specialities	236.00
7. Kalavati Saran Children Hospital, Delhi	25.00	38. Rural Medical Relief Pilot project	30.00
8. Delhi University Medical College	300.00	total (III)	2649.00
9. Kasturba Medical College, Sevagram	50.00	IV. other programmes	
10. Reorientation of Medical Education	225.00	39. health education	10.00
11. Assistance to Meerut Medical College	75.00	40. goitre	56.00
(b) post - graduate medical education		41. nutrition	
12. A.I.I. Medical Sciences, New Delhi	200.00	feasibility test of vitamins and minerals fortification of staple food	3.00
13. Dr. Rajendra Prasad ophthalmic centre	50.00	development of central institutes	
14. post-graduate medical institute, Chandigarh	150.00	42. C.R.I. Kasauli	75.00
15. JIMPER, Pondicherry	150.00	43. separate research wing of C.R.I., Kasauli	100.00
16. Stipends to post-graduate students	125.00	44. rural health research training centre, Najafgarh	10.00
17. V.P. Chest Institute, Delhi	50.00	45. A.I.I. of Hygiene & Public Health, Calcutta	20.00
18. A.I.I. Mental Health, Bangalore	50.00	46. N.I.C.D. Delhi	75.00
19. establishment of regional workshops	50.00	47. drugs standard control	107.00
(c) medical research		48. prevention of food adulteration	35.00
20. I.C.M.R.	900.00	49. standard drugs production at reasonable prices	500.00
21. other research	272.50	50. health intelligence	12.50
22. Operational Research on Health Care Delivery	100.00	51. serologist & chemical adviser to government of India	15.00
(d) nursing education		total (IV)	1018.50
23. establishment of permanent building for college of nursing	15.00	V. I.S.M.	
24. Hostel for Lady Reading Health School, Delhi	1.00	52. ISM including homoeopathy	800.00
(e) Training		grand total	7578.00
25. NIHAЕ	30.00		
total (II)	3013.50		

Note: Total research component under various programmes under Health, Family Planning and Nutrition is Rs. 36 crores viz. Rs. 14.3 crores under Family planning; Rs. 2.0 crores under Nutrition (Evaluation) and 19.7 crores under Health (ICMR) Rs. 9.0 crores; other programmes Rs. 2.7 crores; Operational Research on Health care delivery Rs. 1.0 crore; Cancer Rs. 3 crores Research wing at CRI Kasauli Rs. 1.0 crore; RHRTC, Najafgarh Rs. 0.1 crore; Communicable diseases Rs. 1.4 crores; Research component of Medical Institutes, NIHAЕ; AIIMS; PGI (Chandigarh; JIPMER etc. Rs. 1.5 crores).

Fifth Five Year Plan Centrally Sponsored Schemes

(Rs. crores)

programme	fourth five year plan			fifth Five year plan		
	earlier outlay	revised outlay	anticipated exp	total	central share	states share
(0)	(1)	(2)	(3)	(4)	(5)	
A. control of communicable diseases						
(a) NMEP (rural)	70.00	89.44	72.73	84.92	84.92	—
(b) NMEP (urban)	2.20	3.75	0.61	11.79	11.79	—
(c) NSEP	16.20	16.20	9.97	17.50	17.50	—
(d) leprosy	5.12	8.01	2.48	10.52	10.52	—
(e) T.B.	22.50	18.04	8.00	17.57	8.25	9.32
(f) V.D.	1.02	0.76	0.34	2.89	0.25	2.64
(g) cholera	2.00	2.00	1.09	2.50	1.50	1.00
(h) trachoma	0.20	1.95	0.91	2.75	2.75	—
(i) filaria	5.50	4.88	2.15	9.85	5.00	4.85
total (A)	125.29	144.83	98.28	160.29	142.48	17.81
B. medical education, training & research						
(a) post-graduate medical education	5.00	5.40	2.55	—	—	—
(b) training of physio-therapists and occupational therapists, etc.	0.24	0.24	0.07	0.13	0.13	—
(c) training of multipurpose health workers	—	—	—	8.00	8.00	—
(d) postgraduate education in general practice	—	—	—	1.00	—	—
total (B)	5.24	5.64	2.62	9.13	9.13	—
C. medical care						
(a) integration of health & fp workers	—	—	—	14.65	14.65	—
(b) strengthening of PHC's with basic services	43.98	19.00	7.65	—	—	—
total (C)	43.98	19.00	7.65	14.65	14.65	—
D. i s m						
(a) estt. of ISM pharmacies including herbal farms	—	—	—	2.30	2.30	—
(b) assistance to post-graduate deptts. upgraded	1.50	1.50	0.55	2.20	2.20	—
total (D)	1.50	1.50	0.55	4.50	4.50	—
E. other programmes :						
(a) school health	—	—	—	1.00	1.00	—
(b) combined food & drug labs	—	—	—	3.50	3.50	—
(c) regional food labs.	—	—	—	0.75	0.75	—
(d) estt. of psychiatric clinics	0.50	0.50	0.13	1.00	1.00	—
total (E)	0.50	0.50	0.13	6.25	6.25	—
grand total (A+B+C+D+E)	176.51	171.47	109.23	194.82	177.01	17.81

ANNEXURE III

Fifth Five Year Plan 1974-79 Outlays Health Programmes

(Rs. crores)

programme	fourth five year plan			fifth five year plan		
	approved outlay	anticipated expenditure	total	purely central	centrally sponsored	states/union territories
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. minimum needs programme	76.49	34.27	291.47@	—	—	291.47@
2. control of communicable diseases	127.01	99.26	168.61	0.97	142.48	25.16
3. hospitals and dispensaries	88.29	82.66	155.28	26.49	14.65	114.14
4. medical education and research	85.29	78.74	94.56	29.84	1.00	63.72
5. training programme	12.93	7.25	17.20	0.30	8.13	8.77
6. ISM & homoeopathy	15.83	15.09	28.07	8.00	4.50	15.57
7. other programmes	27.69	26.64	40.81	10.18	6.25	24.38
8. total	433.53	343.91	796.00	75.78	177.01	543.21

@Excluding union territories

Fifth Five Year Plan—Health Sector Sectoral Physical Targets—Health Sector

items	fourth plan			fifth plan	
	position at the beginning of fourth plan 1968-69	targets (ad-ditions)	likely position at the end of fourth plan (1973-74)	targets (ad-ditional)	likely position at the end of fifth plan (1978-79)
(0)	(1)	(2)	(3)	(4)	(5)
A. minimum needs programme					
1. primary health centres	4919	508	5250	101	5351
2. sub-centres	22826	10174	33000	11036	44036
3. rural hospitals . . . . .	..	..	..	1293	1293
B. medical colleges (nos.)					
annual admissions (,,)	93	10	99	..	99
11500	1500	12500	500	13000	
C. manpower					
1. doctors	102520	35410	138000	38000	176000
2. nurses	61000	27000	88000	35000	123000
D. hospital beds					
255700	25900	281600	40000	321600	
E. communicable diseases					
1. national malaria eradication programme					
(i) rural (no. of units)					
attack phase	112.985	30.00 ₁	97.409	20.00 ₁	20.00
consolidation phase	70.285	93.25 ₁	66.31	73.25 ₁	73.25
maintenance phase	209.990	270.00 ₁	229.531	300.00 ₁	300.00
total	393.25	393.25 ₁	393.25	393.25	393.25
(ii) urban malaria (towns)					
..	..	28	104	132	
2. national smallpox eradication programme					
(i) primary vaccinations (in millions)					
..	179	121 _†	151	..	
(ii) revaccinations (,,)					
..	502	348 _†	605	..	
2. tuberculosis					
(i) distt. TB centres	170	125	278	75	353
(ii) demonstration training centres	15	2	17	..	17
(iii) TB isolation beds	35000	2500	36500	3500	40000

₁ Targets for phasing under NMEP for 1973-74 & 1978-79.

_† Anticipated achievements under NSEP during Fourth Plan.

Family Planning Programme

Table 1—Allocation and Expenditure

year	(Rs. lakhs)	
	allocation	expenditure
(0)	(1)	(2)
1969-70	4200.00	3618.42
1970-71	5200.00	4890.43
1971-72	6060.46	6175.56
1972-73	7465.44	7619.93
1973-74	5345.00	5345.00
<i>total</i>	28270.90	27649.34

Table 2—Physical Targets and Achievements

item	position as on 1-4-1969	fourth plan	
		target (cumulative)	achievement (likely)
(0)	(1)	(2)	(3)
1. district FP bureau	303	335	335
2. rural FWP centres	4326	5250	5250
3. rural sub-centres (Health & F.P.)	22826	31752	32217
4. urban FWP centres	1797	1856	1952
5. a. FP training centres (including central institutes)	48	51	49
b. ANM training schools	337	391	342*
ANM training seats	..	1500	565
		(addl.)	
c. LHV training schools	18	22	25
LHV training seats	..	576	65
6. no. of intensive districts to be covered	..	17	17
7. Post-partum centres	..	59	124
8. Indigenous production of Nirodh (million pieces)	..	1200	600
9. sterilisation beds	951	4251	6000
10. vehicles at RFWP centres at PHCs	..	5000	2932
11. SHTO	..	18	NA
12. medical officers (RFWPC)	n.a.	5225	2992
13. ANMs (health & FP)	20583	60000	50225
14. LHVs (health & FP)	3412	15700	10000
15. MCH programme			
(a) immunisation of infants and pre-school age children against diptheria whooping cough and tetanus	..	72.50 lakhs	40.00 lakhs
(b) immunisation of expectant mothers against Tetanus	..	12.32 lakhs	9.00 lakhs
(c) prophylaxis against nutritional anaemia among mothers and children	..	180.00 lakhs	41.42 lakhs@@
(d) nutritional programme for control of blindness among children due to vitamin A deficiency	..	120.00 lakhs	31.24 lakhs@@

*54 ANM training schools had been discontinued in the beginning of the Fourth Five Year Plan.

@@ These figures are based on incomplete data.

(0)	(1)	(2)	(3)
No. of constructed Buildings			
16. Main centres	90	3357	2500
17. Sub-centres	360	11557	11800
18. Regional FP training centres	3	37	26

Table 3:—Targets and Achievements in the Fourth Plan

	targets	achievements
1. sterilisation (million)	15	10
2. IUD insertions "	6.6	2.4
3. conventional contraceptive users "	10	4.1
4. no. of couples protected (cumulative) "	28	19
5. birth rate (per 1000 population).	32	35

ANNEXURE VI

Summary of Plan Outlay for Family Planning Programme during the Fifth Five Year Plan (1974-79)

(Rs. lakhs)

	estimated expenditure fourth plan	plan outlay (1974-79)					total
		1974-75	1975-76	1976-77	1977-78	1978-89	
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. service and supplies.	22790.71	5973.00	7611.32	8851.93	9761.00	10056.05	42253.30
2. training	683.79	203.40	238.50	293.00	304.50	314.30	1353.70
3. mass education	1220.04	410.50	460.50	450.50	432.00	446.00	2200.00
4. research and evaluation	569.33	195.87	251.12	300.72	321.80	362.99	1432.50
5. World Bank project	104.00	515.00	617.00	499.00	225.00	94.00	1950.00
6. maternity and child health	173.76	270.60	356.85	263.45	285.25	323.85	1500.00
7. organisation	610.62	141.10	160.60	180.10	200.60	228.10	910.50
total	27649.34@	7709.47	9695.89	10838.70	11530.15	11825.79	51600.00

@Inclusive of Rs. 1497.09 Lakhs for which schemewise details are not available.

Foreign Exchange Requirements.

1. H.I.L.	Rs. 10.00 lakhs
2. Transport	Rs. 0.50 lakh
3. Nirodh	Rs. 1055.00 lakhs
total	Rs. 1065.50 lakhs

Statement showing break up of the Fifth Plan Outlay for Family Welfare Planning Programme

(Rs. lakhs)

scheme	states & union territories	central sector	total
(0)	(1)	(2)	(3)
<i>I. service & supplies</i>			
1. rural F.W.P. centres	11000.00	—	11000.00
2. rural Sub-Centres	4492.30	—	4492.30
3. construction of buildings	2490.00	—	2492.30
4. urban F.W.P. centres	2300.00	—	2300.00
5. city F.P. bureaux	37.50	—	37.50
6. distt. F.P. bureaux	2700.00	—	2700.00
7. static sterilisation units	15.00	—	15.00
8. sterilisation beds.	750.00	—	750.00
9. supply of surgical equipment to F.W.P. centres.	120.00	—	120.00
10. post-partum programme	1058.70	16.80	1075.50
11. intensive distt. and selected area	150.00	—	150.00
12. disadvantaged area scheme	65.00	—	65.00
13. compensation	10000.00	—	10000.00
14. transport			
(a) vehicles	2400.00	—	2400.00
(b) S.H.T.O.	329.00	—	329.00
(c) C.H.T.O.	—	87.00	87.00
15. ministry of			
(a) defence	—	125.00	125.00
(b) railways	—	250.00	250.00
(c) D.G.P & T.	—	2.00	2.00
(d) labour & employment	—	150.00	150.00
16. conventional contraceptives	1750.00	—	1750.00
17. commercial distribution of conventional contraceptives.	—	1715.00	1715.00
18. Hindustan Latex Ltd.	—	250.00	250.00
19. <i>sub-total</i>	39657.50	2595.80	42253.30
<i>II. training</i>			
20. regional training centres	400.00	—	400.00
21. training of A.N.Ms.	757.50	—	757.50
22. training of L.H.Vs.	100.00	4.00	104.00
23. training of Dais.	40.00	—	40.00
24. orientation training of medical I.S.M. & homoeopath practitioners.	25.00	2.00	27.00
25. family planning training and research centre, Bombay.	—	25.00	25.00
26. stipend to medical students.	—	0.20	0.20
27. <i>sub-total</i>	1322.50	31.20	1353.70
<i>III. mass education</i>			
28. M.E.M. in states	1100.00	—	1100.00
29. Ministry of I & B	—	735.00	735.00
30. M.E.M. division, department of family planning.	—	365.00	365.00
31. <i>sub-total</i>	1100.00	1100.00	2200.00

scheme	states & union territories	central sector	total
<i>IV. research and evaluation</i>			
32. demographic & communication research	22.00	128.00	150.00
33. N.I.F.P., New Delhi	—	275.00	275.00
34. I.I.P.S., Bombay	—	68.00	68.00
35. experimental projects.	50.00	45.00	95.00
36. Bio-Medical Research	—	750.00	750.00
37. India's contribution to UNFPA and IUSSP.	—	94.50	94.50
38. <i>sub-total</i>	72.00	1360.00	1432.50
39. World Bank project	1891.00	59.00	1950.00
<i>V. M.C.H.</i>			
40. immunisation programme	1000.00	—	1000.00
41. nutritional programme	500.00	—	500.00
42. <i>sub-total</i>	1500.00	—	1500.00
<i>VI. organisation</i>			
43. state level organisation	550.00	—	550.00
44. technical wing, deptt. of F.P.	—	160.00	160.00
45. regional & other offices	—	190.00	190.00
46. awards.	—	5.00	5.00
47. discretionary grant.	—	0.50	0.50
48. seminars, conference etc.	—	5.00	5.00
49. <i>sub-total</i>	550.00	360.00	910.50
50. <i>total</i>	46093.00	5507.00	51600.00

APPENDIX VIII

Outlay for Nutrition Programmes

(Rs. crores)

name of programme	sector	estimated outlay
(0)	(1)	(2)
1. programmes of the department of food (pilot projects, food production and processing, research etc.).	central A provision of Rs. 2 crores is earmarked for evaluation of all major nutrition programmes from this allocation.	50.00
2. programmes of the department of community development.	centrally sponsored	20.00*
3. programmes of the department of health & family planning (supplementation of vitamin 'A', iron & folic acid).	centrally	5.00
4. programmes of the department of education—mid-day meals programmes.	state sector	112.00**
5. supplementary feeding programme for children in the age group 0-6, pregnant women, and lactating mothers in tribal areas, urban slums and chronically drought prone areas.	state sector	218.00
<i>total</i>		405.00

*Excluding provision for integrated child care services which is being shown in the Social Welfare Sector.

**Excluding CARE assistance which is likely to continue at the 1973-74 level in the Fifth Plan.

Urban Development, Housing and Water Supply

I

REGIONAL AND URBAN DEVELOPMENT

Introduction

THE 1971 Census has once again highlighted the growing phenomenon of urbanisation as an inescapable feature of a developing economy. During the decade 1961-71, whilst the overall population grew by 24.66 per cent, the urban population increased by 38 per cent. The increase for towns with a population of 1 lakh and above was 49 per cent. During the four decades 1931-71, the urban population in such towns has increased six-fold, namely, from 9.5 millions in 1931 to 57 millions in 1971 and with a corresponding increase in the number of towns from 35 to 142.

Fourth Plan—A review of

11.2. The first significant step in urban development was taken in the Third Plan when a scheme was included in the Central Sector for hundred per cent Central assistance to the States for the preparation of Master Plans for selected important areas. While this scheme was discontinued in the Fourth Plan, a provision of Rs. 70.8 crores was made for the urban development sector as a whole of which Rs 70 crores was in the State Plans. The provision of Rs. 80 lakhs included in the Central Sector consisted of Rs. 50 lakhs for the Town and Country Planning Organisation for the preparation of inter-State Plans and Rs. 30 lakhs for training and research in local self-Government. The Fourth Plan reiterated the need for a more balanced spatial distribution of economic activity. It laid emphasis on the need to prevent the unrestricted growth of metropolitan cities and recommended a regional approach to the problem of urban development with the restructuring of local areas and strengthening and reorganisation of the local administrative set-ups to enable them to cope with the growing problem. It also stressed the need for an Urban Land Policy which would, inter-alia, utilise the rapid increase in urban land values to generate public resources for development through large scale acquisitions and development of land.

11.3. In addition to the schemes originally included in the Fourth Plan, a scheme for the provision of environmental improvement in slum areas was initiated in the Central Sector from 1972-73. The scheme was introduced with a view to provide a minimum level of services like water supply, sewerage, drainage, paving of streets and street lighting in the slum areas of 11 cities with a population of 8 lakhs and above. The

scheme was later extended to 9 more cities, one in each State where no such large towns existed. The scheme has recently gathered considerable momentum and it is anticipated that with an expenditure of Rs. 30 crores on this scheme during the last two years of the Plan, nearly 3 million slum dwellers will benefit.

11.4. Another scheme of considerable importance for the urban development sector for which additional non-Plan funds were subsequently found during the Plan was the scheme for the integrated development of the Calcutta Metropolitan Area. On this scheme, including an amount of Rs. 43 crores which was utilised from within the West Bengal State Plan, a total expenditure of Rs. 150 crores is likely to be incurred on this scheme during the Fourth Plan. The additional expenditure has been made possible by resources raised by the Calcutta Metropolitan Development Authority through new taxation and special non-Plan assistance from the Centre. Some of the programmes of the Calcutta Metropolitan Development Authority were also supported by world Bank IDA assistance.

11.5. In addition to the provisions made under the urban development sector, the Fourth Plan included a provision of Rs. 35 crores under the head 'Miscellaneous' for the development of State capitals. This provision has made comprehensive urban development programmes consisting of various components like bulk acquisition and development of land, building construction programmes for offices, houses and community services possible in four State capitals, namely, Chandigarh, Gandhinagar, Bhopal and Bhubaneswar. In addition, a number of other similar programmes have been undertaken outside the Plan. For example in Delhi, the bulk of Delhi Development Authority's programmes of large scale acquisition and development were financed from a revolving fund created out of a seed capital of Rs. 5 crores. This has enabled the Delhi Development Authority to exceed a turnover of Rs. 100 crores, since the inception of this fund. A number of similar projects have been undertaken in the States of Haryana, U.P., Maharashtra and Tamil Nadu.

11.6. The expenditure on urban development during the Fourth Plan on the schemes, as included in the plans of States and Union Territories, is likely to be of the order of Rs. 76 crores, including the amount of Rs. 43 crores spent on Calcutta within the West Bengal State Plan. In the Central Sector, the expenditure on the two schemes included in the Plan is likely to be Rs. 76 lakhs as compared with the original provision of Rs. 80 lakhs. If, however, we take into account the expenditure on the scheme for

environmental improvement in the slum areas, on the integrated development of the Calcutta Metropolitan Area, and on development of capitals and other towns referred to above, the expenditure on urban development would be many times higher than the Plan provision.

11.7. Whilst, during the Fourth Plan, there has generally been a growing awareness in the States of the problems of urban development, it cannot be stated that the States have made much headway in taking comprehensive action for the adoption and implementation of Master Plans. This has been due primarily to lack of adequate resources both financial and organisational at the local level. The main emphasis in the Urban Development Sector has continued to be on the extension or augmentation of civic services and amenities.

Objectives and Strategy

11.8. In the Fifth Plan, the broad objectives for this sector would be as under :

- (a) to augment civic services in urban centres as far as possible and to make them fit for a reasonable level of living ;
- (b) to make efforts to tackle the problems of metropolitan cities on a more comprehensive and regional basis ;
- (c) to promote the development of smaller towns and new urban centres to ease the pressure of increasing urbanisation ;
- (d) to assist in the implementation of projects of national importance, such as, those related to metropolitan cities or inter-State projects;
- (e) to provide the necessary support for the enlargement of the scope and functions of the industrial townships undertaken by the Central Government Undertakings so as to make them more self-contained.

11.9. To meet the difficult and growing problem of urbanisation a complex and multifaceted strategy is necessary. For instance, a more desirable and balanced spatial distribution of economic activity would need measures to attract industries to new urban centres and disincentives to discourage the flow of population to the existing metropolitan cities. The type and size of urban activity likely to arise in future may call for innovations in administrative organisation at the local level. Thus, in the case of the large and fast expanding cities, the State Governments may have to undertake legislation to set up Planning and Developmental authorities. Similarly, the compulsions of regional and area planning may require the creation of institutions or formal arrangements which will cut across the existing authorities. Action, which is over-due, will have to be taken to augment the resources of local bodies by provision of new avenues of taxation. As recommended by the Committee on Rural and Urban Relationship, it would be necessary for each State to devise a system of devolution of funds to the municipal authorities. However, perhaps the most important instrument necessary for achieving a break-through in the urban development sector will be the formulation of Urban Land Policy.

11.10. In view of the serious problem for urban planning and development posed by the continuous and excessive rise in urban land values in and around urban centres, the formulation of an urban land policy assumes a certain urgency. In the context of the present socio-economic situation, such a policy should have the following broad objectives :

- (a) to promote optimum use of land;
- (b) to make land available for purposes consistent with economic growth and social policy to different sections of the community and in particular to the weaker sections ;
- (c) to reduce and if possible prevent concentration of land ownership, rising land values, speculation, etc.;
- (d) to allow land to be used, as a resource for financing urban development.

11.11. Bearing in mind the various categories of urban land, the tools and policy instruments available for the implementation of these objectives could be broadly categorised as below :

- (i) Legal and regulatory measures
- (ii) Fiscal measures
- (iii) Developmental measures

Under the legal and regulatory category, there could be several measures—essentially restrictive in their scope—which would directly or indirectly aim at checking undue rise and speculation in urban land values. Some of these would be: land use control, restrictions on plot sizes, restrictions on transfers of land, conversion of free-hold tenures into lease-hold tenures by special legislation, and pre-emptive acquisitions. The fiscal measures could consist of various forms of taxes and levies such as :

- (a) differential taxes on urban land depending on various uses. Since the nature and size of land influences speculation, higher taxes could be imposed on vacant lands to discourage hoarding. Similarly, higher taxes on land under non-conforming uses could be imposed to promote redevelopment of such lands for better and more intensive purposes.
- (b) taxes for mopping up unearned increments in the value of land.
 - (i) a recurring tax on the capital value of land and property ;
 - (ii) enhanced stamp duty, or surcharge thereon, on the sale or transfer of urban land and property ;
 - (iii) conversion tax on the change of land from its permitted use to a more profitable use ; and
 - (iv) betterment levy on betterment indirectly accruing to a private land-owner as a result of execution of development schemes by local or public authorities.

Since regulatory and fiscal measures would obviously be restrictive and negative in their scope, they would not fully succeed in achieving the broad objectives of a land policy unless accompanied by a positive policy and programmes which will help in increasing the availability of urban land. It would, therefore, be essential to undertake large-scale programmes of land acquisition and development to meet the several needs of the urban community in the public and private sectors.

11.12. Whilst these objectives of urban land policy may be followed broadly in all cities depending on the functions, size, intensity of problems and other factors, a flexible approach will have to be maintained by applying a combination of instruments in each area. It will be difficult to work out a precise package of instruments for each of these categories. An important consideration will be the potential for and the rate of growth. For example, in towns of 3 lakhs and above, large scale acquisition and development will yield dividends if the rate of growth is high and will not if the rate of growth is poor. In metropolitan cities, fiscal instruments may be of greater relevance than regulatory measures considering that much of the land is built upon already. For new towns the case for large scale acquisition and development as also for regulatory measures is obvious.

Fifth Plan Proposals

11.13. In the Fifth Plan, a total outlay of Rs. 578 crores is proposed for the urban development sector as follows :

Table 1: Fifth Plan Outlays for Urban Development
(Rs. crores)

states and union territories plans :	
(i) urban development projects	71.08
(ii) environmental improvement in slum areas (minimum needs programmes)	105.47
(iii) integrated development of Calcutta Metro- politan Area	150.00
<i>total</i>	326.55
central sector	
(i) extra financial assistance for metropolitan development and projects of national impor- tance	250.00
(ii) research and training	2.00
<i>total</i>	252.00
<i>grand total</i>	578.55

11.14. **Urban Development Projects :** The provision of Rs. 71.08 crores in the State sector under the head 'Urban Development' would be utilised (a) to provide seed capital to local authorities or development authorities referred to earlier, (b) to meet the cost of surveys and staff required for the preparation of plans, and (c) to provide financial assistance to local bodies for carrying out minor improvement schemes. It should be possible for the State Governments to utilise a major portion of these funds for undertaking large-scale programmes of land acquisition and development which will cater to the several socio-economic needs of urban areas and for the formulation and implementation of composite development or redevelopment schemes.

11.15. **Environmental Improvement Scheme in Slum Areas :** The existing scheme of environmental improvement in slum areas, for which a provision of Rs. 105.47 crores is proposed, would be continued as a part of the Minimum Needs Programme. The scheme is proposed to be extended to all towns with a population of 3 lakhs and above and in addition to one town in each State where no such town exists. The provision being made would make it possible to cover a population of nearly 6 million slum dwellers. With the expenditure already incurred in the Fourth Plan, all slum areas in such towns as are not scheduled for clearance and/or otherwise amenable to improvement would stand covered.

11.16. **Metropolitan Cities :** The provision of Rs. 150 crores proposed for the Calcutta Metropolitan Development Authority in the West Bengal Plan would be utilised for the execution of various urban development programmes relating to the provision of water supply, sewerage, roads, transport, housing, slum clearance and housing.

11.17. For a proper appreciation of the overall development likely to take place in the urban sector, and particularly in the metropolitan cities, it is necessary to mention that considerable development activity will take place in these areas as a result of provisions made in other sectors. For instance, in the Transport sector, there is a sizeable provision for transport development in metropolitan areas. Similarly, considerable provision for helping urban development had been made in other sectors such as Housing and Water Supply.

11.18. A provision of Rs. 250 crores is also being made in the Central Sector for implementation of Urban Development Projects of national importance. The type of schemes which would be eligible for such assistance as also the pattern of assistance will be worked out in a manner which will enable maximum benefit to be derived from this supplementary assistance. Of this provision a sum of Rs. 20 crores is being specifically set apart for the development of the National Capital Region around Delhi. This provision will supplement the investments to be made in this direction by the adjoining States of U.P., Haryana and Rajasthan.

11.19. **Research, Development and Training Programmes :** A provision of Rs. 2 crores has been made in the Central Sector to promote research, training and development in the field of Urban and Regional Planning. Of this provision, an amount of Rs. 75 lakhs will be utilised for training programmes in Local Government Administration and Urban Development. Training in Local Government Administration will be continued at the existing centres, viz., the Indian Institute of Public Administration, Delhi, Lucknow, Bombay, Calcutta and Hyderabad. Programmes for imparting special training in the implementation of urban development projects for administrative and technical personnel will be arranged at suitable places like Delhi, Bombay, Calcutta, Ahmedabad and Chandigarh, where considerable field work is being done. An amount of Rs. 1.25 crores would be utilised for providing financial assistance for studies in some of the vital aspects of urban and regional planning.

II

HOUSING

Introduction

11.20. The role of housing in economic development, both as an end and a means, is an important one: as an end, housing is an essential ingredient in the basic requirements of civilised living; as a means, besides adding to National Income, housing is a strong motivator of savings and plays an important part in the generation of employment. Whilst the economic utility of a large housing programme is not in question, it presents many difficulties on account of the magnitude and complexity of the problem and its demand on financial resources.

11.21 The Government has so far played a limited role in this sphere. This has consisted of providing subsidised housing on a limited scale for the economically weaker sections of the community like slum dwellers, industrial and plantation workers and in providing finance to State Governments and Government Housing Boards for undertaking composite projects of land acquisition and housing construction to cater to the needs of low income and middle income groups. Limited assistance has also been provided to individuals in low income and middle income groups. The major part of the effort in housing has, however, necessarily been in the private sector.

Fourth Plan—A review of

11.22. The Fourth Plan envisaged an outlay of Rs. 172.2 crores for housing—Rs. 124.4 crores in the plans of the States and Union Territories and Rs. 47.8 crores in the Central sector. The provision in the States sector was primarily for social housing schemes like subsidised industrial housing, slum clearance and re-housing, low income group housing and middle income group housing. The State sector also included a modest provision for land acquisition and development and village housing. The provision of Rs. 47.8 crores in the Central sector included a provision of Rs. 30 crores for office and residential accommodation for Central Government employees, Rs. 10 crores as equity capital for the Housing and Urban Development Corporation, Rs. 4.5 crores for social housing schemes in the Central sector, viz., Plantation Labour Housing Scheme and the Dock Labour Housing Scheme. The remaining amount of Rs. 3.3 crores was for supporting programmes. The likely expenditure on and physical achievements in respect of schemes in the States and the Central sector is given in Annexure I.

11.23. This shows that compared with a planned outlay of Rs. 124.4 crores for housing schemes in the States and Union Territories plans, an expenditure of Rs. 140.80 crores is likely. The outlay on housing schemes in the States sector was supplemented by an assistance of Rs. 30 crores given by HUDCO to State Governments and State Housing Boards and L.I.C. assistance and market borrowings of the order of Rs. 10.05 crores and Rs. 33 crores respectively. The expenditure in the Central sector is anticipated to be Rs. 48.6 crores inclusive of

Rs. 12 crores on the Central scheme for providing house sites to landless agricultural labourers referred to below. It is also estimated that in addition to the provision made under the housing sector, an amount of Rs. 350 crores is likely to be spent by Central Departments like the Railways, P & T, Defence, Port Trusts and other Central Government public undertakings on housing for their staff. No reliable figure for private investment in housing is available. It is, however, unlikely that the level of investment would be less than Rs. 2,140 crores envisaged in the Fourth Plan.

11.24. The expenditure on the village housing scheme continued to be low and is likely to be Rs. 5.8 crores at the end of the Fourth Plan. However, to assist the weakest sections of the rural community, a scheme for the provision of house-sites to landless agricultural workers was introduced from 1972-73 under the Central Programme of Special Welfare Schemes. Under the scheme, a hundred per cent grant was made available to the States and Union Territories to meet the cost of acquisition of land and development at the rate of Rs. 150 per site. During the last two years of the Plan, the expenditure on this scheme is anticipated to be Rs. 12 crores and it is expected that half a million sites will be provided. Some State Governments, notably the Kerala Government, have provided further financial assistance for the construction of houses. It is expected that in Kerala a programme of 1 lakh houses which will benefit landless agricultural labourers, will be completed by the end of the Fourth Plan.

11.25. Significant developments during the Fourth Plan was the establishment of the Housing and Urban Development Corporation (HUDCO) as a government owned company under the Companies Act to provide financial support to State Governments, Housing Boards and other local authorities for implementing composite and viable housing and urban development projects promising a quick turnover to enable the generation of further funds for investment in future schemes. HUDCO began functioning in the middle of 1970 with an authorised capital of Rs. 10 crores against which it received Rs. 6 crores from the Central Government. The Corporation raised another Rs. 20.5 crores, Rs. 10 crores by way of LIC loans and Rs. 10.5 crores by issue of debentures. By the end of August 1973, the Corporation is reported to have approved schemes estimated to cost Rs. 110 crores with a loan commitment of Rs. 74 crores, of which nearly Rs. 30 crores would have been released by the end of the Fourth Plan.

Existing Housing Shortage and the Magnitude of the Problem

11.26. The available data as regards the shortage of housing in the urban and rural sectors is unreliable and unsatisfactory. Nevertheless, according to an assessment made by the National Building Organisation on the basis of figures of housing stock as in 1961, and projections for the subsequent period, it is estimated that the current housing shortage in the urban areas would be of the order of 6.2 million houses. This figure is inclusive of 3.1 million ser-

viceable kucha houses. However, even excluding the number of serviceable kutchas, the shortage will be of the order of 3.1 million. In computing requirements account must also be taken of the increase in the urban population which is likely to be of the order of nearly 20 to 25 million during 1974-79 and would necessitate a provision of a minimum number of 4 million houses. Allowing for deterioration in the existing housing stock of 21 million at the rate of 1 per cent per year, another million houses will be necessary to replace the deteriorated stock. The highest incidence of shortage of urban housing as also of future requirements will be in low income categories. Judging from past experience, the contribution of the private sector to the housing stock used by these categories is not likely to be significant. The position in respect of rural housing is even worse. The number of rural households at the beginning of the Fifth Plan is estimated at 90 million. Of these, above 72 million households may be taken to be living in pucca, semi-pucca or serviceable kutchas. The balance of 18 million house-holds are living in bad, dilapidated and improvised structures which would require replacement. Another 1.8 million houses a year would be required to meet the anticipated increase in population. The housing conditions of the landless agricultural labourers are particularly bad and it is estimated that at least 12 million landless labourers do not even own their own house sites. Any approach to provide housing to the lowest-income groups in the urban and rural areas through subsidised housing is difficult to universalise on account of obvious financial limitations. On the other hand, the existing levels of income make it difficult for these income groups to participate in public housing schemes on account of their inability to even pay concessional rents. Efforts to undertake housing programmes on a large scale have also to contend with the non-availability of building materials at a reasonable price.

Objective and Strategy

11.27. Given the above constraints it is extremely difficult for any developing country, even with the highest ideals of social welfare, to implement an ambitious programme of housing which is unrelated to the economic level and the saving capacity of the people and to the totality of the available resources. Consequently, the Fifth Plan addresses itself to the following limited objectives in the housing sector:

- (i) preservation and improvement of the existing housing stock;
- (ii) provision of house sites to 4 million landless labourers as a part of the Minimum Needs Programmes;
- (iii) continuance of the existing schemes to provide subsidised houses to certain weaker sections of the community;
- (iv) extension of support to institutional agencies such as, HUDCO and housing boards under the State Governments to enable them to provide assistance to schemes for

the benefit of low-income and middle-income groups; and

- (v) intensification of research in and development of cheap building materials.

11.28. One of the main impediment in the way of increased housing activity is the non-availability of land at reasonable prices. It is an universal experience that if housing plots are available at reasonable prices, large sections of the community are willing to undergo considerable privation and inconvenience, in order to construct and own houses. A proper strategy for the housing sector cannot, therefore, be thought of in isolation and unrelated to a well formulated land policy. A reference to the essential ingredients of urban land policy have been referred to in the Chapter on 'Regional and Urban Development'. Some of the other ingredients of a strategy in relation to the housing sector are mentioned below.

11.29. The objectives of preservation and improvement of the existing housing stock would, on the one hand, require the enforcement of statutory and regulatory measures regarding repairs and improvement and would, on the other, require modifications in the existing taxation and other laws as may subserve the achievement of this objective.

11.30. As regards housing for the urban poor, there may be a need for orientation towards the provision of developed plots with kutchas and pucca construction despite the fact that such houses may have some inherent disadvantages. The existing system of financing and execution of various social housing schemes on a compartmentalised basis will need to be reviewed. Preference will have to be given to composite housing schemes catering to all income groups so that whilst such schemes are economically viable as a whole, it is possible to subsidise the economically weaker sections at the expense of persons belonging to the upper-income brackets. For social housing it is proposed to shift the emphasis from public housing constructed for rental purposes to housing whose ownership can be transferred by outright sale or through hire purchase system.

11.31. Since the bulk of the housing effort will necessarily be in the private and the cooperative sectors, efforts will be made to place such housing schemes on a more organised basis in relation to the procurement of land and building materials and the development of services as these will help in effecting economies in construction costs. A considerable effort is proposed to be made for research, extension and training programmes in respect of building materials and to promote the production of building materials both in the public and private sectors.

11.32. Efforts will be made to strengthen the organisations charged with responsibilities in respect of the housing programmes. Action will be taken to persuade States which have still to set up housing boards to expedite action in this connection. However, where development authorities (or institutions such as improvement trusts) at the local level are

functioning effectively for the comprehensive development schemes, workable arrangements will be evolved to coordinate and integrate housing programmes with urban development activity.

11.33. The scheme for house sites for the landless labourers, will essentially be linked with larger measures of land reforms and consolidation of holdings and the provision of plots will be treated as a first charge on the surplus land that such measures may yield. Construction activity on such sites will need to be organised by assisting self help.

Fifth Plan—Outlays and Proposals

11.34. The outlays proposed for Housing in the State and Central sectors are mentioned in Table 1.

Table 2 : Provisions in the Fifth Plan for Housing
(Rs. crores)

programme	outlay
(0)	(1)
<i>I states & union territories plans</i>	
(i) housing schemes	234.84
(ii) rural house sites for landless agricultural workers as a part of the minimum needs programme	108.16
(iii) total	343.00
<i>II central sectors</i>	
(i) office and residential accommodation for central government employees	100.00
(ii) housing & urban development corporation	90.00
(iii) production of building materials	35.00
(iv) pilot plants for production and training in building materials	
(v) extension, research & development	4.00
(vi) rural housing extension	
(vii) housing statistics	
(viii) subsidised housing schemes for plantation workers	5.00
(ix) dock labour housing	1.16
(x) hindustan housing factory	2.00 ¹
(xi) total	237.16
(iii) grand total	580.16

¹includes institutional funds & market borrowings.

11.35. In addition to the provision made under the head "Housing" in the States and Central Sectors, it is anticipated that approximately an amount of Rs. 450 crores is likely to be spent by Central Departments like, the Railways, P&T, Defence, Port Trusts and other Central Government Public Undertakings. The estimated investment in housing by the private sector is likely to be of the order of Rs. 3640 crores.

11.36. The provision of Rs. 234.84 crores in the State Plans is intended to meet the expenditure under the existing housing schemes such as integrated housing schemes for industrial workers and economically weaker sections, slum clearance and rehousing schemes, low income and middle income housing schemes, village housing scheme, and for land acquisition and development. Till the end of December, 1972, about 1,80,000 houses had been constructed under the integrated subsidised hous-

ing scheme for industrial workers and economically weaker sections of the community which is intended for the construction of subsidised rental houses for low paid industrial workers and economically weaker sections of the community. The slum clearance and rehousing schemes as also the low income group housing scheme have also benefited the weaker sections of society. Their continuation and expansion during the Fifth Plan would be in keeping with the overall objectives of the Plan. The main shift in emphasis during the Fifth Plan will be to undertake as many composite housing projects as possible to which a reference has been made earlier.

11.37. The Fifth Plan marks a considerable step-up of public expenditure on rural housing. A substantial provision of Rs. 108.16 crores has been made in the plans of the States and Union Territories under the Minimum Needs Programme for provision of house sites to landless agricultural workers. With this provision it is hoped that it will be possible to provide nearly 4 million landless agricultural workers with house sites. At the same time, it will be necessary to enforce (and where necessary also enact) legislation conferring homestead rights on existing houses where houses have already been constructed. As mentioned earlier, the construction activity in rural housing is proposed to be promoted on the basis of aided self-help. Manufacture of materials such as bricks and thatch will be linked to various other programmes such as those relating to improving the conditions of the backward classes. Wherever feasible, Rural House Building Cooperatives will also be sponsored. The provision under rural housing will also be supplemented by the implementation of the Village Housing Projects Scheme which aims at providing housing in rural areas and other amenities such as provision of streets and drains in selected villages.

11.38. *Housing & Urban Development Corporation.*—The outlay under the Central sector includes a provision of Rs. 90 crores for the Housing & Urban Development Corporation—Rs. 14 crores by way of additional equity capital and the balance relating to market and other institutional borrowings. By turnover of these funds and through refunds of earlier loans, it is hoped that it will be possible for the Corporation to finance schemes of the order of Rs. 125 to Rs. 150 crores in the Fifth Plan.

11.39. *New Building Materials—Production & Training.*—Adequate provision has been made for raising the production of cement and steel in the Industries and Minerals sector. However, some shortages in the availability of these materials for housing activities cannot be ruled out. In the circumstances, considerable stress has been laid in the State plans for the production and use of local materials, such as, bricks and lime mortar on a more organised basis by Housing Boards. In addition to promote economy and to reduce the use of cement and steel a provision of Rs. 35 crores has been made for the production of new building materials such as light weight materials which utilise fly ash, sand-lime bricks, ready mixed concrete with fly ash, structural concrete products and light weight aggregates. It is proposed that a public sector under-

taking will be established for the production of such materials. A provision of Rs. 2 crores has also been made for the extension of the Hindustan Housing Factory at Delhi. The plants set up for the production of new building materials will also be utilised for training and demonstration purposes.

11.40. *Research, Development and Extension of new building technology.*—For research, development and extension of new building technology, adequate provisions have been made for institutions like the Central Building Research Institute, Roorkee and the Structural Engineering Research Institute in the programmes of the Council of Scientific and Industrial Research. In addition, a provision of Rs. 4 crores has been made in the Housing sector for the National Buildings Organisation for promoting programmes of research, development and extension in urban and rural housing. The outlay for the National Buildings Organisation also includes a suitable provision for the improvement of housing statistics. It is also proposed that through administrative and organisational arrangements by the Central and State Governments a reasonable proportion of the building construction funds to be expended by large construction agencies such as the Central Public Works Department, the Military Engineering Service, the State Public Works Departments and State Housing Boards are utilised for research and development relating to housing and building activity as an integral part of the projects undertaken by them.

11.41. The Central sector also includes a provision of Rs. 100 crores for office and residential accommodation for Central Government employees. It is hoped that with this provision it will be possible to improve considerably the level of satisfaction of housing of Government employees stationed at various places. The Central sector also makes a provision of Rs. 6.16 crores for schemes relating to housing of plantation workers and dock labour.

III

WATER SUPPLY AND SANITATION

Introduction

11.42. The provision of a safe water supply and the proper disposal of wastes constitute the Principal environmental control measures against the transmission of most water borne diseases. Recognising the importance of these measures for the general health and the working capacity of the people increased provisions have been made for these activities in successive Five Year Plans. However, given the magnitude of the problem and the constraint of resources, only a small dent has been made on the overall problem. Thus on the eve of the Fifth Plan, whilst 85 per cent of the urban population will have piped water supply, nearly 1.16 lakh villages, with a population of about 61 million, will not have even the most elementary water supply system. Moreover even in areas with water supply schemes—whether urban or rural—there is considerable need for augmentation and improvement. As regards sewerage, only 38 per cent of the urban population, chiefly in the metropolitan cities, will have sewerage at the beginning of the Fifth Plan. Most medium and smaller towns will have no sewerage systems. In the rural areas, the implementations

of proper sewerage and drainage schemes has hardly begun. A concentrated effort has yet to be made in respect of the problem of solid waste disposal. With the rapid increase in industrialisation and urbanisation, the problem of air and water pollution is also likely to pose considerable difficulties in the coming years.

Fourth Plan—A Review of

11.43. The Fourth Plan envisaged an outlay of Rs. 407 crores on water supply and sanitation programmes—Rs. 401 crores in the plans of the States and Union Territories and Rs. 6 crores for supportive programmes under the Central Sector. Out of Rs. 401 crores in the State Sector, Rs. 276 crores were for urban water supply and sanitation, and Rs. 125 crores for rural water supply. The provisions for the urban programmes were to be supplemented by LIC loans to be negotiated by the State Governments or local authorities on the basis of individual projects.

11.44. As against the approved outlay of Rs. 276 crores in the Fourth Plan for urban water supply and sewerage schemes, the expenditure is expected to be of the order of Rs. 280 crores. In addition, the programmes would have been supplemented by LIC loans and market borrowings to the extent of Rs. 100 crores. Nearly 200 spillover and 497 new schemes of water supply were undertaken during the Fourth Plan at a total expenditure of Rs. 350 crores. The balance amount of Rs. 30 crores was likely to be spent on sewerage schemes in 40 towns. In addition, under the Calcutta Metropolitan Development Authority's expenditure of Rs. 150 crores for integrated urban development, it is expected that about Rs. 70—80 crores will have been utilised for water supply and sewerage.

11.45. Before the Fourth Plan, rural water supply schemes were undertaken as part of the programmes of community development, local development works and welfare of backward classes. These were supplemented by the National Water Supply and Sanitation Programme of the Ministry of Health. For the Fourth Plan, it was envisaged that the bulk of the provision under rural water supply and sanitation schemes would be utilised in areas of acute scarcity and that other areas would meet their needs from programmes for community development and welfare of backward classes or through local effort. Against the approved outlay of Rs. 125 crores, the States and Union Territories are likely to spend Rs. 162 crores.

11.46. As a result of the Mid-term Appraisal of the Fourth Plan, a Central scheme to accelerate the programmes of rural water supply in the States' sector was introduced in 1972-73 as a part of the overall programme of special Social Welfare scheme. Under this Central Scheme, hundred per cent assistance was given to the States and Union Territories for extending the water supply to villages or areas where the problem was most acute—preference being given to villages predominantly inhabited by tribals and Harijans and other backward classes. During the Fourth Plan, the financial assistance under this scheme is likely to be of the order of Rs. 29 crores. Central

assistance was also extended to the States under two additional schemes, viz., (a) the scheme for setting up special investigation divisions to survey and investigate the problem of difficult villages, and (b) the scheme for setting up design and planning cells for formulation of projects. The assistance under the two schemes is likely to be of the order of Rs. 3.5 crores and Rs. 83 lakhs respectively.

11.47. The progress on the rural water supply programme was helped to some extent by the investigations carried out by the Geological Survey of India and the Central Ground Water Board to explore groundwater resources for provision of drinking water, particularly in the rural areas of Rajasthan and Gujarat. UNICEF assistance in the form of 118 high speed drilling rigs also accelerated the exploitation of groundwater in hard rocky areas.

11.48. As a result of the effort made during the Fourth Plan and the earlier Plans, nearly 36,000 difficult villages benefitting a population of nearly 21.6 million have been provided with a water supply.

Objectives and Strategy

11.49. The Fifth Five Year Plan proposals for the Water Supply and Sanitation sector have been framed to subscribe the following objectives :—

- (a) to cover the remaining 1.16 lakh difficult and problem villages as a part of the National Programme of Minimum Needs;
- (b) to intensify the efforts for provision of water supply in urban areas, and in particular to ensure the completion of spillover schemes;
- (c) in view of the constraint of resources for full-fledged sewerage schemes, to increase the efforts for the conversion of dry latrines into sanitary latrines in unsewered areas;
- (d) increased efforts to promote and demonstrate modern methods of garbage collection and disposal;
- (e) initiation of regulatory and other measures for water and air pollution control;
- (f) continuation of efforts for providing training to public works and health engineering staff at various levels.

11.50. One of the main handicaps in financing urban water supply schemes has been the inability of the current level of water rates to generate adequate resources to fully cover capital and operational costs. Consequently, the initial funds for such schemes have inevitably to come from plan resources or institutional sources. Whilst this constraint is a part of the larger issue of the augmentation and management of the resources of local bodies, the need, for making urban water supply schemes financially viable must not be delayed. Together with measures to increase water rates or municipal taxes, the State Governments and local bodies will need to examine the possibilities of imposing ad-hoc capital levies on the beneficiaries to raise the necessary finances.

11.51. To cover the remaining difficult villages in the rural areas will be a considerable problem. Given resource constraints effort will be made to apply

austere standard through the adoption of the cheapest mode of water supply. For example, piped water supply schemes will only be provided if less expensive means such as tubewells or deep wells are infeasible. Full use will be made of water from irrigation schemes. The programmes of rural water supply will be coordinated with other rural minimum needs programme such as those for the establishment of primary health centres; rural electrification and rural roads. This programme is discussed in greater detail in the Chapter on the Minimum Needs Programme.

11.52. Inadequate attention has so far been paid to the problem of the maintenance water supply schemes in rural areas. Given the rapid expansion of the rural water supply programme in the Fifth Plan, it is proposed to give adequate attention to the financial and administrative measures necessary to remedy this situation.

11.53. Given the large outlays provided for water supply and sanitation adequate measures will be taken to strengthen the technical organisations in the States and Union Territories. The need for such measures is imperative in the case of new and smaller States. Necessary action for the assessment and procurement of materials will be taken well in advance. Simultaneously, action is also proposed for increasing the manufacture and production of essential materials such as pipes, indigenous rigs, pumpsets, etc., in the public and private sectors.

Outlays and Proposals

11.54. The outlays for the Water Supply and Sanitation sector in the Fifth Plan will be as follows :

Table 1 : Fifth Plan Outlays for water supply and Sanitation

sector (0)	(Rs. crores)	
	outlay (1)	
<i>(i) state and union territory plan</i>		
(a) rural water supply programme		573.0
(b) urban water supply and sanitation		431.0
<i>total</i>		1004.0
<i>(ii) central sector</i>		
(a) centrally sponsored projects		16.6
<i>grand total</i>		1020.6

State and Union Territories Plan Schemes

11.55. *Rural Water Supply* : The Fifth Plan outlay of Rs. 573 crores for rural water supply under the National programmes of Minimum Needs includes an amount of Rs. 562.5 crores for the States and Rs. 10.5 crores for the Union Territories. With the proposed outlay, it will be possible to cover the remaining 1.16 lakh villages identified as "no source" or problem villages during the Fifth Plan. A rural population of about 61 million is expected to benefit during the Fifth Plan.

11.56. *Urban Water Supply and Sanitation* : In the Fifth Plan, loans taken by a local body from the LIC and other institutions will be considered as a part of Plan resources. Inclusive of such loans and market borrowings, a total provision of Rs. 431 crores has been made for Urban Water Supply and Sanita-

tion in the plans of States and Union Territories—Rs. 353 crores for Urban Water Supply and Rs. 78 crores for Urban Sanitation. Of this provision an amount of Rs. 210.65 crores is proposed for major projects of metropolitan cities as follows:

Table 2 : Fifth Plan Outlay on Urban Water Supply and Sanitation for Major Projects of Metropolitan cities

(Rs. crores)	
project	outlays
(0)	(1)
(i) Bombay Water Supply and Sanitation	92.50
(ii) Delhi Water Supply and Sanitation	60.00
(iii) Madras Water Supply and Sanitation	27.50
(iv) Bangalore Water Supply	15.00
(v) Hyderabad Water Supply	15.65
<i>Total</i>	210.65

For the Bombay Water Supply and Sanitation project considerable assistance will be extended by the World Bank.

The balance of Rs. 220.35 crores in the State and Union Territories Plans has been included to meet the needs of the Water Supply and Sanitation Programme of the medium and small towns.

11.57 The requirements of the Water Supply and Sanitation programmes for Calcutta will be made from the consolidated provision of Rs. 150 crores separately made for the integrated urban development of Calcutta in the State sector under urban development. Of this, it is anticipated that an amount of the order of Rs. 70 to 80 crores will be utilised for programmes of water supply and sanitation. The provision of Rs. 250 crores being made for integrated Urban Development in the Central sector may also substantially support programmes of water supply and sanitation where such programmes form a part of integrated urban development projects of national importance.

11.58. It is estimated that the provision available for Sewerage schemes in the State plans is likely to be about Rs. 78 crores. As the proposed outlay is small compared with the needs of States and Union Territories, as an interim arrangement, emphasis is proposed to be laid on the conversion of dry latrines into sanitary latrines in un-sewered areas, Sewage utilisation for agriculture will be intensified.

11.59. In addition to the provision made in the Central sector, provisions for preliminary investigations and arrangements in connection with the water and air pollution control have also been made in the Plans of some States and Union Territories to initiate the water pollution control measures.

Central Sector Projects

11.60. *Public Health Engineering Training:* An outlay of Rs. 50 lakhs has been included for training of public health engineering personnel of various categories such as graduate engineers, water-works supervisors, sewerage works supervisors, well drillers, sanitary inspectors and laboratory analysts. About 3000 persons belonging to various categories are expected to be trained during the Fifth Plan.

11.61. *Survey, Investigation, Design and Planning Unit:* The survey, investigation and design units opened in the States during the Fourth Plan under a centrally sponsored scheme have been found to be very effective in creating a base for launching a massive Rural Water Supply programme. An outlay of Rs. 2.50 crores has been proposed in the Fifth Plan in respect of such units, particularly in view of the demands likely to arise as a result of the Minimum Needs Programme.

11.62. *Special Rigs Programme:* A small provision has been made in the Fifth Plan for incidental expenditure in connection with procurement of rigs of different types through UNICEF and UNDP as well as for the direct import of spares and accessories.

11.63. *Solid Waste Disposal:* An outlay of Rs. 10 crores has been made in the Fifth Plan for assisting States and Union Territories under the Central sector for the promotion and demonstration of modern mechanical methods of garbage collection composting and disposal. This scheme is proposed to be taken up in 12 cities during the Fifth Plan on the basis of pilot-cum-demonstration projects. Cities in the population range of 2 lakhs to 10 lakhs are proposed to be initially included in this pilot programme.

11.64. *Conversion of Dry Latrines into Sanitary Latrines:* An outlay of Rs. 2 crores has been made in the Fifth Plan for this scheme which aims at the conversion of dry latrines into sanitary latrines and for making satisfactory arrangements for the collection and disposal of waste in the congested and fringe areas of developed towns. It is proposed to take up about 10 to 15 projects on a pilot-cum-demonstration basis in selected cities.

11.65 *Water and Air Pollution Control:* With increasing population and industrial activity, control of environmental pollution requires urgent measures. A Central Law on Water Pollution Control is already under consideration. A provision of Rs. 1.5 crores has been made for water and air pollution control to meet the cost of establishment of a Central Water Board and for undertaking of extending financial assistance to State Governments and Union Territories for necessary studies in this direction.

ANNEXURE I

Fourth Plan Provision and likely Expenditure on housing
(Rs. crores)

	fourth plan provision	likely expendi- ture	number of hous- ing units constru- cted upto 31-3-73
(0)	(1)	(2)	(3)
<i>I States and Union Territories</i>			
1. subsidised industrial housing		21.00	16343
2. slum clearance and improvement		25.80	14073
3. low income group housing		35.80	36581
4. middle income group housing		20.90	9326
5. rental housing	124.40	9.60	2439
6. land acquisition and development		14.10	..
7. village housing		5.80	n.a.
8. others		7.80	..
total-I	124.40	140.80	78762
			add 30000 for the year 73-74 108762

	(0)	(1)	(2)	(3)
<i>II Central Sector</i>				
1. central pool office & residential accommodation for central government employees		30.00*	25.00*	6000
2. equity capital to housing & urban development corporation		10.00	6.00	
3. plantation labour housing.		2.00	1.75	2000
4. dock labour housing		2.50	0.76	624
5. cellular concrete factory in Tamil Nadu		2.60	2.60	..
6. experimental housing		0.35	0.31	..
7. housing statistics		0.35	0.26	..
8. total (II)		47.80	36.68	8624
scheme for providing house sites to the agricultural landless workers		..	12.00	
9. total			48.68	

*including expenditure on office accommodation.

Employment, Manpower And Labour Welfare

Introduction

THE importance of providing adequate and increasing employment opportunities in our development programmes cannot be over-emphasised. The basic objective of any developmental Plan must always be the provision of an adequate living standard for all people in the country. Mere achievement of an increased average per capita income cannot by itself help in the achievement of this objective unless there is a reasonable assurance of suitable employment to every citizen who has the capacity of being gainfully employed, in a manner, which will not only give remuneration but also social satisfaction in the use of his talents and capabilities. To the extent that any Plan falls short of generating adequate employment opportunities, it will necessarily give rise to a degree of social unrest which, if allowed to grow to unmanageable proportions, could wreck the other benefits that the Plan may seek to provide.

12.2. Within the overall aim of generating increasing employment opportunities, it has to be recognised that more detailed consideration has to be given to certain sectors of skills, particularly those in which the development requires a substantial degree of social and financial investment and those in which there is a long gestation period before they can be fully acquired. In these specified areas of training and aptitudes, greater care has to be exercised to match the estimated requirements and availability as closely as feasible. If the available skilled manpower in any one of these sectors falls short of requirements, it can seriously jeopardise the success of the developmental sphere in which that skill is required; on the other hand if the available supply exceeds the demand, one faces a situation of unemployment involving persons whose talents could otherwise have been put to better use in the national economy.

12.3. Apart from other measures, the development of an adequate and effective placement service is of vital importance for ensuring that the available employment and the most suitable incumbents are brought together as early as possible. The placement services have an important role in providing not only suitable placement opportunities but also vocational guidance in enabling an individual to find the employment most suited to his talents and capabilities.

I

EMPLOYMENT

Review

12.4. The Fourth Five Year Plan laid stress on increasing employment opportunities and on the adop-

tion of labour-intensive techniques to the maximum extent possible. However, it would appear that employment generation has not kept pace with the growth of labour force. The situation of unemployment among educated and technically qualified persons also continues to cause concern.

12.5 There are several factors which have contributed to this situation. The investments made in the Fourth Plan did not generate the same degree of development as was anticipated, both in the agricultural and industrial sectors. The growth of employment opportunities was, therefore, naturally affected. Besides, our educational system has its own weaknesses. Our social traditions have looked down upon manual work creating a craze for white-collar jobs. On top of it all, the entrepreneurs have been shying away from less developed areas, where employment imbalance has been further accentuated.

12.6. In the past, the Planning Commission used to present estimates of the backlog of unemployment at the beginning of the Plan, of the estimated increase in the labour force during the Plan period and of additional employment likely to be created through implementation of the Plan as formulated. In view of the considerable divergence of opinion regarding the appropriate definitions and yardsticks for measuring unemployment and under employment in rural and urban areas and in view of the widely differing magnitudes of unemployment worked out on the basis of various sources such as the Census, the National Sample Survey and the Employment Exchange data, it was felt that the various aspects needed a closer scrutiny. Accordingly, the Planning Commission appointed in August 1968 a Committee of Experts to enquire into the estimates of unemployment worked out for the previous Plans and the data and methodology used in arriving at them and to advise the Planning Commission on the various concerned issues.

12.7. The Committee of Experts on Unemployment Estimates had recommended that:

- (i) the concepts of labour force and of measurement of unemployment and under employment in terms of man-years as adopted in developed economies, are unsuitable for an economy like ours with its preponderance of self-employment and production within the house-hold enterprises;
- (ii) estimates of unemployment and under-employment presented in one-dimensional magnitude are neither meaningful nor useful as indicators of the economic situation;

- (iii) studies should be undertaken to obtain data on different segments of the labour force, taking into account important distinguishing characteristics such as region, rural-urban residence, status of workers, educational attainments, age and sex; and
- (iv) various improvements should be made in the collection and presentation of data by agencies such as the Census, National Sample Survey and the Employment Exchanges.

12.8. In pursuance of these recommendations *inter-alia* as a first step, a comprehensive labour force survey has been undertaken by the National Sample Survey in its 27th round. The results of this survey are still awaited. Such surveys conducted at frequent intervals would help to throw light on the trends in the labour market and make possible more dependable projections of the trends in employment and unemployment in the future. Besides, under the Pilot Intensive Rural Employment Project (PIREP) schemes fifteen Action-cum-Study projects have been taken up as a part of the Crash Scheme for Rural Employment. This scheme would provide information regarding the employment situation in these areas and also throw up useful material on the various methodological issues involved in generating employment in rural areas.

Objectives

12.9. Redistributive growth is a major objective of the Fifth Five Year Plan. In this context, the conventional fiscal measures for redistribution of income cannot by themselves, make a significant impact on the problem. Since a major cause of inequality is large scale unemployment and under-employment, the most effective way to deal with it is to provide vastly expanded employment opportunities at reasonable income levels. Employment policy will continue to aim at providing more gainful utilisation of the time of as many people as possible. Employment can be of two varieties: wage employment and self-employment. In so far as wage employment is concerned, the increased investment programme of the Fifth Plan will generate considerable new employment opportunities. Care needs to be taken to see that programmes for investment which are selected are those which are labour intensive as far as possible. Wage employment alone, however, cannot meet the situation fully and major efforts will have to be made to generate more self-employment opportunities to the extent possible, particularly in the sectors of agriculture, small industry, services, commerce and trade. Consistent with the overall policy in the Fifth Five Year Plan, an increased emphasis will also have to be given to the generation of employment opportunities for the poorer sections of our population as well as to increase the earnings of those at present only marginally employed.

Strategy

12.10 It was the experience in the Fourth Plan that measures to increase self-employment would involve (a) the proper identification and motivation of suitable persons, (b) the provision of requisite on the job or other professional training, and consultancy services and preparation of projects to back the efforts of

individuals, (c) effective arrangements to provide infrastructural facilities, raw materials, and also marketing and (d) last, but not the least, proper institutional arrangements which would enable the maximum financial support from banks and other financing institutions with the minimum necessary involvement of government funds. These measures formed an important part of the package of special employment programmes adopted in the Fourth Plan period. It would be desirable for the State Governments, Union Territories and other agencies, which have gained some experience along these lines in the Fourth Plan, to utilise the expertise built up, in their Fifth Plan programmes.

12.11. Since two-thirds of the population are engaged in agriculture, about the same proportion of the additional labour force will be generated in this segment. In agriculture the incidence of unemployment and under-employment is high, particularly among the agricultural workers, and marginal and small farmers who have a poor resource base of land and capital. At the present pace of industrialisation, any mass scale transfer of the labour force from agricultural to non-agricultural sectors is ruled out. The growing labour force in agriculture has therefore, to be provided with fuller employment within agriculture. Considerable possibilities in this direction have opened up with the recent technological breakthrough which has significantly enlarged the scope for intensification of agriculture thereby enabling the small holdings to be economically viable and profitable. But this will, no doubt, call for effective redistribution of land, coupled with support in organisation, credit inputs, marketing and other extension facilities to the small and marginal farmers. Further, with the intensified efforts proposed to be made towards the propagation of appropriate dry-farming technology, many of the basically rain-fed and other less-promising areas will witness sizeable agricultural growth and also employment opportunities. Intensified efforts to develop animal husbandry in such areas could make appreciable improvement in the living conditions of people in such areas.

12.12. Many of the special schemes for rural development have a substantial employment angle. The Small Farmers Development Agency (SFDA), the Marginal Farmers and Agricultural Labour (MFAL) and the Drought Prone Areas Programme (DPAP) justify particular mention in this connection. The adoption and continued effective functioning of these programmes within the framework of an integrated rural development programmes in the Fifth Plan will have a major effect in improving the general climate of employment in the rural sector. The adoption of similar labour intensive schemes in the special programme to be formulated for the tribal and hill areas will have a similar effect in these regions.

12.13. Lest the fruits of growth are eroded by the labour-force explosion resulting from rising rate of growth of population, the approach to family planning will be oriented to evolve an effective range of programmes of family limitation. With the reorganisation

and integration of the medical and health services as well as the nutrition and family welfare programmes, an extremely broad-based structure would become available for giving a substantial boost to the effort for bringing down the birth-rate. Besides, our educational system has to be suitably adopted to the requirement of our changing economy. Further, for evolving a general approach to the question of better utilisation of the human resources, examination would have to be carried out in depth on such aspects as the extent of mechanisation of agriculture, and the intensity of use of skilled and unskilled labour in construction activities.

II

MANPOWER

Review

12.14. The employment situation of technically qualified personnel continued to be difficult during the Fourth Plan period. In the engineering sector, although measures were taken both in the Fourth Plan and the preceding years to restrict the intake of trainees in degree and diploma courses, the outturn of those already admitted earlier continued to add to the overall availability of such personnel despite the slack in demand. The problem worsened further as the rates of industrial development that were anticipated during the Fourth Plan period were not achieved. The position regarding each category is given in the following paragraphs.

Engineering Personnel

12.15. A substantial base for the training of engineers at the post-graduate, degree, diploma and craftsmen levels has been created. This base consists of an admission capacity of 2,350, 25,000, 50,000 and 1.56 lakhs seats respectively at these four levels. At the degree and diploma levels only about 2/3rd of the available seats are being utilised since 1968. The present levels of admissions (1972) in the degree and diploma courses are about 20,000 and 36,700 respectively. As for craftsmen, about 48,700 were trained during 1971-72 in the I.T.Is. and this is also not likely to increase substantially in the Fifth Plan period.

12.16. The estimated stock of engineers at the beginning of the Fourth Plan period was about 324,000 consisting of 132,000 graduates and 192,000 diploma holders. The estimated stock at the end of 1971 was about 414,000 of which about 176,000 were graduate engineers. This stock is likely to grow to 201,000 engineering graduates and 259,000 diploma holders by the end of 1973 and to about 248,000 engineering graduates and 308,000 diploma holders by the end of 1978. With the annual outturn remaining at the level of 1973 even in the early years of the Sixth Plan period, the present decade is likely to close with a stock of 265,000 engineering graduates and 326,100 diploma holders.

12.17. The total requirement of engineers on the basis of the 5.5 per cent annual rate of growth envisaged in the Fifth Plan would be about 6 lakhs, the addi-

tional requirement during the Fifth Plan period being 2 lakhs. Considering the estimated outturn of 1,60,000 engineers (68,000 degree and 92,000 diploma holders) during the Fifth Plan period and the backlog of unemployed engineers (which was 82,679 i.e., 22,832 degree and 59,847 diploma holders at the end of 1972 according to the live registers of Employment Exchanges), there does not appear to be any shortage of engineers at the national level. There may, however, be a need to review, during the Fifth Plan, the admission capacity in respect of degree and diploma courses separately and among the specialities on a disaggregated basis.

Craftsmen Training

12.18. There are at present 357 Industrial Training Institutes/Centres with a total seating capacity of 1,56,000 in 32 engineering and 22 non-engineering trades. Under the Apprentices Act, 161 trades have been designated in 201 industries; so far about 87,000 places have been located for apprenticeship against which 52,500 apprentices have been engaged.

12.19. The main thrust in the Fifth Plan will be to consolidate, diversify and improve the quality of vocational training and to relate such training more closely to the employment potential and needs. Provision has been made for the early completion of the programmes for building construction, procurement of equipment and recruitment of instructors in all the Institutes. Funds have been provided for the gradual replacement and modernisation of the equipment of the Industrial Training Institutes. Vocational Training will be re-oriented towards the level and type of skills required by the economy. It is proposed to bring about effective coordination of efforts between the training institutions and the employing establishments.

12.20. The specialised institutes set up in the Fourth Plan for staff training and research, foremen training and advanced training will be further developed. A new institute for Electronics and Instrumentation will be set up. The activities of the Central Training Institutes for Instructors would be strengthened and diversified in support of the craftsmen training programme.

12.21. The Apprentices Act, as amended recently, provides, among other things, for the training in industry of engineering graduates and diploma holders and for the reservation of training places for candidates belonging to the scheduled castes and scheduled tribes.

12.22. The organisational set up for the apprenticeship programme will be strengthened; apex and satellite centres will be set up for apprenticeship and basic training in a variety of diversified trades. Arrangements will be made to organise related instruction at selected centres for a number of smaller establishments taken together.

12.23. The heterogeneity of craftsmen skills, the diverse sources of their supply, lack of uniformity in

the duration, content and level of training make the estimation of demand for craftsmen difficult. The requirements of these personnel might appropriately be assessed at the area level.

Agricultural Manpower

12.24. At the beginning of the Fourth Plan (1969), the stock of agricultural graduates was 51,000. On the basis of the present intake the stock would increase to 76,000 and 97,000 in 1974 and 1979 respectively.

12.25. The training facilities for agricultural manpower both at the graduate and post-graduate levels were expanded considerably during the Third Plan period. In 1970-71, there were 72 agricultural colleges in the country with an intake of 7,285 and outturn of 5878. On present indications the supply would be adequate to meet the requirements of about 30,000 during the Fifth Plan period.

12.26. Regional imbalances in agricultural education have arisen as a result of concentration of intake (to the extent of 54 per cent of the total intake in 1970-71) in two States, namely, Uttar Pradesh and Maharashtra. Of the total intake, 31 per cent was in Uttar Pradesh itself. The qualitative deficiencies of agricultural education may be remedied by measures like introduction of a uniform course of three years after Intermediate in Science, preventing new colleges being set up and reduction in the admission capacity of private agricultural colleges. The conversion of some sub-standard colleges to Farmers' Training Institutions and closure of other ill-equipped private colleges, suggested in the Fourth Plan document, may be considered by the State Government.

12.27. The concentration of outturn of agricultural graduates in Uttar Pradesh and Maharashtra has accentuated the problem of unemployment among agricultural graduates. Two-thirds of the total job-seekers among agricultural graduates were concentrated in Uttar Pradesh, Maharashtra and Andhra Pradesh by the end of 1972. Inter-State mobility among agricultural graduates being negligible, the States should review periodical surplus or shortage of agricultural personnel and take appropriate measures.

12.28. The unregulated growth of agricultural education has resulted in high rate of student wastage. A study of student wastage in the Agricultural Colleges of Maharashtra in 1969 showed that the wastage rate for the B.Sc. course was 29.7 per cent and for the M.Sc. course 18.8 per cent. These rates are higher than what the Agricultural Personnel Committee (1958) deemed tolerable, namely, 10 per cent as the maximum limit. The Indian Council of Agricultural Research which ensures standards of agricultural education should focus attention on the improvement of quality of agricultural education.

Medical Manpower

12.29. There has been considerable expansion of medical education; the number of medical colleges having increased from 57 in 1960-61 to 99 in 1973-74 with the corresponding expansion in intake from 5,800 to 12,500. This expansion augmented the

stock of allopathic physicians from 70,000 in 1960-61 to 1,38,000 in 1973-74. It is anticipated that the stock will further increase to 1,76,000 by 1978-79 on the basis of the anticipated output of the existing medical institutions.

12.30. On the basis of the normative approach of the Mudaliar Committee (1961) of 1 doctor for 3,500 population there should be 1,67,000 doctors in 1973-74 and 1,85,000 in 1978-79, as against the estimated stock of 1,38,000 and 1,76,000 respectively. It is estimated that the doctor-population ratio will improve from 1; 5,200 in 1968-69 to about 1; 4,200 by 1973-74 and 1; 3,700 by 1978-79.

12.31. What is more important is that the allopathic doctor stock is equitably distributed between the rural and urban areas. It is estimated that only 21.2 per cent of the allopathic doctors are serving 80 per cent of the population residing in rural areas. There has no doubt been a gradual improvement in the manning of Primary Health Centres since 1960. Even so by 30th September, 1972, there were 5,195 PHCs. in the country out of which 2,010 had only one doctor and 143 had no doctor. There were thus 2296 vacancies of doctors in the PHCs. Another problem was the shortage of lady doctors. Even the existing stock is under-utilised.

12.32. A number of committees have reviewed the situation in the context of the planning of health services in the country and recommended remedial measures to be adopted by the appropriate authorities. They comprise, among others, preferential treatment for admission to post-graduate course to those serving in rural areas, monetary incentives and conditions governing the grant of stipends to medical students and training of a new type of health auxiliary—a multi-purpose health worker—to deliver the integrated health care services. The various measures taken to correct the distributional imbalance require to be evaluated periodically by the authorities concerned to ascertain the extent to which the Plan objectives are fulfilled.

12.33. The problems affecting medical education also need prompt attention. They relate to diversity in the methods of selection of students, domiciliary restrictions, the practice of charging capitation fees by some private colleges for admission irrespective of merit, under-utilisation of post-graduate educational facilities, shortage of medical teachers etc. The Medical Education Committee (1969) highlighted the factors that are affecting the quality of medical education and suggested remedial measures which were considered by the Medical Education Conference and referred to appropriate authorities for action.

12.34. On post-graduate educational facilities the Medical Education Committee had observed that the admission capacity of the post-graduate departments of about 6,000 seats both in degree and diploma courses is not being fully utilised, the annual intake being only 3,500 per annum. Whilst the sanctioned admission capacity in post-graduate medical courses is being underutilised, there are at the same time vacancies of teachers in medical colleges especially in

para-clinical and pre-clinical disciplines and of specialists in district hospitals. This imbalance should receive attention at the zonal level if not at the State level. A review of the staffing of the medical colleges and of referral hospitals in respect of doctor-teachers and specialists respectively vis-a-vis the staffing norms recommended is necessary not only for rectifying deficiencies but also for a more systematic approach to the regulation of post-graduate training facilities.

Nurses

12.35. As the training of nurses takes less time supply-demand adjustment can be made in a shorter time period. As against the desirable stock of 1,30,000 nurses by 1978-79 according to the recommended norm of 1 nurse for 5,000 population, there will only be 1,15,000 nurses on the basis of the available training facilities. According to the Fifth Plan programmes, the demand for nurses in the public sector would be 35,000.

There is a shortage of post-graduates in nursing who are required for teaching institutions for nurses and auxiliary nurse-midwives. The dearth of post-graduate students in nursing might be overcome by instituting scholarships and other incentives during the Fifth Plan period.

Auxiliary Nurse Midwives

12.36. There are about 40,000 auxiliary nurse midwives (ANMs) at present and their number will go up to 50,000 by the end of the Fourth Plan. The expected outturn of ANMs during the Fifth Plan with the existing training facilities will be 35,000. This should be adequate to meet the requirements of ANMs given the norm of one ANM for 10,000 rural population and also for manning urban family planning centres, other health and family planning centres etc. Whilst a few States have almost achieved the targets by now, some are expected to reach the targets by the end of the Fourth Plan period. Shortage of ANMs, experienced by any of the remaining States is proposed to be met with personnel from other States.

Teaching Personnel

12.37. At the beginning of the Fourth Plan (1968-69) there were 21.30 lakh teachers in school education. The percentage of trained and untrained teachers was 76 and 24 respectively. A little over one-third of these teachers were in Uttar Pradesh, Maharashtra and Tamil Nadu. In 1970-71 the number of teachers had gone up to 23.25 lakhs of whom 83 per cent were trained. The percentage of trained teachers among primary, middle and secondary schools, was 83, 85 and 81 respectively.

12.38. The intake of teachers training colleges (graduate and post-graduate levels) increased from 37,654 in 1967-68 to 54,080 in 1970-71. The supply may be of the order of 2.25 lakh graduate trained teachers, including post-graduates, during the Fifth Plan which would be adequate to meet the demand for trained graduate teachers.

12.39. The pupil-teacher ratios of 40:1, 35:1 and 25:1 have been considered appropriate for the Fifth Plan period for the Primary, Middle and Secondary stages respectively.

12.40. Under elementary education, the additional enrolment in classes I-V and VI-VIII will be 145 lakhs and 66 lakhs respectively. On the basis of the accepted teacher-pupil norms the additional requirement of teachers to meet the needs of additional enrolment is estimated to be 5.5 lakhs (3.6 lakhs for primary and 1.9 lakh teachers for middle classes) at the elementary level during the Fifth Plan period. The replacement needs work out to 2 lakhs. Thus the total requirement will be 7.50 lakhs during the Fifth Plan. The enrolment of 2.7 million additional children is envisaged during the Fifth Plan period at the higher secondary stage. With a teacher-pupil ratio 1:25 the number of teachers required to meet the needs of additional enrolment during the Fifth Plan would be 1.10 lakhs. The replacement needs are estimated at 0.54 lakh. The total requirement will thus be 1.64 lakhs.

12.41. The main problems that affect school education are : (a) high pupil-teacher ratios in the primary schools; (b) inadequate staffing of schools in the tribal and backward areas, and of schools for girls; (c) backlog of untrained teachers who need to be trained; (d) shortages of science and mathematics teachers; and (e) existence of regional disparities in the availability of trained teachers.

12.42. A quick survey of educational development and all the attendant problems in each State for the three levels of school education is necessary to ascertain, for instance, the backlog of untrained teachers and the requirements of tribal and backward areas in States like Bihar, Madhya Pradesh, Orissa and Rajasthan. The position regarding girls' education and the shortage of trained lady teachers and of qualified graduates or post-graduate science and mathematics teachers has also to be ascertained for appropriate measures to be taken for gearing up school education. In the light of such an assessment each State Government will be in a better position to absorb some of the job-seeking trained teachers.

Scientific Personnel

12.43. The Council of Scientific and Industrial Research estimated the stock of scientists at the end of 1970 as 4,20,000 graduates and 1,13,000 post-graduates. Assuming an attrition rate of 2 per cent the stock estimates of graduate and post-graduate scientists at the end of 1973-74 would be 7,33,688 and 1,70,031 respectively. By 1978-79 the stock is estimated to be about 15 lakh graduate and 3 lakh post-graduate scientists. It is estimated that the universities will turn out by 1978-79, 8,65,000 science graduates and 1,34,000 post-graduates. The demand for science graduates and post-graduates is for teaching, research, industry and technical services. Demand projections usually made for other categories of manpower have not been systematically attempted for scientific manpower owing to lack of necessary data and the inter-disciplinary nature of the work done by the scientists.

Managerial Personnel

12.44. There are 20 universities and 10 other institutions offering full-time and part-time training courses on management. The out-turn from these institutions in pre-service courses was 997 in 1970-71. Four more universities have been approved for conducting full-time management courses. In addition to pre-service programmes offered by the Institutes of Management and the universities there are several other institutions offering part-time and short-time courses for managerial personnel already in position. There are also extensive in-plant training arrangements in most of the large commercial undertakings.

12.45. The outturn from 32 universities and two Institutes of Management, assuming the present level of admissions and pass percentages, would be 8,600 for all courses during 1974-79 comprising the outturn from graduate diploma courses (2270), Master's level courses (2665) and other diploma courses (2905).

12.46. The estimation of requirements of managerial personnel over a time perspective is beset with difficulties. These arise because of problems of concept and definition, diverse specialisation of managers at various levels and lack of data on the stock of managers. Available information does not, however, indicate any likelihood of significant shortage of managerial personnel in the Fifth Plan period.

12.47. It is necessary to review the present management courses with a view to bringing about uniformity in standards and content and ascertaining whether available courses meet the needs of managerial functions in the Indian environment. Courses will have to be evolved to provide the necessary managerial orientation to the small entrepreneurs since the small units do not have the resources to employ full-time managers.

Other Issues

12.48. It will be necessary to shift the emphasis from quantitative to qualitative aspects which will enable a more meaningful assessment and development of skills to meet the requirements of the different sectors and areas.

12.49. A disconcerting problem which is creating, to some extent, artificial surpluses and shortages in different regions for different categories of manpower is the existence of impediments to inter-State mobility of even higher skills for which national and international markets could normally be assumed. These impediments adversely affect the implementation of Plan programmes in different sectors. The restrictions on mobility have their origin in restrictive recruitment practices, based either on knowledge of local languages or duration of stay of candidates in a particular State or region. Appropriate measures need to be taken to remove the artificial barriers to mobility of skills; otherwise there is a risk of the employment market, even for higher skills, getting artificially delimited to State jurisdictions resulting in larger inter-State manpower imbalances.

12.50. In the present context, manpower planning cannot be done on a uniform basis at the national level

alone. The States have to assume an increasing responsibility in manpower planning as they are not only in a better position to identify sectoral manpower imbalances but also take most of the vital developmental decisions in the field of education, industrial and craftsmen training, agriculture and health. In view of the growing surpluses, manpower policies and programmes will be largely influenced during the Fifth Plan period by the overall unemployment situation and its regional manifestation in the States. It will be useful if the State Governments periodically take stock of the unemployment situation and also of the measures taken to promote employment in their respective States.

12.51. For checking the growth of educated unemployment, the supply of different categories of manpower needs to be regulated through appropriate admissions policy formulated against the backdrop of educated unemployment prevailing in the States. This would require a regulatory and selective policy of expansion or curtailment, as the case may be, of the training facilities available at the regional or State levels in different sectors both in respect of post-graduate education and higher technical and professional education.

12.52. In view of the increasing importance of evolving a suitable employment and manpower strategy in the context of regional economic planning, the State Governments have been advised to establish Employment and Manpower Units. These Units will collect and analyse employment and manpower data, organise studies and surveys for improvement of the manpower information system in respect of different categories of manpower and bestow constant attention on manpower problems like barriers to mobility, manpower imbalances and utilisation of surplus categories with a view to making manpower planning more purposive.

III

EMPLOYMENT SERVICE

12.53. The number of Employment Exchanges in the country was 409 at the commencement of the Fourth Plan (end of March, 1969) and is now 463 (end of August, 1973). Placements rose from 4.28 lakhs in 1969-70 to 4.99 lakhs in 1972-73. Of these 218 exchanges at present have vocational guidance units. These units, apart from providing assistance in the field of vocational choice and career planning, also collect and disseminate occupational information. There are also University Employment Information and Guidance Bureaux at 52 Universities in the country that render guidance and placement services to university alumni and students. And also a career study centre is set up at the Central Institute for Research and Training in Employment Services with a view to implement the vocational guidance and career counselling programme in the country.

12.54. The employment service in the States and Union Territories is proposed to be strengthened for better functioning in the spheres of registration, placement, vocational guidance and employment counselling. Some more employment exchanges will be set up in areas where such facilities are not available. The existing employment exchanges will be suitably strengt-

hened to service the increasing number of job seekers. Selected employment exchanges located in the areas with the highest concentration of industrial and commercial employment potential are expected to be upgraded; in these exchanges, job development officers will be provided to maintain close liaison with the employers. This is expected to bring about a better matching between the requirements of workers by categories of skills and the candidates seeking employment. The employment service will also provide information regarding opportunities for self-employment which appear promising in various regions and areas.

12.55. Various studies and surveys are being initiated to provide the necessary informational base for strengthening the programme of vocational guidance for educated youth. These studies will also be of use in assessing the training needs at the area level, in re-orienting the existing training programmes and the areas of self-employment. In order to improve the scope and content of the training programme for employment service officers, the Central Institute for Research and Training in Employment Services will be strengthened.

12.56. Vocational rehabilitation centres for the physically handicapped are at present functioning in four areas and another two are being set up during 1973-74. It is proposed to open four more centres of this type during the Fifth Plan period.

IV

LABOUR WELFARE

12.57. Steady progress is being achieved in social security measures. The Employees' State Insurance Scheme which provides for medical benefit in kind and certain cash benefits to insured persons has been extended to cover 4.2 million employees as on 30-6-1973. The families of the insured persons are also being progressively covered for medical care under the Scheme. The question of expansion of the coverage of the Employees' State Insurance Scheme has been considered by a Committee on Perspective Planning appointed by the Employees' State Insurance Corporation. The Committee has recommended that the Employees' State Insurance Scheme should carry out a 5-year phased programme of extension to additional categories of establishments, including smaller factories, shops and commercial establishments, mines and plantations. The Report of the Committee has been considered by the Employees' State Insurance Corporation. Further action will be taken after Government reaches decisions on the recommendations.

12.58. Provision for family pension has been introduced under the Employees' Provident Fund Scheme and Coal Mines Provident Fund Scheme since March 1971. The scope for integrating certain important social security measures is being studied.

12.59. Welfare of workers in coal, mica and iron ore mines is the responsibility of the Statutory Coal, Mica and Iron ore Labour Welfare Funds respectively. Setting up of similar welfare funds to look after the welfare of workers in mines other than these, has been engaging the attention of the Government. The Limestone and Dolomite Labour Welfare Act, 1972 has now been passed and steps are being taken to set up a Welfare Fund for the benefit of workers employed in these mines.

12.60. In the State Plans, provisions have been made for programmes of labour welfare centres. Under the Workers' Education Programme, it is proposed to train about 20,000 worker teachers and 10 lakh workers during the Fifth Plan by activating the existing regional centres and opening new regional centres.

12.61. For promoting industrial safety in increasing measure, provisions have been made for setting up safety cells in various States. The activities of the Directorate General of Factory Advice Service and Labour Institutes will be intensified to undertake further studies on industrial safety, industrial hygiene and occupational health. The National Safety Council will undertake various measures for bringing about safety consciousness in industrial and commercial organisations.

12.62. Stress will be placed on strengthening industrial relations and conciliation machinery, better enforcement of labour legislation, research in labour relations and labour laws, imparting training to labour officers, improvement of labour statistics and undertaking studies in the field of wages and productivity. Special attention will be devoted to bring about improvement in productivity in all spheres of the economy. The Labour Bureau will undertake various studies relating to Rural Labour, Working and Living Conditions of Scheduled Castes and Scheduled Tribes, Occupational Wage Survey and other subjects in the field of Labour.

12.63. A National Labour Institute is proposed to be set up by re-organising and expanding the Indian Institute of Labour Studies at present functioning under the Chief Labour Commissioner's Organisation. The Institute would be a co-ordinating agency for research in labour matters. Its activities would relate to training, consultancy and evaluation.

Financial Outlays in the Fifth Plan

12.64. A provision of Rs. 57.00 crores has been made in the Fifth Plan for craftsmen training, employment service and labour welfare programmes. Of this, Rs. 14.57 crores will be in the Central Plan and Rs. 42.43 crores in the States and Union Territories' Plans.

Development of Backward Classes and Social Welfare

I

DEVELOPMENT OF BACKWARD CLASSES

Introduction

SCHEDULED castes and scheduled tribes and other backward classes such as denotified and nomadic tribes, who comprise more than one-fifth of India's population, live, below the poverty line. Age old social and cultural handicaps coupled with environmental factors have, to a significant extent, contributed towards their low levels of living. In accordance with the constitutional directives, attempts have been made, through suitable legislative and executive measures, to remove their disabilities. A variety of programmes were also adopted for their socio-economic and political development. However, in view of the magnitude of the problem, intensive efforts are required to bridge the gap between the levels of living of these groups and the more advanced groups of society. Amongst scheduled castes and tribes different groups are at varying levels of development. Their occupational pattern is not diversified enough to assure the requisite degree of social mobility.

Review of Fourth Plan

13.2. The major programmes for the development of backward classes in the Fourth Plan have been in the Centrally Sponsored sector and have consisted of post-matric scholarships, girls' hostels, tribal development blocks, co-operation, research and training, improvement in the living and working conditions of those engaged in unclean occupations, coaching and allied schemes and aid to voluntary agencies. In the State Plans, most of the schemes for economic development of backward classes have been largely in the nature of aids to individuals for the purchase of agricultural implements, bullocks, fertilisers, land reclamation and for taking up village industries and handicrafts. Since the First Five Year Plan a total amount of Rs. 450 crores has been spent in the Central and State sectors on welfare of backward classes under the supplementary programmes. Of this amount, Rs. 200 crores have been spent on educational programmes, Rs. 149 crores on programmes of economic development and Rs. 101 crores on health, housing and social services schemes.

13.3. As a result of planned efforts, the enrolment of children from backward classes has increased considerably. By the end of the Fourth Plan, about three million and one million children belonging to scheduled castes and scheduled tribes respectively would

have been awarded pre-matric scholarships or stipends. The number of students of scheduled castes and scheduled tribes who were awarded post-matric scholarships increased from 2180 in 1951-52 to 2,11,570 in 1970-71. In 1973-74, this number is expected to increase to about 3,21,800. The scheme of coaching centres was further expanded. Ten pre-examination training centres and four coaching-cum-guidance centres were set up in the Fourth Plan. In the Centres at Allahabad and Madras, out of 79 candidates who were given pre-examination coaching during 1970-71, 34 were selected for all-India and Central Services. Two new tribal research institutes, one each in Kerala and Uttar Pradesh, were set up during the Fourth Plan. This was in addition to the nine tribal research institutes which were set up in the earlier plans. The tribal development blocks started in earlier plans continued in the Fourth Plan. During the Fourth Plan, 4 new blocks were started and 8 blocks in Manipur were re-organised into 20 sub-blocks. At present, there are 484 tribal development blocks and 20 sub-blocks functioning in the various tribal regions of the country.

13.4. Past experience shows that allocations from the general sector programmes were not adequate to provide a reasonable base for the development of backward classes so that the supplementary sector could play an effective role in bridging the gap between these groups and the rest of the society. Even in the case of area based programmes, such as tribal development blocks, which have been taken up since the Second Plan, the impact has not been very appreciable on account of the limited areas of the blocks, rigid adherence to the schematic pattern in the implementation of the programme and inadequacy of general sector outlays for these regions. The institutional framework developed for advanced areas have generally been adopted for the simple tribal economies without taking note of the special requirements of these areas. The inadequate development of credit and marketing, agriculture and communications in tribal areas have been a major factor in their slow economic and social progress. The benefits of development appear to have reached a small section of these communities. Although plan programmes for scheduled castes have had better impact in the field of education, in the absence of adequate supporting economic programmes, they have added to the ranks of educated unemployed and the disparity between the literacy levels of the backward classes and the general population persists. The programmes of economic development have not fully succeeded in bringing about a significant rise in their levels of living.

Objectives and Strategy in the Fifth Plan

13.5. The schemes for the development of backward classes in the Fifth Plan will aim at improving the quality of life of these people and narrowing the gap between the levels of development of these people and the general population. It will be essential to formulate time-bound programmes for the elimination of exploitation of the backward classes and to speed up the processes for their economic and social development. In order to achieve these objectives, greater emphasis will be placed in the Fifth Plan on the role of general sectors in providing a major thrust to the development of backward classes. The programmes in the backward classes sector will be of a catalytic nature and will be supplemental to the general sector programmes.

13.6. For speeding up the socio-economic development, certain basic infrastructure in terms of growth centres, network of communication, schools, rural health centres, rural electrification etc. will require to be developed. An integrated credit-cum-marketing structure will have to be established. The legal and institutional framework will be strengthened for realising the social and economic objectives.

13.7. For the development of scheduled tribes and tribal areas, an integrated area development plan will be undertaken. Separate sub-plans for areas with a large concentration of scheduled tribes will be drawn up within the respective State Plans. Larger flow of funds from various sectors of development will be ensured to meet the requirements of each specific area provided it is geographically and administratively viable. The tribal development blocks, tribal development agencies and other projects set up by central Ministries in the various States will be integrated with the area plans. Taking into consideration the concentration of tribal population as the criterion, compact areas will be demarcated at the district, taluk and block levels. A core programme will be required to be drawn up for providing the basic infrastructure necessary for development of each area. This would relate to credit, marketing and ware-housing; completion of land records and records of rights in forests, debt redemption; development of medium and minor irrigation; provision of improved practices in agriculture and horticulture; tackling the problem of shifting cultivation; establishment of agro and forest based processing industries; arterial roads linking tribal *hats* and forests, transport and communication facilities; strengthening of administrative structure; etc. There would still be a large number of tribal pockets scattered throughout the country. These pockets would need special attention and their development will necessarily have to be given priority at the block level. The State resources for sub-plans for the development of tribal areas will be supplemented by suitable financial support from the Centre. This support will be in addition to the provision made in the supplementary as well as sectoral programmes. In other areas having dispersed population, the backward classes sector will assume a coordinating role providing critical inputs where necessary. The more backward amongst the scheduled castes and scheduled tribes will be identified and special programmes will be formulated for them.

Programmes

13.8. Tribals by and large depend on agriculture and collection of minor forest produce for their livelihood. Hence the development of agriculture and processing of forest produce would be given higher priority in any programme of action for their development. The most important components for the development of agriculture are the possession of land, the provision of assured irrigation and improved methods of cultivation. Land surveys are yet to be completed in many tribal areas. High priority will be accorded to the completion of land records, prevention of land alienation, exploitation by intermediaries, bonded labour and debt redemption. Programmes of horticulture and small cottage industries based on forest raw materials will need to be developed in such a manner as to generate considerable employment to the tribals. Schemes for the exploitation of forest resources will be drawn up as to involve the participation of the tribal communities. Forest villages and labourers will receive special attention.

13.9. Tribals who are engaged in shifting cultivation are living under poor conditions. Shifting cultivation is resulting in major soil erosion and deforestation. While measures for the control of shifting cultivation will be necessary in the national interest, attention will have to be given to the question of permanent settlement of the affected people. An integrated programme for their development will be prepared, which will include the protection of forest lands, improving the methods of shifting cultivation in transitional phase and providing the shifting cultivators with alternative means of livelihood. Programmes for horticulture will be given a higher priority in such areas.

13.10. In the areas affected by industrialisation and urbanisation, programmes for the diversification of the occupational base of scheduled tribes will be given priority. The training programmes for tribals will be intensified to facilitate their absorption in the new set-up. In future, the problem of tribal communities affected by the establishment of industrial projects will form an integral part of the project itself and advance planning for the development of these areas will be made so that these communities are in a position to absorb the benefits of the new enterprises by the time they are established in these areas.

13.11. The exploitation of tribals by contractors, money lenders and other vested interests in different spheres of economic activity will be curbed by establishing, reorganising and expanding the existing framework including the tribal development corporations. The existing co-operative structure in tribal areas is too weak to provide a package of services such as credit, supply of seeds and other inputs, supply of consumer goods and marketing of produce. For providing effective services in tribal areas, the existing organisation will be strengthened. The objective will be to have large sized societies which are capable of integrating the functions envisaged in the package.

13.12. Under the Minimum Needs Programmes, priority will be given to scheduled castes and scheduled tribes and for this purpose the general norms

applicable to other areas and classes will be relaxed for meeting the special requirements of backward classes and tribal areas. For instance, under elementary education, residential quarters which are intended for female teachers will be provided to male teachers also in tribal areas. Under the rural roads programme, for tribal areas where the population is relatively more dispersed, all weather link roads will be provided to each cluster of villages having a population of 1500 and above. The States which have reached 40 per cent coverage under rural electrification programme but which have a lower coverage in respect of tribal areas, will also be covered under the programme. The criteria for locating the primary health centres and special centres will be relaxed in tribal areas.

13.13. The scheduled castes population in the village is, by and large, dependent on land owning classes. To minimise their dependence on them, modernisation and diversification of occupations of these groups will be taken up. Efforts will be intensified towards the eradication of the practice of untouchability and mechanisation of unclean occupations. In order to eliminate the practice of carrying night soil as head load, mechanisation of this occupation will be combined with the urban development programme. Suitable machinery will be set up for enforcement of the Untouchability (Offences) Act and intensifying the efforts to eradicate the practice of untouchability.

13.14. The social and economic problems of the nomadic and semi-nomadic groups will be studied in detail for formulating suitable programmes for their rehabilitation. Their attitudes, skills and aspirations will be carefully identified for avoiding mal-adjustment resulting from their rehabilitation. The combined correctional-cum-development approach started in the earlier Plans for the welfare of denotified communities will be continued and strengthened. A family and group approach will be adopted when the programmes are formulated and implemented. The participation of local leaders and voluntary organisations will be encouraged for the effective implementation of these programmes.

13.15. The scheduled castes and scheduled tribes will be given the highest priority in the schemes for the universalisation of elementary education. In sparsely populated tribal areas where hamlets are not large enough to support primary schools, ashram schools will be established on a priority basis to provide a universal coverage of primary education in these areas. The schemes of pre-matric and post-matric scholarships, hostels, boarding charges, preparation of books in tribal dialects and incentives to teachers in tribal areas will be continued and strengthened. In addition to these promotional efforts, special programmes to encourage talented students from backward communities and coaching schemes to help them to increase their competitive capacity will be necessary. From the middle school onwards, efforts will be directed towards suitable career planning and guidance with a view to promoting gainful employment. The existing rates of post-matric scholarships will be suitably revised. The present programme of awarding scholar-

ships to all eligible candidates will be continued. Special attention will be given to the provision of hostel facilities for girls from backward communities. The reasons for the low enrolments amongst the most backward communities will be identified and a package of assistance programmes will be provided so that the general educational facilities are actually utilised.

13.16. The unemployed amongst the scheduled castes and scheduled tribes will be helped with loans to set up small service centres. Coaching-cum-guidance centres started in the Fourth Plan for guidance and pre-employment orientation training will be expanded in the Fifth Plan. Urbanisation and industrialisation as well as modernisation of agriculture have thrown up a large number of occupations like the maintenance and propulsion of machinery and equipment. If members of the scheduled castes are helped to obtain employment in these occupations, they will not only raise their incomes but will also be able to change their traditional occupations which are linked to the practice of untouchability. Training and employment in avenues such as nursing, mid-wifery, sales, stenography, typing and telephone operation will be provided to the educated women of these communities.

13.17. Past experience reveals that most of the programmes did not have an adequate data base for project formulation to reflect the needs of different communities. The tribal research institutes will henceforth be required to concentrate on developmental needs and applied research. The services of the Anthropological Survey of India and other research organisations in the field will also be utilised for undertaking applied research. In view of the complex problems of scheduled castes, denotified tribes and nomadic and semi-nomadic groups, the tribal research institutes will include, within their scope, the studies of these categories. These research institutes will be suitably strengthened in the Fifth Five Year Plan. The training of personnel working in tribal areas is also necessary and it will be undertaken on a continuous basis.

13.18. Voluntary organisations have an important role to play in the mobilisation of support to various programmes and their effective implementation. Their participation in creating consciousness among backward classes for their developmental needs will be essential. It will be necessary to develop leadership at different levels so that their urge for betterment is constantly sustained. All-India voluntary organisations which have done pioneering services in this field will be encouraged to further intensify their activities in most backward, tribal and rural areas. They will be suitably aided and strengthened so that they could develop into viable organisations at the national and state levels. The areas and activities like the more backward tribal areas, women's education, where voluntary effort could play an important role, will be identified.

13.19. Administrative set-up in the tribal areas will be restructured to suit their special requirements. It is essential that formulation and implementation of area development plan is entrusted to a single line

agency. Personnel policy will be required to be re-oriented and a system of incentives devised to attract competent personnel to these areas. Besides, incentives at the field level like housing, schools, medical facilities, etc. will be necessary to retain competent personnel in the tribal areas. A Central Coordination Committee will be set up for ensuring the flow of funds to the development programmes of backward classes from the sectoral programmes, watching the progress of the schemes in tribal areas and for suggesting measures for effective implementation of the programmes.

Outlays

13.20. A provision of Rs. 255 crores—Rs. 170 crores in the State sector and Rs. 85 crores in the

Central sector—has been made for programmes in the Backward Classes sector in the Fifth Plan. The details of the Fifth Plan outlays against the outlays and the likely expenditure in the Fourth Plan are given in Table 1. The amount which the States will provide in their Plans for the Tribal Sub-plans will be in addition to this outlay and the States' resources in this respect will be further supplemented by suitable financial support from the Centre. The total allocation which will thus become available in the Fifth Plan for the Backward Classes sector will be quite large as compared with the Fourth Plan allocation.

Table 1 : Fifth Plan Outlay and likely Expenditure in Fourth Plan for Welfare of Backward Classes

item	(Rs. crores)		
	fourth plan outlay	fourth plan anticipated expenditure	fifth plan outlay
(0)	(1)	(2)	(3)
<i>Centre</i>			
1. tribal development blocks	32.50	32.94	10.00*
2. post matric scholarships	11.00	23.13	53.00
3. girls hostels	2.00	1.96	4.00
4. coaching and allied schemes	1.00	1.00	3.00
5. research, training and special projects	1.50	0.74	3.00
6. co-operation (special schemes)	2.50	2.95	3.00
7. improvement in working and living conditions of those engaged in unclean occupations	3.00	2.96	‡
8. denotified tribes and nomadic tribes	4.50	4.41	‡
9. aid to voluntary organisations	2.00	1.82	4.00
10. machinery for enforcement of untouchability (offences) act . . . . .	..	..	5.00
<i>total</i>	60.00	71.91	85.00
<i>II. states</i>			
1. education	79.98	59.65	165.00
2. economic development		17.46	
3. health, housing and other programmes		21.63	
<i>total</i>	79.98	98.74	165.00
<i>III. union territories</i>			
1. education	1.36	0.28	5.00
2. economic development		0.23	
3. health, housing and other programmes		1.54	
<i>total</i>	1.36	2.05	5.00
<i>grand total</i>	141.34	172.70	255.00

* Under tribal development blocks programme, provision has been made only for one year.

‡ No separate provision has been made in the Central sector as this programme will be taken care of in the State Plans.

II SOCIAL WELFARE

13.21. In the past two decades of planning the governmental effort in the field of social welfare was directed mainly to the provision of some basic curative and rehabilitative services. Even though the voluntary sector had to shoulder the major responsibility for the development of welfare services, the participation of State has been steadily increasing with successive Five Year Plans. In view of the commitment of the State towards social justice and development of human potential, the State will be required to assume much greater responsibility in the coming years than in the past. In order to discharge this responsibility, the policies and programmes in this sector will require a new orientation. The Fifth Plan attempts to provide a new approach and strategy for promoting various services for social welfare and development.

Review

13.22. During the Fourth Plan period, the Central Social Welfare Board sanctioned annually under its grants-in-aid programme, grants to about 3000 voluntary institutions amounting to a total of Rs. 191 lakhs. For the benefit of women and children in rural areas, the Board started 163 Family and Child Welfare projects during this period, bringing the total number of projects to 281 since the launching of the scheme in November, 1967. Two other major programmes of the Board for the welfare of women were: (a) condensed courses of education for adult women and (b) the socio-economic programme. During the Fourth Plan period, 653 condensed courses were organised. The number of socio-economic units in operation in the last year of the Fourth Plan stood at 120. With the advent of Panchayati Raj, the Central Social Welfare Board handed over the erstwhile welfare extension projects to Mahila Mandals in 1961-62 with financial support to the extent of 75 per cent of the actual expenditure for carrying on the activities. About 450 Mahila Mandals were given financial assistance annually. The Board also extended grants-in-aid for organising 926 holiday camps for children belonging to low income group families.

13.23. The three National Institutes for the blind, the deaf and the mentally retarded, continued their activities and one more Institute for the orthopaedically handicapped was set up during the Fourth Plan period. About 7500 scholarships were awarded to the physically handicapped persons to enable them to prosecute their studies in general and technical courses of education. For the placement of handicapped persons in employment, 9 special employment exchanges set up under the Central sector and 2 under the State sector continued to function during the Fourth Plan period.

13.24. For the prevention of mal-nutrition among children in the age group 0-6 years and pregnant and nursing mothers belonging to vulnerable social groups, two schemes, viz., (i) Special Nutrition Programme, and (ii) Nutrition through balwadis, were started. About 40 lakh children and expectant and nursing mothers in urban, tribal and drought affected

areas benefited under the former scheme. The latter programme covered about 2 lakh children through 5577 balwadis.

13.25. Though there has been substantial expansion of social welfare activities in the country during the various plans, most of the welfare programmes in the past were designed mainly with the object of providing assistance to individuals and groups, who, on account of certain economic, social, physical and mental handicaps, could not take full advantage of the amenities and services provided for the community in general. These services were curative or ameliorative in nature. The preventive and developmental aspects of social welfare, which are more effective and economical in the long run, could not receive adequate attention. The scheme of family and child welfare projects was not comprehensive and did not fully succeed in providing essential services such as immunisation and health check-up for children and economic programmes for women. The four national institutes for the handicapped did not attain their full potential for promoting research and training in the field. By and large, welfare services in the previous plans came to be developed on an *ad hoc* basis. This was partly due to lack of adequate data on social problems, and partly due to lack of integration between social and economic planning. It is necessary to remedy these lacunae in the Fifth Plan period.

Approach and Strategy in the Fifth Plan

13.26. The concept of social welfare would be enlarged in the Fifth Plan and would be considered as an organised function designed to enable families, groups and communities to cope with social problems arising out of changing social conditions, particularly in regard to the structure of the family and its functions. The new approach would aim at a proper integration of welfare and developmental services. A major thrust in this field during the Fifth Plan will be the expansion of preventive and developmental programmes of social welfare. Efforts will also be made to bring about integration between the social and economic aspects of planning for the weaker sections, particularly for children and women. Welfare services will be promoted taking the family as a unit of development and integrated with programmes of employment, economic development and distributive justice. Simultaneously, efforts will be made to provide basic health services, such as maternity care, family planning, immunisation, functional literacy, child care, nutrition and other social services to families in general and particularly those of the weaker sections. These efforts would further be supplemented by the Minimum Needs Programme to cater primarily to the needs of families of vulnerable groups. Welfare programmes for women and children in need of care and protection as also assistance to the aged and the handicapped would be further expanded and strengthened with the ultimate object of developing a comprehensive social security programme. A high place is assigned in the Fifth Plan to the role of voluntary organisations in social welfare programmes. Such organisations will be encouraged by providing grants-in-aid with the increasing emphasis on improvement of standards and expansion of welfare services rendered by them. For deriving maximum benefits from the existing organisational

machinery citizen participation, use of community resources and intensive workers' cooperation will be enlisted at various levels.

Programmes

The major programmes for the Fifth Plan are dealt with below :

13.27. *Child Welfare* : Child welfare has been accorded the highest priority in the social welfare sector. To ensure healthy growth and development of children, especially those in the age group of 0-6, a scheme of Integrated Child Care Services, with emphasis on supplementary nutrition, immunisation, health check-up, referral service and nutrition education will be launched in the Fifth Plan on a fairly large scale. The scheme would cover the needs of pregnant and nursing mothers, particularly those hailing from weaker sections of the society, and would also aim at reducing the infant and maternal mortality rates. Health and nutrition components of the package programme have been provided in the respective sectors. Suitable mechanism for inter-sectoral coordination between health, nutrition, social welfare and other concerned departments will be evolved for ensuring proper implementation of the programme.

13.28. Available services for children in need of care and protection are found to be inadequate. To stimulate voluntary action in this direction, it is proposed to take measures such as liberalisation of conditions of grants for the purpose of expanding the existing voluntary institutions and starting new institutions for children. To the extent possible, starting of children's institutions in small towns will be encouraged to reduce maintenance costs as well as to achieve wider coverage. Development of non-institutional services like foster care and adoption will also be given due importance. A Central Inspection system is proposed to be organised to ensure maintenance of minimum standard of services in Government-aided institutions.

13.29. *Welfare of Women*: In regard to the programmes for the welfare of women, priority will be given to the claims of women in need of care and protection, women from low income families, needy women with dependent children and working women. A programme of functional literacy, which would endow women with necessary knowledge and skills to perform the functions of the house-wife, such as child care, nutrition, health care, home economics, etc. will be launched for women in the age group 15-45 years. The existing scheme of condensed courses of education for women in the age group 18-30 years will be suitably modified and expanded. Special steps will also be taken for the placement and follow-up of successful candidates. The socio-economic programme of the Central Social Welfare Board, which aims at providing opportunities for work and a wage to needy women, such as widows,

destitutes and the physically handicapped, would be adequately expanded during the Fifth Plan. Besides, diversification of trades in the production-cum-training units based on improved technology would be attempted. Managerial and sales training will also be introduced in order to promote marketability of goods produced in different units.

13.30. With the increased educational and occupational opportunities available to girls and the economic compulsions, more and more women are entering the employment market. Women coming from rural areas and small towns to metropolitan cities are in dire need of accommodation at reasonable rates. A scheme to assist voluntary organisations in extending hostel facilities for such women is contemplated.

13.31. *Welfare of the Handicapped* : The working of the four National Institutes for the blind, the deaf, the mentally retarded and the orthopaedically handicapped is proposed to be streamlined and their activities will be suitably expanded and improved. The Institutes for the blind and the deaf are proposed to be reorganised for diversifying their training and other programmes. The model school in the Institute for mentally retarded will be upgraded to provide some additional services. The Institute for the orthopaedically handicapped that has been recently set up would also be further developed. Under the scheme of Research on Technical Aids for the Handicapped, it is proposed to sponsor research in physical and biological sciences for developing technical aids such as sensory and prosthetic aids for the handicapped. Other important schemes for the welfare of the handicapped, viz., scholarships for general and technical education and training, sheltered workshops, assistance to voluntary organisations and special employment exchanges/cells, will receive greater attention.

13.32. *Social Defence* : For the care, education, training and rehabilitation of delinquent and neglected children, it is necessary to extend the application of the Children Act on a wider scale. Preventive services, such as setting up contact clubs, play centres, juvenile guidance units, workshops, parental counselling, etc. particularly in slum areas of metropolitan cities and big towns, will be encouraged. Expansion of probation system, improvement of services for social and moral hygiene, development of parole services, appointment of welfare officers in prisons, expansion of after-care services and enforcement of minimum standards in correctional and non-correctional institutions are some of the priority areas to which attention will be given during the Fifth Plan period. It is desirable to bring all the services relating to correctional administration under one implementing agency. Progressively, the States should endeavour to evolve a comprehensive social security system covering the needs of the aged handicapped and others in need of assistance.

13.33. *Grants-in-aid*: Voluntary sector will be further encouraged by providing grants-in-aid

with an increasing emphasis on improvement of standards and expansion of welfare services for the family, particularly for women and children. Measures will be taken to rationalise and simplify further the system of grants-in-aid. As far as possible, special efforts will be made for the development of voluntary organisations in rural areas. Field counselling services will be strengthened by injecting greater professional and organisational talent.

13.34. *Research* : Studies of 'Social Profiles' to reflect information on the present level of development of social welfare services in the States will be sponsored. The organisational set up needed for strengthening research and programme administration is proposed to be developed at various levels during the Fifth Plan. The activities of the Central Bureau of Correctional Services and the Central Institute of Research and Training in Public Co-operation will be reoriented to enhance their contribution in their respective areas.

13.35. *Prohibition* : In view of the rampant social evil of alcoholism particularly among the lower income groups and its harmful effects on families and communities in general, a programme of education and propaganda to mould public opinion against this evil and in favour of prohibition has been in operation during the Fourth Plan. Financial assistance will continue to be given to suitable voluntary organisations for carrying out this programme in the Fifth Plan period.

13.36. *Manpower, Training and Administration* : Requirements of trained personnel at various levels, both for implementation and supervision of development programmes, will be carefully worked out for ensuring success of the programmes in the Fifth Plan. The Balsevika training programme will be further strengthened for manning the scheme of Integrated Child Care Services and Creche-cum-balwadi programme. Since the programme is largely rural based, women from rural areas and low income groups will be given priority in selection for training.

13.37. It is proposed to strengthen the machinery for administration, research and project formulation at various levels to ensure better formulation and implementation of welfare schemes. Efforts will be made to bring together various welfare services which are still scattered among different departments of the State Governments under a unified system to provide a common approach and direction in planning and implementation.

Outlays

13.38. A provision of Rs. 229 crores has been made for social welfare in the Fifth Plan—Rs. 200 crores at the Centre and Rs. 29 crores in the States and Union Territories. The details of the outlays for the Fifth Plan as compared with the outlays and the likely expenditure in the Fourth Plan are given in Table 2.

Table 2 : Fifth Plan Outlay and Likely Expenditure in Fourth Plan for Social Welfare

(Rs. crores)

item	fourth plan		fifth plan outlay
	outlay	likely exp.	
(0)	(1)	(2)	(3)
<i>central schemes</i>			
I. family and child welfare projects	7.50	7.19	3.20
II. child welfare			
assistance to voluntary organisations for the welfare of destitute children	2.00	..	..
III. women welfare			
1. functional literacy . . . . .	..	..	8.00
2. condensed courses of education for adult women	*	*	4.00
3. socio-economic programme	*	*	4.00
4. hostels for working women . . . . .	..	..	5.00
5. assistance to voluntary organisations for the welfare of destitute women	1.00	..	..
IV. welfare of the handicapped			
1. expansion and improvement of National Institutes for the blind, the deaf, the mentally retarded and the orthopaedically handicapped	2.50	1.14	3.65
2. scholarships, research, training, sheltered employment and grants-in-aid to voluntary organisations			5.35

*Included under Item VI

Table 2—(contd)

	(0)	(1)	(2)	(3)
<i>V. planning research, training and evaluation</i>				
1. central bureau of correctional services		0.20	0.05	0.25
2. central institute of research and training in public cooperation				0.65
3. social work training and education		1.05	0.53	6.70
4. planning research, evaluation and monitoring				0.50
<i>VI. grants-in-aid to voluntary organisations by Central Social Welfare Board and strengthening its field organisation</i>				
		6.50	6.19	8.00
<i>VII. grants-in-aid to all India voluntary organisations</i>				
		0.33	0.30	3.50
<i>VIII. education work for prohibition</i>				
		0.10	0.06	0.20
<i>IX. rehabilitation of rehabilitable persons from permanent liability homes</i>				
		1.25	0.56	..
<i>X. nutrition for pre-school children through balwadis</i>				
		5.00	3.29	..
<i>XI. special nutrition programme</i>				
		..	43.46	..
<i>total</i>		27.43	62.77	53.00
<i>centrally sponsored schemes</i>				
<i>XII. child welfare</i>				
1. integrated child care services	140.00
2. services for children in need of care and protection	5.00
3. pre-vocational training		2.00	1.94	..
<i>XIII. welfare of the handicapped</i>				
1. integrated education		£	£	1.50
2. placement of the handicapped persons through special employment exchanges and appointment of special officers in ordinary employment exchanges	0.50
<i>total</i>		2.00	1.94	147.00
<i>states/union territories</i>		11.98	11.09	29.00
<i>grand total</i>		41.41	75.80	229.00

£Included under Item IV

Backward Areas

ACCCELERATED development of backward areas, with a view to reducing regional disparities, is one of the important national objectives. Successive Five Year Plans have drawn attention to this problem and emphasised that the realisation of the growth potentials of the backward areas should be taken up on a priority basis in order to give practical shape to the ideals of egalitarianism and social justice. Further, in view of the emphasis laid on increasing the levels of living of the lowest 30 per cent of the population, a significant fraction of which are in the backward areas, it has been stressed that the strategy for socio-economic development should be structured in such a way that the relatively disadvantaged areas and sections of the population are gradually drawn into the mainstream of the development process.

14.2. Development of backward areas represents a very complex problem in planning. Market forces normally operate in such a way that growth tends to be attracted to the already developed areas. The economies of agglomeration, size and specialisation accentuate the trends which widen the inequalities between different areas, making it difficult to alter the growth process in favour of the less developed areas and to evolve policies concerning the spatial allocation of resources and activities. Moreover, in the comparatively backward areas, choices for investment are not so obvious and have, therefore, to be identified on the basis of a careful investigation of local potentials and integrated into the framework of appropriate strategies arising out of the existing levels of productivity, trends of development, assessment of organisational capabilities, coverage and quality of infrastructure, patterns of consumption, production relations, vocational patterns and availability of skills and entrepreneurial availabilities. Above all, even the identification of backward areas presents considerable difficulties due to the paucity of data and conceptual and methodological inadequacies.

14.3. An analysis of the regional structure in the country indicates that a variety of factors have, singly or jointly, prevented different areas from benefiting adequately from the process of socio-economic development. In several areas, stagnation is attributable to historical reasons. During the pre-Independence era, the areas which were unimportant from the point of view of commercial and political interests received less attention compared to others. In many areas production relations have also not been conducive for the development of initiative, stimulation of entrepreneurial abilities and capital formation. Certain other areas have adverse land-

man ratios or are so poorly endowed in natural resources as to offer very limited opportunities for the diversification of their economic structure. Poor infrastructure and the resulting absence of external economies are also an important causal factor for backwardness. In hilly and other sparsely populated areas, the effect of these factors is further accentuated by the relatively higher cost of providing economic and social services and the existence, particularly in the tribal areas, of unfavourable socio-cultural impediments.

14.4. The successive Five Year Plans have been concerned, in varying degree, with the problem of backward areas. In the Third Plan, programmes for the extension of the fruits of economic progress to the less developed regions and a widespread diffusion of industry were suggested as part of the effort to redress the inequalities between different parts of the country. The Fourth Plan took a comprehensive view of the factors for backwardness and proposed that a multi-directional Area Development approach should be adopted in order to accelerate the development of backward areas. Since each backward area represented a unique combination of factors, it was recognised that no uniform programme could be successfully conceived and imposed from the national level. It was, therefore, felt that an essential prerequisite for accelerated development was the evolution of appropriate location-specific strategies based on a careful identification of the causes of backwardness as well as the potential available for development.

14.5. Even though the responsibility for the development of backward areas was assigned essentially to the State Governments, the Centre has, in the Fourth Plan, supplemented the efforts of the State Governments in accelerating the pace of development in some of the less developed areas, in recognition of the size, dimension and complexity of the problems as also the national commitment for reducing spatial inequalities. In this context, for evolving an appropriate policy-frame and formulating operational programmes, backward areas were grouped broadly in two categories :

- (a) areas with unfavourable physico-geographic conditions, terrain, climate and regions inhabited by people with typical cultural characteristics. These included hill areas, drought-prone areas and tribal areas;
- (b) economically backward areas marked by adverse land-man ratios, lack of infrastructure or inadequate development of resource potentials.

14.6. For the areas falling in the first category, a series of measures were initiated in the Fourth Plan. These were :

- (a) central projects in 54 drought-prone areas, with an outlay of Rs. 2 crores per project for four years, under which attention was given to the development of minor and medium irrigation, afforestation, soil conservation, horticulture, animal husbandry and dairying, mobilisation of credit facilities, and development of roads and drinking water facilities. Since their inception in 1970-71 schemes costing approximately Rs. 112 crores have been sanctioned in these districts;
- (b) central sector projects for the integrated development of tribal areas in six districts taken up in the latter part of 1971-72. Under this scheme, emphasis was placed, among other things, on the economic aspects of tribal development covering the provision of credit, arrangements for the marketing of agricultural produce by co-operative or corporate agencies and the supply of agricultural inputs. In addition, various programmes for the extension of social services and the economic amelioration of the Tribal Development Blocks were also continued in the Fourth Plan ;
- (c) in recognition of the higher costs and poor returns from investments in hill areas, it was decided that special allocations of Central assistance should be made to the hilly States, and the pattern of Central assistance to the hill areas in other States should also be liberalised in order to encourage them to make substantial allocation of funds from their plan resources. The pattern provided for 50 per cent grant component in the Central assistance accruing on account of expenditure incurred in these areas as compared to a 30 per cent grant component available in other areas. For a few backward and strategically important areas on the Himalayan border, a more liberalised pattern involving 90 per cent grant and 10 per cent loan was introduced during the Fourth Plan. In addition, a Hill Areas Cell was set up in the Planning Commission for providing assistance to the States in the preparation of integrated plans for their hill areas.

14.7. So far as the economically backward areas falling in the second category were concerned, it was found that their problem was not amenable to an easy solution. Firstly, it presented conceptual and methodological problems in the identification of such areas. There were difficulties both in the selection as well as assignment of suitable weights to the indicators of development. Secondly, meaningful programmes for such areas could be evolved only out of

location—specific strategies based upon a careful assessment of potentials and priorities arising out of the resource endowment, infrastructure, settlement pattern and marketing opportunities in various identified areas. For the kind of detailed work involved in the development of the appropriate strategies and programmes, neither the requisite data nor adequate personnel with the required skills were available at local levels. Thirdly, private entrepreneurs as well as financing institutions and banks were unwilling to invest in these areas in the absence of either the requisite infrastructure or the proper identification of development prospects.

14.8. Notwithstanding these difficulties, certain significant developments have taken place during the Fourth Plan in relation to the economically backward areas. The Central Government initiated Small Farmers Development Agencies in 46 districts/areas and projects for Marginal Farmers and Agricultural Labour in 41 districts/areas with the allocation of Rs. 103 crores for a period of five years. These projects, which laid particular emphasis on the mobilisation of credit, the development of appropriate agricultural and related supplementary programmes and also the development of essential economic infrastructure, though oriented specifically to certain categories of population, inevitably brought general benefits to the backward areas where land-man ratios were unfavourable.

14.9. Another significant development has been the progress towards the formulation of district plans in many States, not on the old pattern of making inventories of felt needs but on the basis of selective and integrated strategies. Realising the importance of local planning for the development of backward areas, States were requested to give priority in this matter to backward districts identified on the basis of criteria appropriate to the physico-geographic and socio-economic characteristics of each State. In this context, an important development has been the introduction of a Central scheme in 1972-73 under which the planning capabilities of the States have been augmented, among other things, for the setting up of well-organised units for regional and district planning. Responding to this initiative and the general emphasis on establishing appropriate mechanisms for planning and development at various crucial levels, many States have already set up district and regional development authorities and regional development corporations with the necessary technical support for the collection, scrutiny, analysis and interpretation of data, development of programmes/projects and implementation.

14.10. Another line of action initiated in the Fourth Plan, which is relevant to the development of backward areas, is the introduction of a scheme under which 229 districts have been identified according to certain predetermined criteria, as industrially backward, and made eligible for concessional finance from all-India term-lending institutions involving loans on lower rates of interest and a longer amortisation period. Further, a scheme for giving an outright grant or subsidy amounting to 10 per cent of fixed

capital investments of new and existing units having a total fixed investment of not more than Rs. 50 lakhs was initiated in mid-1970, in 44 industrially backward districts/areas. The coverage of this scheme has now been extended to 89 districts/ areas as well as to units having fixed capital investment of more than Rs. 50 lakhs, subject to the subsidy being limited to Rs. 5 lakhs. Recently, the rate of the subsidy has been raised from 10 per cent to 15 per cent of the investment.

14.11. Licensing of new industries continued to be guided by the overall objective of balanced regional development. Further, the policy of uniform prices of indigenous steel and cement throughout the country favours the development of far and distant places which would otherwise be at a locational disadvantage. A scheme under which the Central Government subsidised transport costs on raw materials and finished products from selected rail-points to the extent of 50 per cent, has been introduced for the States of Jammu and Kashmir, North Eastern States/Union Territories, Himachal Pradesh and the hill districts of Uttar Pradesh.

14.12. For backward regions such as Western Ghats, Dandakarnaya and Bundelkhand whose development has to be undertaken through the concerted action of more than one State, the Planning Commission has taken the initiative in setting up Task Forces/Committees with the representation of the concerned States, Central Ministries and the Planning Commission with the objective of evolving suitable strategies and programmes of development. The North Eastern Council which has been established through an Act of Parliament in 1972, is also expected to contribute significantly towards the development of the various units in the North Eastern Region by preparing a regional plan to provide infrastructural facilities and for taking up projects of a multi-State character.

14.13. In addition to various steps taken by the Central and State Governments, certain financing and promotional institutions have been charged with the specific responsibility of assisting the development of backward areas. The Rural Electrification Corporation set up in the year 1969 has, for instance, approved out of a total of 499 schemes, 214 schemes for the backward and special under-developed areas upto the end of August 1973. Under the guidance of a Committee of Direction consisting of representatives from the Reserve Bank of India, the Industrial Development Bank of India, the Industrial Finance Corporation of India, the Industrial Credit and Investment Corporation of India, the Agricultural Refinance Corporation and the Government of India, surveys of backward States have been initiated for the purpose of identifying specific projects for investment in the light of natural and other resources, demand conditions and infrastructure facilities. Such surveys have already been completed in many States.

14.14. Whilst considerable progress has undoubtedly been made during the Fourth Plan period

for laying down the groundwork for a systematic acceleration of the process of the development of backward areas, it would be premature to expect any sizeable impact on the problem within a short period, especially since many of the relevant measures were initiated in the mid-plan period. Moreover, special programmes for backward areas inevitably run into a lot of teething troubles since their smooth operation depends upon the introduction of flexibility and delegation in the organisational framework, the availability of requisite techniques and skills at the operational level and the sustained allocation of adequate funds by the State Governments to support the activities initiated through Central projects and programmes.

14.15. The policy for the Fifth Plan with regard to the accelerated development of Backward Areas has been formulated broadly on the basis of the following considerations:

- (a) that the problem of backwardness is a long-term problem which can be tackled only over a long period of time;
- (b) that allocation of adequate financial resources is only one of the many steps necessary for the accelerated development of these areas: other essential measures being the evolution of locally oriented integrated strategies; the development of suitable programmes with appropriate norms, procedures and technologies; the strengthening and coordinated functioning of financing, promotional and consultancy institutions; and the reorientation and, where necessary, the restructuring of the field organisation to suit the functional requirements of the identified development programmes; and
- (c) that, in view of the indivisibility of the plan and non-plan activities and the basic administrative structure, the States would have to continue to bear the main responsibility for the development of their backward areas, though the Central Government would also actively participate in this task by making special allocations for hilly and tribal areas and also by (i) providing technical support in respect of planning as well as programme development, (ii) channelising institutional resources on a priority basis, (iii) continuing and further extending the liberal patterns of Central assistance; and (iv) providing special incentives for the flow of private investment to identified backward areas.

14.16. Perhaps the most significant development in the Fifth Five Year Plan in respect of the reduction of disparities will be the launching of the National Programme of Minimum Needs with an outlay of Rs. 2803 crores, under which action will be taken to take care of marked deficiencies of social consumption in backward areas by extending facilities for Ele-

mentary Education, Rural Health and Water Supply, Nutrition, Rural Roads, Rural Electrification etc. The introduction of this programme will enable the disadvantaged areas and sections of population, to achieve parity in the matter of the basic items of social consumption, and participate effectively in the process of their development.

14.17. So far as programmes of economic development of backward areas are concerned, particular attention is proposed to be given to drought-prone, tribal and hilly areas. Since drought-prone areas represent nearly 19% of the total area of the country and are a major cause of regional imbalances in the country, the Drought-Prone Area Programmes (DPAP) started in the Fourth Plan will not only be continued but will be further reinforced in the Fifth Plan. The main effort under this programme will be to bring about a proper ecological balance in the drought-prone area programmes relating to irrigation, soil conservation, livestock etc., the details of which are given on the Chapter on "Special Programmes of Rural Development and Employment". In order to keep the above priorities constantly in focus and also to ensure greater flexibility and inter-departmental cohesion, it is proposed to set up coordinating bodies as well as corporate organisations which will be charged with the responsibility of designing, coordinating and catalysing programmes of integrated development in such areas. Further, it is proposed that the accrual of Central funds under this programme should be made contingent upon the States also earmarking predetermined amounts of their own plan and non-plan resources for project areas. Another very important feature of the DPAP will be the preparation of shelves of projects for accelerating work on the development of the project areas and also augmenting employment opportunities in areas afflicted with natural calamities.

14.18. So far as Tribal areas are concerned, an altogether new strategy is being introduced in the Fifth Plan. It is now proposed that sub-plans for the geographically and administratively viable areas with tribal concentration should be prepared with the objectives of (a) narrowing down the gap between tribal and other areas, (b) improving the quality of life of the tribal communities and (c) achieving social and cultural integration of tribals with the rest of society. The experience of tribal development through the Tribal Development Blocks was that not only were these blocks too small for evolving integrated strategies for economic activities, infrastructure and social services, but their impact was also marginal since the rest of the activities in plan and non-plan sectors in these areas were insulated from the approaches and priorities relevant to tribal development. In relation to the sub-plans for tribal areas too the approach will be to first of all persuade the States to earmark adequate funds from their own plan and non-plan resources and thereafter make additional allocations in the light of the essential requirements identified in the sub-plans. In addition, organisational innovations will also be introduced to ensure greater flexibility as well as more effective planning,

coordination, implementation and monitoring.

14.19. For the Hill Areas, in addition to continuing favourable patterns of Central assistance and the determination of the plan size of hill States on the basis of their essential requirements as in the Fourth Plan, additional allocations of funds are being made to supplement, for the execution of integrated area development plans for these areas, the funds set apart by the States from their plan resources.

14.20 In addition to the above programmes, the programmes for Small Farmers and Marginal Farmers are also proposed to be continued in 160 districts/areas in the Fifth Plan with the modification that unlike the Fourth Plan, these projects will now cater to the development of both the categories of farmers in all the projects. The other measures already introduced regarding the reorientation of financing institutions to give special attention to backward areas, the preference accorded to such areas in the matter of licensing investment, the concessions allowed by way of capital and transport subsidy and the setting up of a special mechanism for identifying investment opportunities are also proposed to be continued and reinforced in the Fifth Plan.

14.21. Local planning will continue to be the main plank of the strategy for the accelerated development of backward areas in the Fifth Plan. To facilitate this on a realistic basis, measures are being introduced in the plan which would result in the identification of overall development measures for the plan period not only for those areas which are going to be covered by special projects/programmes, but for all the districts in the country. Towards this end, States have been asked to prepare before the start of the Fifth Five Year Plan, special supplements which would give the rationale, the overall allocations and the sectoral distribution of their divisible plan resources for each district.

14.22. As will be seen from the foregoing paragraphs, the Fifth Plan conceives of accelerated development of Backward Areas as a cooperative endeavour in which the State Governments will play the pivotal role while the Central Government, the Research Institutions, the financing and other State and Central Corporations, the cooperative organisations and the private sector will all make their contributions in accordance with a well-formulated and integrated plan of action. The success of this approach will obviously depend upon better planning, administrative organisation, effective coordination and a deep sense of commitment to the cause of backward areas. In this connection, it has to be recognised that the existing expertise available within the Government for local planning may prove inadequate and may, therefore, have to be improved through a large-scale programme for the training of various categories of functionaries at different levels and also supplemented through the involvement of academic institutions, private consultants and technical experts belonging to different disciplines. So far as coordination is concerned, this will have to be ensured mainly through

the instrumentalities of a systems approach and network planning and the building up Information and Monitoring systems at the State as well as the national level. Inevitably, the responsibility for creating institutional arrangements for the two areas of action indicated above will have to be borne by the Planning Commission.

14.23. The problem of the identification of backward areas has, it is felt, been made somewhat easier by the adoption of a location—specific and norm-oriented Minimum Needs Programme. However, considerable work will still need to be undertaken to evolve nationally acceptable criteria for this purpose. It is proposed, therefore, that steps may be taken to

organise studies for determining norms for the identification of economically backward areas with the participation of the representatives of State Governments and research and academic institutions, etc.

14.24. It is felt that the setting up of a Committee of Direction consisting of representatives of the Reserve Bank of India and various Financing Institutions to survey the backward areas and identify investment opportunities has been a significant step in the right direction. In the Fifth Plan, this arrangement is proposed to be extended and institutionalised on a more stable basis with the participation of State Governments as well as State Corporations in order to establish investigation and consultancy cells for backward areas all over the country on a more dispersed basis.

Chapter 15

Other Programmes

I

MACHINERY FOR PLANNING

PLANNING represents a unique challenge in India because of the democratic and federal nature of the Indian polity, the wide disparities between different areas with regard to the level of development and resource endowment, the increasing complexities arising out of the need for establishing sectoral and spatial complementarities and the gaps in the availability of definitive information about past performance and trends, demand and consumption patterns, investment opportunities and the variety of technologies required for different resource situations and production processes. It is widely recognised that the multifarious tasks involved in the determination of strategies and priorities in such a complex situation cannot be performed in a systematic manner without setting up an appropriate and functionally oriented institutional structure. The successive Five Year Plans have, therefore, laid increasingly greater emphasis on the organisation of an appropriate mechanism for planning at the Central, State, regional and district levels.

15.2. The main functions identified in relation to the planning process, for which suitable machinery has to be devised, are :

- (a) marshalling relevant socio-economic information;
- (b) preparation of resource inventories and formulation and *ex-ante* evaluation of shelves of projects and programmes;
- (c) collection and analysis of feedback experiences regarding the performance and impact of on-going programmes and the role and capabilities of the various administrative and institutional agencies;
- (d) formulation of integrated location-specific strategies for different spatial and administrative units;
- (e) correlation and integration of sectoral, temporal and spatial strategies through a process of iteration into an internally consistent overall national plan; and
- (f) spelling out of the perspective and medium-term plans into operational programmes for implementation.

15.3. In the context of building up an appropriate structure for planning, three basic considerations have to be borne in mind. One is that planning is

a joint endeavour in which different government, public and private sector organisations concerned with various aspects of socio-economic development have to interact with the planning agencies set up at different levels for preparing comprehensive and integrated plans. Such an interaction can, however, be meaningful only if simultaneous action is taken across the board to develop the capabilities for handling data, preparing or appraising projects and programmes and undertaking different kinds of studies in all the sectoral and overall planning organisations. Secondly, planning has to be viewed not as a periodical activity concerned only with the drawing up of plan documents but as a continuous process, constantly occupied with (i) locating new resources, potentials and technologies and their translation into projects and programmes; (ii) identifying and diagnosing contingent problems; and (iii) introducing modifications and improvements in the plan frame in the light of concurrent experience. Thirdly, it has to be recognised that the involvement of the people and their elected representatives is a prerequisite for effective planning. A plan which does not take into account their aspirations and preferences can have no operational validity, especially since its successful implementation can be ensured only if the majority of citizens, functioning as entrepreneurs and decision-makers in relation to consumption, savings investment, etc., endorse the envisaged policies and programmes by their whole-hearted participation.

15.4. The position with regard to planning machinery was reviewed at the time of formulating the Fourth Five Year Plan. It was noted that since the beginning of the planning era, considerable progress had been made in firming up the data-base for plan formulation. In relation to project preparation, there had been marked progress in the development of methodologies and technical expertise particularly in relation to key sectors such as irrigation, power, industries and transport. In other sectors too, programme formulation had been greatly facilitated by fundamental and operational research covering a wide field of activities. While these achievements were no doubt impressive, there were still several aspects of the planning process which still required particular attention. In relation to feedback information, it was found that the steps taken so far for monitoring and concurrent appraisal were hardly adequate for providing a firm basis for the modification and improvement of plans in the course of their implementation, particularly in response to contingent situations arising from internal or external causes. Despite the emphasis on local area planning, not enough progress had been made in building up either appropriate administrative and information systems or

evolving operational methodologies for formulating integrated location-specific strategies at the district or regional levels. It was also found that while some attempt was made at the national level to establish inter-sectoral complementarity, the process of planning at the State and lower levels continued to be largely aggregative in character. This was attributed partly to the fact that operational decisions were taken essentially in departmental organisations, which tended to take a fragmentary view of problems and programmes, and partly to the inability of the State Planning Departments to handle the enormous volume and variety of data and the complex issues relevant to the evolving of an integrated plan-frame.

15.5. In the Fourth Five Year Plan, considerable attention was paid to the improvement of the planning process, particularly at the State and lower levels. In this connection, it was recognised that progress in this respect would continue to be unsatisfactory as long as the initiative and innovative motivation at these levels was circumscribed by predetermined schematic patterns of Central assistance with varying grant or loan components. It was, therefore, decided to delink the allocation of Central assistance to States from the sectoral and schematic content of their plans. An objective formula for Central assistance was evolved on the basis of population, tax effort, per capita State incomes, special problems and requirements for continuing irrigation and power programmes. It was also emphasised that regional and district planning were essential prerequisites for the augmentation and rational allocation of resources between areas and programmes and their optimal utilisation for: (i) increasing productivity; (ii) improving distribution of incomes; and (iii) reducing disparities between different areas and sections of the population. This emphasis on local-area planning was further reinforced by a number of special programmes which were introduced later into the Plan for disadvantaged sections of the population such as Small and Marginal Farmers and Rural artisans and also for Drought Prone and Tribal Areas. Each of these programmes proposed specific measures for strengthening the planning capabilities at the local level to facilitate the orientation of the development programmes in consonance with the requirements of selected beneficiaries and areas. One of the important experiments in administrative innovation in this context has been the setting up of multi-disciplinary units for programme development and implementation under the auspices of special "agencies" established as registered societies.

15.6. So far as the machinery for planning at the State level is concerned, far-reaching changes have been introduced during the Fourth Plan period. Most of the States have already set up Planning Boards/Commissions consisting of senior Ministers, technical experts and representatives of key departments. In addition, following the introduction of a scheme in the year 1972-73 for Central support towards the additional cost of strengthening and reorganising planning departments on a functional basis, several States have set up units for (i) Perspective Planning; (ii) Monitoring, Plan Information and Evaluation;

(iii) Project Appraisal; (iv) Area/District Planning; (v) Manpower and Employment; and (vi) Plan Co-ordination, with the induction of suitable technical personnel. In many States, regional bodies with appropriate technical support have been established to deal with the special problems of disadvantaged areas. A large number of States have also decided to constitute planning bodies at the district level and appoint technical personnel specifically to ensure both quality as well as continuity in Planning at this level.

15.7. Another significant development has been the setting up of the North Eastern Council to look after the balanced development of North Eastern States and Union Territories through the formulation of a regional plan incorporating programmes of an inter-State character. Joint Task Forces and Committees have also been set up to deal with inter-State aspects of planning in relation to Bundelkhand, Dandakaranya, and Western Ghats.

15.8. In a variety of ways, the formulation of the Fifth Five Year Plan has shown a distinct improvement on the earlier attempts at medium term planning. This time, work on the identification of investment opportunities and the preparation and ex-ante appraisal of projects was started nearly two years in advance and as a result in the fields of Irrigation, Power, Industry and Transport, definitive information is available for a large proportion of outlays allocated to these sectors. It has also been possible to establish internal consistency between the production programmes of various sectors through a series of rigorous exercises. Even in the development of sectoral strategies, there has been a great deal of inter-disciplinary inter-action in the Task Forces and Working Groups set up specially for this purpose. This has resulted in the adoption of a functional approach to various problems, such as the movement of coal, production of steel and heavy electrical equipment, agricultural productivity, tribal development, etc., which cuts across the conventional departmental approach to decision-making.

15.9. In order to ensure the fulfilment of the objectives of growth and social justice envisaged in the Fifth Plan, considerable attention has been paid to the identification of the institutional and organisational measures required to support various programmes. As a result, the plan itself spells out the policy implications in relation to different sectors and enumerates the specific issues on which decisions would have to be taken to facilitate coordinated and purposeful implementation. In this connection, particular attention has been paid to the definition of the role and responsibilities of different governmental organisations, public and private enterprises and the multifarious institutions concerned with research, promotion, management and financing. There has also been a great deal of consultation in the course of plan formulation with panels of economists, trade union leaders, representatives of political parties, legislators and parliamentarians.

15.10. So far as planning at the State and lower regional and administrative levels is concerned, a

multi-level approach has been adopted in the Fifth Plan. The basic idea under-lying this approach is that from the point of view of both efficiency as well as equity, it is not desirable to mechanically impose the hierarchy of programme priorities determined at the national and State levels without taking into consideration the peculiarities of different areas in terms of levels of development, physico-geographic conditions, resource potentials and the coverage and quality of economic and social services.

15.11. In operational terms, this concept envisages that decisions regarding activities which either affect or have to be financially and administratively supported at a particular level should not be taken at the higher or lower levels without adequate inter-action and iteration with the planning and administrative agencies at this level. In this context, it is recognised that while the broad policies with regard to Agriculture, Animal Husbandry, Minor Irrigation, Rural Electrification, Elementary Education, Water Supply, etc., may be enunciated at the National and State levels, detailed decisions regarding the choice or innovation of specific programmes and determination of locations, capacities, norms and techniques should more appropriately be taken at the district, regional or project levels. One of the important advantages of this approach would be that it would facilitate an integrated view of related activities on a spatial basis and thereby ensure their physical convergence and synchronisation.

15.12. In pursuance of this approach, an attempt has been made in the Fifth Plan to evolve national policies and objectives and subsequently to decompose these into State, regional and district plans through a two way process of consultation between various levels at different stages of plan formulation. For the first time in the history of Indian planning the States were requested to formulate their own "Approach" documents for the Fifth Plan to enable the Planning Commission and the Central Ministries to take their views into account while determining their approaches to the National Plan. Representatives of the State Governments were also closely associated with the Task Forces and Steering Groups which drew up the strategies in respect of the plans of different sectors.

15.13. So far as local-area planning is concerned, many States have already initiated work on the disaggregation of their divisible outlays between districts on the basis of the certain objective criteria pertaining to levels of development, population and area, productivity and the coverage of various social services and economic infrastructure. It is envisaged that every State would bring out a supplement to their plan documents giving details of the rationale for resource allocation, the sectoral distribution of outlays and the physical targets for each district. This, it is expected, would introduce realism and also lay a firm foundation for the rationalisation of the planning process at the district level through subsequent reorientation of plans according to local needs and the revision of physical content of district plans in the light of annual performance.

15.14. Notwithstanding the significant improvements already introduced into the planning process, many measures will have to be taken in the course of the Fifth Plan to evolve appropriate methodologies and also strengthen the planning machinery at various levels. One of the critical areas requiring immediate attention pertains to the machinery and procedures for monitoring plan implementation and collecting information regarding emergent socio-economic trends on a systematic basis. Past experience has repeatedly shown that the course of action laid down in the five year plans has often to be modified in mid-course because of unforeseen internal and external development. Moreover, almost all plans have to reckon with some imponderables of policy and also incorporate at least a few programmes and projects for which all the details of location, technologies, etc. are not available. To deal with these problems, it is proposed that the instrument of annual planning, which at present is no more than an exercise in the budgeting of financial resources from year to year, should be sharpened so as to facilitate the introduction of timely modifications and improvements in development programmes and also determine the annual requirements for different sectors on the basis of a critical appraisal of their progress in the previous years. Towards this end, steps will be taken in the Fifth Plan to set up sensitive monitoring systems at various levels, and procedures will also be devised to facilitate expeditious decision-making in response to contingent situations.

15.15. In the course of the formulation of the Fifth Plan, many serious lacunae in the information system have come to light. It has, for instance, been brought out that estimation of employment is rendered almost impossible because of a variety of definitional and methodological inadequacies. Similarly, the assessment of State incomes on a uniform basis requires the resolution of differences in the methodologies followed by different States. There is still a large unorganised sector for which the information available is very sketchy and unreliable. During the Fifth Plan, an attempt will, therefore, have to be made to refine and extend the data systems to obtain reliable information for many more activities and also facilitate estimation and projections at the regional and district levels.

15.16. While considerable progress has been made during the Fourth Plan towards the restructuring and strengthening of the State Planning Departments, there is much that still remains to be done to strengthen the planning capabilities of some of the subject-matter ministries and departments in the States, particularly in relation to the expertise required for project formulation, undertaking cost-benefit studies and looking after the commercial aspects of their activities. In relation to integrated area planning at the regional, district and project levels, measures have to be taken urgently to evolve operational methodologies and to set up appropriate mechanisms to translate the concern for the proper utilisation of potentials and reduction of regional disparities into operational programmes of development. This would involve: (a) induction of statisticians, regional planners, management personnel and other technical experts; (b) dele-

gation of considerable powers and responsibilities at different operational levels; (c) setting up of mechanisms for inter-departmental consultation and public participation; and (d) in some cases, the integration of various services and field organisations on a functional basis. These measures would have serious implications in relation to the present style of fragmented and centralised decision-making by subject-matter departments and might, therefore, necessitate their restructuring to ensure coordinated planning and better synchronisation of inter-related activities.

15.17. It will obviously be impossible to fulfil the many tasks set forth in the Fifth Plan for the improvement of the planning process unless concerted efforts are made to (i) foster research in relation to methodologies for area planning, filling up gaps in the information system and the reorientation of the existing procedures for decision-making in the government departments, public sector corporations and private organisations; and (ii) also take up a large-scale programme of training to develop appropriate planning skills among functionaries of the government at various levels as well as the key personnel in the various public sector bodies. Towards this end, it is proposed to draw up detailed programmes for the government organisations concerned with research and in-service training and also evolve schemes to take advantage of the expertise available in consultancy organisations and academic institutions concerned with economic analysis, management and administration.

II

INFORMATION SERVICES AND PLAN PUBLICITY

15.18. It is a People's Plan. For meaningful participation in planning activities, the people must know what the Plan means to them; its implications, its priorities, the efforts and sacrifices involved in its implementation. The rationale behind each proposal in the Plan has to be conveyed to the people in the language intelligible to them and through the media which could easily reach them. The role of the mass communication media is, therefore, important. The Five Year Plans have emphasised this aspect. However, development of our mass communication media has continued to be one of the weakest links. A regular two-way flow of information between Government and people creates the proper atmosphere for the formulation and implementation of development Plans.

15.19. The Central and State Governments have been making provisions for Information and Publicity schemes in their Plans. These provisions have enabled the Publicity Departments at the Centre as well as in the States to extend their activities and strengthen some of their outfits. However, this augmentation has not been commensurate with the tasks before the country. There are still large areas in the country which remain uncovered by any media of mass communication. In the formulation of programmes, the basic approach will necessarily have to be to fill these glaring gaps. The regions which are backward and

which do not have publicity facilities at present, will have to be provided with the minimum facilities.

15.20. As pointed out in the Fourth Five Year Plan, publicity activities in many States are undertaken by a number of departments engaged in developmental activities. This is in addition to the activities of the Publicity Departments. The Fourth Plan has recommended, among other things, the integration of all such activities and the organisation of the Publicity Departments as servicing agencies for all the departments devoted to developmental programmes. Such a step would have led to development-orientation in the training and outlook of publicity personnel. This would also have meant better use of personnel and facilities, removal of idle capacity and waste. However, this recommendation is yet to be implemented. If publicity is to play an effective role in our planning activity, proper integration and formulation of publicity plan by all the States is imperative.

15.21. A Plan for the development of infrastructure for providing information services and Plan publicity has to take into consideration the areas and people to be reached and the media and technique available. The Fifth Plan programmes are formulated keeping these aspects in view, limiting them only within the unavoidable constraint on financial resources.

15.22. The Fifth Plan seeks, among other things, to meet some of the minimum needs of the common man. It lays considerable emphasis on schemes relating to the creation of employment opportunities, both for educated as well as uneducated people. It includes programmes for removal of regional imbalance and meeting the requirements of small farmers, marginal farmers and agricultural labour. These programmes are intended mainly for the rural areas and if publicity support is to be provided to them, it is necessary that the publicity media should try to spread out to remote areas and reach the people concerned with the developmental programmes.

15.23. In spite of scientific and technological developments and the evolution of sophisticated techniques in Plan publicity, personal contact and the spoken word continue to be the most effective media for mass communication in our country. Considerable emphasis, therefore, is laid on the spread of field publicity units which establish direct contact and convey the message of the Plan. In addition to the field publicity units which have been set up by the State Governments and which are proposed by them in the Fifth Five Year Plan, Central field units are proposed to be deployed by the Directorate of Field Publicity of the Ministry of Information and Broadcasting so that it will be possible during the Fifth Five Year Plan to have at least one field publicity unit in every district.

15.24. With the radio covering almost the entire country in the Fifth Plan, the Field Publicity Units should be able to provide welcome support to disembodied voice of radio. The programmes of States include setting up of Song and Drama Cells, Information Centres, Exhibition Wings and Film Units etc.

15.25. In the Fifth Plan, the Ministry of Information and Broadcasting will have a Directorate to monitor and evaluate the impact of various mass communication media as its regular activity and also to provide the much needed feed-back. The evaluation will also cover Broadcasting and Television.

15.26. Another important activity which needs special attention during the Fifth Plan is the training of publicity personnel. This has to be organised both at the Central and State levels. The activities of the Indian Institute of Mass Communication are being enlarged to meet the requirements to some extent.

15.27. The Song and Drama Division of the Ministry of Information and Broadcasting has evolved a new technique which involves directional lighting stereophonic sound and live acting in a vast open-air locale where thousands of spectators can be catered to at a time. It is proposed to have more of these programmes during the Fifth Plan period which will add another dimension to the communication media. The Exhibition Wing will mount exhibitions, one each, on a Broad Gauge and a Metre Gauge trains which will travel throughout the country carrying the message of the Plan. The new programmes of the Press Information Bureau include Youth Services, Science Newsletter, Development Features and Rural and District Newspaper Services. The Films Division will also produce regional newsreels on a fortnightly basis in addition to national newsreels and documentaries for which more prints have been provided with a view to reducing time-lag in circulation.

15.28. The Plan has made a provision of Rs. 37.96 crores for Information Services and Plan Publicity. Out of this, Rs. 24.85 crores is for the programme of the Ministry of Information and Broadcasting and Rs. 11.76 crores for States and Rs. 1.36 crores for Union Territories. In addition, there are also provisions for publicity under the programmes of some of the other Departments like Health, Agriculture and Tourism.

III

REHABILITATION

15.29. The objective of rehabilitation programmes is to help the persons displaced from their normal environments to settle down in new areas in a viable manner and integrate them into the mainstream of national life. In addition to some of the problems which have continued since the country's independence, new dimensions to the problem were added following the nationalisation of trade in Burma, the agreement on repatriation of persons of Indian origin from Sri Lanka and the massive influx of refugees from the former East Pakistan areas.

15.30. Rehabilitation efforts during the Fourth Five Year Plan provided assistance to about 20,000 families of migrants from former East Pakistan, about 27,000 families of repatriates from Burma and nearly 8,000 families of repatriates of Sri Lanka. Against the approved outlay of Rs. 66 crores, the expenditure likely to be incurred in the Fourth Plan period

would be Rs. 60 crores. The programme of rehabilitation falls broadly into the following categories:

- (i) Loans to migrants for agricultural and non-agricultural occupations;
- (ii) Schemes for settling migrants in agriculture through the acquisition and development of land, the provision of irrigation facilities etc.; some of the schemes are in the nature of area development programmes, for example, in Dandakaranya and in Andaman and Nicobar Islands;
- (iii) the Provision of educational, health and training facilities;
- (iv) Institutional support through Rehabilitation Industries Corporation, Repatriates Cooperative Finance and Development Bank; and
- (v) Industrial schemes, including the setting up of industrial estates as well as the provision of loans to entrepreneurs/cooperatives for the employment of refugees.

15.31. In addition to the normal tasks, the Rehabilitation Organization was called upon to bear a heavy responsibility in regard to relief arrangements for about 10 million refugees and arrangements connected with their repatriation to Bangla Desh. The non-availability of sufficient land of suitable type for rehabilitation purposes continued to limit the pace of work. Some new approaches had to be adopted, by taking up of plantation projects for absorbing the repatriates from Sri Lanka. While assistance was extended to a large number of persons as mentioned above, the organisation of the Rehabilitation Industries Corporation and the Repatriates Cooperative Bank ran into management problems relating to the accumulation of stocks, recurring losses, recovery of loans etc.

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15.32. A tentative outlay of Rs. 70 crores is proposed for the Fifth Five Year Plan period, related to programmes which can be carried out during the plan period for tackling problems in regard to the different categories of migrants/repatriates identified. While the remaining problems in respect of repatriates from Burma, displaced persons from West Pakistan, Tibetan refugees, re-settlement of Uganda repatriates are of relatively limited proportions, the major effort will have to be directed to the liquidation of the remaining problems of migrants from the former East Pakistan areas by re-settling migrants in and outside West Bengal, the rehabilitation of displaced persons from the Chhamb area and the repatriates likely to come from Sri Lanka.

15.33. The Fifth Plan outlays being suggested are based on the following considerations:

- (i) The needs of assistance for migrants from former East Pakistan are based on the residual assessment made by the Department of Rehabilitation in 1960-61, since the magnitude of the present problem of new and

old migrants has not been assessed on a scientific basis in the recent past. The Committee of Review set up in 1967, at the instance of the Department of Rehabilitation, is presently examining the various aspects of the problem. It would accordingly be necessary to take a fresh view of the magnitude of the remaining rehabilitation problem in respect of persons who have been in West Bengal for a long time.

- (ii) The actual trend of repatriation of persons and the pattern of their rehabilitation from Sri Lanka will have to be reviewed and suitable allocations will have to be made in the Annual Plans according to the needs of the situation. It has been observed that these repatriates are generally reluctant to settle anywhere outside Tamil Nadu or the neighbouring southern States and it has not been possible so far to persuade them to settle in plantations in the Andaman and Nicobar Islands. The question of availability of land for plantations and the long period of gestation before the rehabilitation in these types of settlements becomes self-supporting are also further issues which require attention.
- (iii) The speed of absorption in Dandakaranya is ultimately dependent on opening up new agricultural areas, following the execution of the Potteru Irrigation scheme.
- (iv) Re-structuring of the functioning of the Rehabilitation Industries Corporation and the Repatriates Cooperative Bank are also envisaged.

15.34. It has been noticed that the process of transfer of rehabilitation projects after the necessary investments in infra-structure and development have been carried out by Rehabilitation Organization is not proceeding at such a pace as to enable the newly settled persons to start drawing benefits from the financial and other institutions and the normal developmental agencies working in the area. This applies to credits of short-term and long-term nature, access to essential services and amenities etc. Steps will have to be taken to remove impediments in this process. Giving full ownership rights over agricultural lands or house-sites in urban areas to the resettled families has to be given top priority. To the extent that the rehabilitated persons are able to draw upon the normal facilities of all kinds available to the other local people, specially on the implementation of the National Programme of Minimum Needs throughout the country in the Fifth Plan, the greater are the chances of their integration with the socio-economic fabric of the society.

15.35. It is expected that through the measures outlined above, the problems of rehabilitation identified at present would be substantially solved, except to the extent that the repatriation process from Sri Lanka as visualised in the agreement is to be carried out over a longer period.

IV

STATISTICS

15.36. The timely availability of reliable, adequate and upto-date statistical data is of vital importance for development planning. A continuous effort has been made since the start of planning era in 1951 to improve the coverage and quality of socio-economic data. Steps taken towards building up the statistical system at different levels particularly the setting up of statistical machinery at district and lower levels and the establishment of the National Sample Survey Organisation with a strong Field Operations Division well-equipped to conduct country-wide multi-purpose surveys and streamlining procedures for collection and compilation of statistics relating to different sectors are some of the significant achievements recorded during the past two decades. The experience gained in the implementation of the Plans, however, signifies the need for more accurate, more prompt and more purposeful statistics. Besides, the growing complexity of the economy and the improvements in the techniques of management and planning require collection of varied types of new statistical data.

15.37. The Central Statistical Organisation under the Department of Statistics at the Centre and the State Statistical Bureaus in the States have been playing pivotal role in the development of statistics, ensuring uniform standards, concepts and definitions and providing guidance and co-ordinating the official statistics at various levels. The Department of Statistics was brought under the Ministry of Planning with effect from February, 1973 to ensure effective co-ordination between the planning and the statistical organs of the Government.

15.38. The national sample survey (NSS) was created in 1950 with the object of obtaining comprehensive and continuing information relating to social, economic, demographic, industrial and agricultural statistics through sample surveys on a countrywide basis. Till 1970 the work relating to preparation of sampling design and schedules of enquiry, processing of data and preparation of analytical reports was entrusted to the Indian Statistical Institute (ISI) and that relating to canvassing of schedules was retained in the Government. With a view to achieve effective programming and better co-ordination, the work of the NSS was re-organised in terms of the Government of India Resolution of 5 March, 1970 and all its activities were brought under a unified control by creating, in January 1971, the National Sample Survey Organisation. The activities of the NSS Organisation are governed by a Governing Council consisting of a non-official Chairman, 4 non-official and 5 official economists and statisticians and 4 Directors of functional Divisions of the NSS Organisation as members, with the Chief Executive Officer of the NSS Organisation as its Member-Secretary.

15.39. The Governing Council started functioning with the formulation of the subject programme for the 25th round (1970-71) which was devoted to

study the economic condition of the weaker sections of the population. During the 26th round (1971-72) two important surveys were carried out—one dealing with the survey on land holdings undertaken as a part of the World Agricultural Census, 1970, sponsored by the Food and Agriculture Organisation of the United Nations and the other for the Reserve Bank of India to study the debt and investment position. A survey for studying the employment and unemployment situation in the country formed the principal item of enquiry during the 27th round (1972-73). The 28th round which has been initiated in October, 1973 is being devoted mainly to the survey on family planning.

15.40. Among the several structural and technical improvements brought out by the Governing Council in the working of the national sample survey, mention may be made of the setting up of manual tabulation units at the NSS blocks spread all over the country with a view to reduce the time-lag between the completion of field work and publication of survey results. Apart from expeditious tabulation of data, this arrangement helps in improving the quality of data through mutual consultations between the field workers and analysts on the discrepancies observed in the field. Proposals are under way to modify the sampling design of the socio-economic enquiries with a view to link up rural and urban sectors of population at the district level and make it so flexible that in future it should be possible to build up estimates for any given area. In view of the persistent demand for providing estimates at regional level within each State, a scheme for doubling the sample size of the socio-economic enquiries in the course of next 5 years is receiving active attention. In the field of agricultural statistics, a scheme for improvement of crop statistics has been prepared. The scheme envisages integration of sample for crop-cutting surveys with that for the Timely Reporting Scheme (TRS) sponsored by the Ministry of Agriculture and intensive sample checks over enumeration of crop area and crop-cutting experiments by the NSS Organisation as well as by the State Agricultural Statistics Authorities to locate the weak and vulnerable regions in the sphere of estimation of area and yield of crops and take remedial measures.

15.41. The first significant measure for development of Electronic Data Processing Machines (EDPM) in Government was taken in 1966 when the Government of India acquired 10 Honeywell computers to meet its data processing requirements. The Computer Centre was set up in 1967 in the Department of Statistics with the installation of three of these computers and the remaining seven were installed in other Organisations in the country. The Computer Centre has been functioning as a training and service bureau and helps a number of government organisations and public undertakings in their data processing jobs. The Centre provides support in systems design, programming and data preparation and also accepts responsibility for developing applications on a 'closed shop' basis.

15.42. The facilities available at the Computer Centre are fully saturated. The demand for computer

time has, however, been rising steeply and it is estimated that by 1975, the demand will be three times the existing capacity. The present computers are reconditioned second generation machines and will have to be replaced sometime in 1975-76. The Department of Statistics proposes to instal a large sized computer facility to meet the growing requirements of computer applications and for a smooth switch over of the current applications before the present system becomes unserviceable. The large size computer facility is expected to meet most of the data processing requirements of government offices in Delhi.

15.43. Statistics required for operational purposes are collected by the concerned subject-matter Departments. The Central Statistical Organisation is responsible for collection of national income and industrial statistics. Estimates of domestic product by industries, capital formation and savings are prepared annually at the national level. A number of studies for improvement of national accounts were undertaken during the Fourth Plan. The scheme for computation of estimates of domestic product at the State level was also taken up in a number of States. Estimation of capital formation and savings at the State level is proposed to be undertaken during the Fifth Plan. The important studies undertaken during the Fourth Plan related to international comparison of national aggregates, reproducible tangible wealth, private consumption expenditure, transactions of general government, input-output branches of production and trends in incomes and prices. In regard to industrial statistics, the most important single source of data is the Annual Survey of Industries (ASI) conducted since the reference year 1959. Under this scheme, factories employing 50 or more workers with the aid of power and 100 or more workers without the aid of power are covered on complete enumeration basis. The remaining factories employing 10-49 workers with power and 10-99 workers without power are covered on sample basis. A high-powered Steering Committee was set up in 1973 to look into the design, field work, processing and analysis of Annual Survey of Industries. A number of improvements have since been brought about on the recommendations of the Steering Committee. For smaller establishments in the urban areas as employ 5-9 workers with the aid of power and 5-19 workers without the aid of power, a centrally sponsored scheme was taken up during the Fourth Plan. The work of improvement and development of industrial statistics will be carried forward during the Fifth Plan.

15.44. The last decennial population census taken in 1971 marked the centenary of census operation in India. Several improvements were introduced in the last census. Post-enumeration checks in the selected census blocks to find out the coverage and content errors in canvassing the census schedules were introduced for the first time. Additional data on age at marriage, fertility pattern, internal migration and commutation was collected. Electronic data processing was introduced to meet the increased demand for more specialised tabulation and to cut down time-lag.

15.45. Periodic estimates of population are an imperative need for formulation, implementation and evaluation of development plans. An essential prerequisite to such estimates is the availability of reliable data on birth and death rates through a good registration system. In order to overcome the deficiencies in the registration system in its quality and coverage and also to meet the immediate requirements of vital rates, a sample scheme of "Registration promotion, Method Research and Population Studies" was formulated by the Registrar General, India at an outlay of Rs. 216 lakhs under the Fourth Plan. The principal components of this scheme were: (a) Sample Registration of births and deaths, (b) Model Registration—survey of causes of deaths, and (c) Registration Promotion and establishment of regional offices for liaison with the States. A significant achievement in the field of registration promotion was the enactment of Registration of Birth and Deaths Act, 1969. The Act has been enforced in all the States and the rules under it framed in most of the States. The Sample Registration scheme is in operation in all the States and Union Territories covering a population of 3.5 millions spread over 3,700 units (2,400 rural and 1,300 urban). The survey provides an estimation of vital rates which also serve as a cross-check on the statutory registration. It is proposed to strengthen the scheme in the Fifth Plan by establishment of a parallel sample of units based on 1971 Census frame. It is also proposed to strengthen the machinery for evaluation and analytical studies on different aspects of Sample Registration to meet the requirements of family planning programmes. As regards Model Registration scheme, it is designed to collect statistics on causes of deaths in the rural areas through trained para-medical personnel employed in the Primary Health Centres. The scheme was started in a few States in 1965 and has since covered all the major States. The scheme is being run in 552 selected Primary Health Centres in the country. It is necessary to enlarge the sample size in order to obtain more comprehensive and representative picture of mortality. It is accordingly proposed to extend the coverage to 1,000 Primary Health Centres during the Fifth Plan. Two Primary Health Centres (against one during Fourth Plan) will be selected per one million population approximately.

15.46. The Third Agricultural Census was conducted with agricultural year 1970-71 as the reference year as part of the decennial World Census of Agriculture sponsored by the Food and Agricultural Organisation of the United Nations. Operational holding constituted the primary unit for data collection. The data were collected by combination of three approaches—by updating and retabulation of the land records maintained in the temporarily settled States, by carrying out special sample surveys for securing such data in case of States where detailed land records did not exist, and by the NSS during the 26th round. The data collected pertained to (i) the number and size distribution of holdings, (ii) area under different crops, (iii) land utilisation and (iv) irrigation. In addition information has been collected in regard to holdingwise tenure and tenancy. The NSS data in addition provide holding-wise details on use of ferti-

zers and pesticides, area under high yielding and other varieties of crops, as also information regarding livestock, agricultural machinery and implements etc. In regard to high yielding varieties the data collected is expected to throw light on the extent of holding area put under high yielding varieties as also on the extent of irrigated area of the holding put under high yielding varieties. The data will throw light on the study of relationship of the size of holding with irrigation as also with the use of chemical fertilizers. Further information in regard to credit requirements which could be worked out on per acre basis is also expected to become available through the agricultural census.

15.47. The following core-schemes were taken up in the States during the Fourth Plan with a view to providing all-India estimates on a uniform basis:

- (i) Scheme relating to Statistics of Village and Small-Scale Industries;
- (ii) Survey of Distributive Trade;
- (iii) Survey of Goods Traffic by road;
- (iv) Improvement of State Income;
- (v) Housing Statistics;
- (vi) Training Programmes;
- (vii) Machine Tabulation Unit;
- (viii) Strengthening/creation of Unit for Statistics of resources for planning; and
- (ix) Preparation of Municipal Statistical Year Book and District Statistical Hand Book.

The above schemes were selected from a larger list drawn up by Central and State Statisticians. The implementation of the schemes was, however, not satisfactory in some States because of the low priority accorded to Statistics by them. A number of State Governments/Union Territory Administrations took up additional schemes under the head 'Miscellaneous Statistics'. The outlay for some of the schemes was provided under the concerned sectoral programmes.

15.48. There is no doubt that there has been significant improvement in the statistical system in the country over the years. Some gaps in statistical information in various sectors of the economy, however, still remain. There is also increasing demand for statistics for social development planning. The approach in the formulation of statistical schemes during the Fifth Plan is accordingly guided by the following considerations:

- (i) Maintenance of continuity in implementation of the important statistical programmes undertaken since the earlier Plans;
- (ii) Implementation of the core schemes of the Fourth Plan in the State/Union Territory where the same have not been implemented so far;
- (iii) Extension of statistical development to new areas of enquiry to meet the requirements of planning at various levels; and
- (iv) Reduction in time-lag and improvement in quality of statistical data.

The statistical schemes to be taken up in the States during the Fifth Plan are proposed to be broadly divided into three parts (a) Core schemes of National Importance (Schemes requiring top priority); (b) Core schemes of State Importance; and (c) Other schemes of local importance. The core schemes of National Importance would include (i) economic census to be undertaken once in five years to cover all economic activities in the unorganised sector—trade, transport, construction and small-scale industries, (ii) capital formation and savings estimates at the State level, and (iii) construction of State index of industrial production. The core schemes of State importance would comprise (i) strengthening of statistical machinery at different levels to meet the statistical needs of multi-level planning, (ii) provision of electronic data processing, (iii) provision of a printing unit for statistical publications, (iv) studies of impact on employment in command areas of power and industrial projects and the spread effect on employment in adjoining areas and (v) training of district and lower level field staff in statistics and survey methodology. The schemes of local importance would include schemes which are of particular interest to the State concerned.

15.49. The Fifth Plan schemes in the Central Sector for the promotion of statistics would include, improvement and expansion of studies in national income, improvement in industrial statistics, conduct of fresh middle class family living survey, setting up of staff college for training of statistical personnel, expansion of socio-economic surveys to provide estimates for regions within State, improvement of crop estimates, expansion of Annual Survey of Industries, strengthening of design, research and data processing and other divisions of the National Sample Survey Organisation at headquarters and strengthening of the field organisation.

15.50. The outlay for the schemes of the Department of Statistics in the Fourth Plan was Rs. 5.85 crores and the estimated expenditure Rs. 3.75 crores. The statistical schemes under the head "Miscellaneous Statistics" in the States were allocated Rs. 4.22 crores during the Fourth Plan and the actual expenditure was estimated at Rs. 3.20 crores. The Fourth Plan outlay on the statistical scheme provided for in the sectoral programmes of the Central Ministries/Departments was about Rs. 8 crores.

15.51. The Plan provision for the schemes under the purview of the Department of Statistics in the Fifth Plan has been placed at Rs. 46.21 crores, of which Rs. 33.96 crores are provided for the Central

Sector and balance of Rs. 12.25 crores for States and Union Territories. The Plan provision for statistical schemes are :

Statistics : Fifth Plan Outlay

		(Rs. lakhs)
item		outlay
(0)		(1)
1.	<i>Central Sector</i>	3396
1.1	<i>Department of Statistics—CSO schemes</i>	641
1.1.1	improvement and expansion of studies on national income and allied aggregates	25
1.1.2	improvement of industrial statistics	33
1.1.3	preparation of indices of comparative costliness and fresh middle class family living survey	60
1.1.4	setting up of staff college for training of statisticians	27
1.1.5	economic census and surveys	370
1.1.6	construction of a separate building	100
1.1.7	other schemes including methodological, analytical studies and setting up of printing units	26
1.2	<i>department of statistics NSSO schemes</i>	1925
1.2.1	expansion of socio-economic surveys to provide estimates for regions within States	659
1.2.2	improvement of crop statistics	434
1.2.3	expansion of A.S.I.	121
1.2.4	strengthening of the NSSO including survey design, research and data processing divisions	403
1.2.5	other schemes	93
1.2.6	grants-in-aid to States	215
1.3	<i>department of statistics—computer centre schemes</i>	280
1.3.1	setting up of central data bank	10
1.3.2	setting up large-size computer	270
1.4	<i>grants-in-aid to ISI</i>	550
2.	<i>states and union territories schemes</i>	
	core and other statistical schemes	1225
	<i>total (1+2)</i>	4621

15.52. A provision of Rs. 547 lakhs during Fifth Plan has been proposed for the statistical schemes of the Computer Centre of the P.E.O. (Rs. 92 lakhs), D.G.S.&D. (Rs. 80 lakhs) and the Registrar General's Office (Rs. 375 lakhs). In addition provision has been made for statistical schemes in the sectoral programmes of the Central Ministries/State Departments.

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